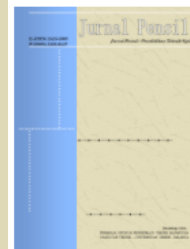


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ANALYSIS OF 5R/S WORK CULTURE IN THE BOWPLANK INSTALLATION PRACTICE IN CONSTRUCTION ENGINEERING

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Abstract

The installation of bowplanks as part of the assignment work still shows variations due to the less than optimal implementation of the 5R/S work culture in the field, especially in the arrangement of measuring tools, neatness of the work area, and compliance with K3 procedures. This study aims to analyze the implementation of the 5R/S work culture in the installation of bowplanks in the field of construction engineering carried out by students of the Vocational School of Construction and Housing Engineering SMKN 3 Semarang. The method used is quantitative with a correlational approach. The sampling technique used is total sampling with 72 respondents from 2 classes. Data were analyzed using descriptive statistical tests, normality tests, linearity tests, and correlation tests using SPSS statistical software. The results show that the level of implementation of the 5R/S work culture is in a fairly consistent category with an average value of 73.15, while the average level of understanding is 73.76 with relatively high variations. The correlation test produces a significance value of 0.000 which indicates a significant relationship between the understanding of the 5R/S work culture and its implementation in the installation of bowplanks. These findings indicate that consistent application of 5R/S can contribute to improving the quality of work, especially in determining the axes and elevations of buildings.

P-ISSN: [2301-8437](#)

E-ISSN: [2623-1085](#)

ARTICLE HISTORY

Accepted:

24 April 2026

Revision:

25 September 2026

Published:

30 September 2026

ARTICLE DOI:

[10.21009/jpensil.v15i3.67380](https://doi.org/10.21009/jpensil.v15i3.67380)



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Keywords: Work Culture, 5R/S, Bowplank, Construction Practices, Construction Engineering

Introduction

Work culture in the implementation in the field is one of the factors that determine the quality of building results. The initial stage that has a high level of sensitivity to errors is the installation of bowplanks as part of the construction work measurement process (Aprilianda et al., 2020). Inaccuracies in the installation of bowplanks both in determining the axle of the building and elevation can lead to deviations in the position of the structure that have an impact on subsequent work errors (Mahyar et al., 2019). In addition to technical competence in measurement, it is also necessary to implement a work culture that supports the regularity, precision, and consistency of work in the field (Tjendani & Ramadhan, 2022; Kassofi & Yusuf, 2026).

One of the relevant approaches in supporting the quality of construction work is the implementation of the 5R/S work culture adapted from the Japanese 5S concept namely Seiri, Seiton, Seiso, Seiketsu, and Shitsuke (Shahriar et al., 2022; Setiyawan et al., 2023). The 5R/S principles (concise, tidy, clean, caring, and diligent) play a role in ensuring the systematic arrangement of measuring instruments, cleanliness of work areas, and discipline in following work procedures and safety. Consistent implementation can minimize measurement errors, improve operational time efficiency, and reduce the potential for accidents in the field (Sutianah, 2021; Sobari et al., 2023; Suprayitno et al., 2021; Sanjaya et al., 2024).

The implementation of 5R/S work culture has an influence on improving efficiency and quality in the workplace (Muotka et al., 2023; Karuppuswamy et al., 2026; Dilaksa et al., 2025). Improving efficiency and quality in the workplace can be done by applying every aspect of the 5R/S work culture. Implementing the 5R/S work culture can create good habits for workers, especially in the area of soft skills such as responsibility, discipline and teamwork (Kularathne et al., 2026; Mulyani, 2024). These positive habits can be created by doing it at all times (Samoling et al., 2023). As the complexity of construction work increases, non-technical factors such as 5R/S work culture become an integral part of supporting technical performance (Waluyo, 2021; Ananta et al., 2025).

In Vocational High School, the implementation of 5R/S work culture is very relevant in shaping students' character and skills that will affect the quality of their performance in the industrial world. 5R/S work culture is used as one of the tools that can improve performance and discipline which can ultimately increase productivity in the workplace (Ahmad & Susilawati, 2023; Suprayitno et al., 2021; Sanjaya et al., 2024).

From this explanation, the application of 5R/S work culture can reduce errors and accidents in the workplace and increase efficiency. The application of 5R/S is a habitual science related to occupational safety and health (OSH) (Plevris & Papazafeiropoulos, 2024; Fuad et al., 2025). Based on observations made at SMKN 3 Semarang, it was found that some students still do not fully apply the 5R/S principle, especially in the K3 aspect. Students are considered less compliant with K3 procedures such as not using appropriate safety equipment and less concern for the cleanliness and tidyness of the practical environment (Santosa et al., 2022; Sutariyono, 2023; Riawan & Hadidjija, 2023). This issue shows that there is an urgent need to optimize the implementation of 5R/S work culture, especially at the introduction stage of Phase E.

By introducing a 5R/S work culture consistently and sustainably, it can form positive habits that will be carried over to the world of work (Sanjaya et al., 2024; Sutariyono, 2023; Al Hassany & Nurdin, 2024). The urgency of this research is to increase student awareness about the importance of implementing a 5R/S culture. The results of this study are expected to provide an overview of the contribution of work culture to work rigor. In addition, it is also a basis for improving the quality of construction work work implementation through the implementation of more structured and consistent work standards.

Research Methods

This study uses quantitative analysis. The quantitative approach is used to analyze the significance and direct relationship between the variables studied using numerical calculations (Sugiyono, 2023). The approach was chosen to explore the relationship between understanding and the level of application carried out by students. The data collected was then analyzed using the SPSS application. The testing process consisted of several stages, namely (1) statistical descriptive test, (2) normality test, (3) linearity test, and (4) correlation test.

The population in this study is Phase E students from the Construction and Housing Engineering Expertise Program of SMKN 3 Semarang. The sampling technique used is total sampling, so the entire population is used in the research. The respondents consist of 2 classes where each class consists of 36 students so that there are 72 people. The independent variable in this study is the student's understanding of the 5R/S work culture, while the dependent variable is the application of the 5R/S work culture in bowplank practice learning. The data in this study was collected through observation and questionnaire distribution. The questionnaire provided contains questions that measure attitudes with four answer choices related to the activities carried out by students. The answers provided reflect the actions taken by students during the bowplank practice process. Table 1 shows the indicators of the instruments used in the study.

Table 1. Indicators of research instruments

Aspects	5R/S Understanding Indicator	5R/S Implementation Indicators
Concise	Understand the selection of goods and tools	Activities to prepare practical equipment and materials with easy access.
Tidy	Understand the arrangement of goods and tools	The activity was to tidy up materials and equipment for bowplank training and to arrange the training place.
Clean	Understand how to clean places and equipment	Cleaning activities of the place and equipment used.
Caring	Understand how to maintain environmental conditions and equipment	Activities to maintain environmental conditions and practical equipment.
Diligent	Understanding how to build discipline	Disciplinary activities on procedures and provisions of practice.

The indicator table was used as an instrument to collect data, which was then distributed to respondents through questionnaires. Previously, the research instrument was validated using the aiken formula and reliability using cronbach's alpha. Table 2 is the result of the validity of the instruments in this study.

Table 2. Results of the Validity of Research Instruments

Item	Validity	Statement	Categories
1	0.883	Valid	Very Hight
2	0.967	Valid	Very Hight
3	0.783	Valid	Height
4	0.967	Valid	Very Hight

Item	Validity	Statement	Categories
5	0.789	Valid	Height
6	0.850	Valid	Very Hight
7	0.961	Valid	Very Hight
8	0.794	Valid	Height
9	0.722	Valid	Height
10	0.867	Valid	Very Hight
11	0.617	Valid	Height
12	0.972	Valid	Very Hight
13	0.950	Valid	Very Hight
14	0.794	Valid	Height
15	0.872	Valid	Very Hight
16	0.978	Valid	Very Hight
17	0.789	Valid	Height
Average	0.860	Valid	Very Hight

Based on the results of the validity above, it shows that the average criteria of the question items for the 5R/S work culture understanding instrument are very high. The question items that get very high criteria are 10 items, while the question items that get high criteria are 7 items, so the instrument is suitable for use. Table 3 results of the reliability of the research instrument.

Table 3. Results Reliability of Research Instruments

Reliability Statistics	
Cronbach's Alpha	N of Items
.917	17

Based on the table, the reliability test results show that cronbach's alpha results are 0.917. The results of cronbach's alpha test are interpreted that the instrument has very high criteria, so it can be said to be reliable. Figure 1 illustrates the scheme used in this study.

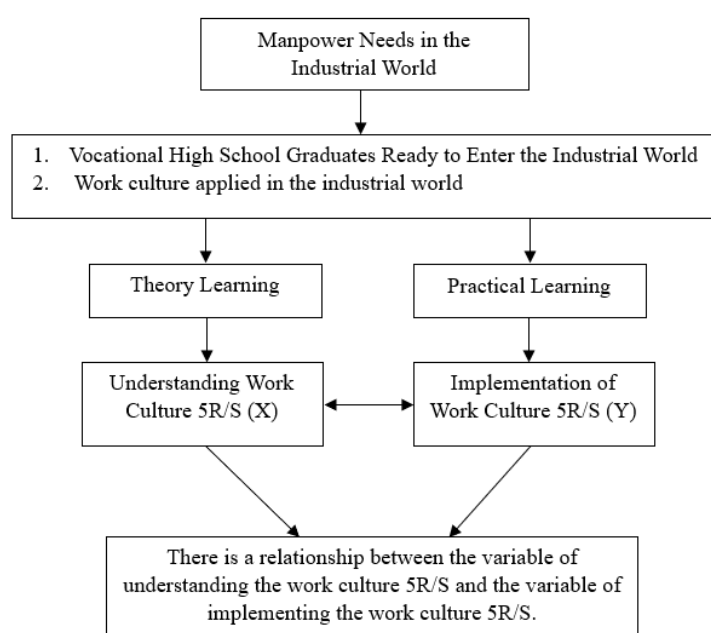


Figure 1. Research Scheme

Research Results and Discussion

The data obtained were analyzed in accordance with the rules and conditions of the research. The testing stage was through (1) the Statistical Description Test, (2) the Normality Test, (3) the Linearity Test, and (4) the Correlation Test. The results of the analysis prerequisite test can be seen in Table 2, Table 3, and Table 4.

Descriptive Statistical Test

The statistical descriptive test in this study was used to determine the results of the maximum score, minimum score, and average results of student questionnaires and student observations. Table 4 shows the results of the descriptive statistical test.

Table 4. Descriptive Statistical Test Results

Descriptive Statistics					
	N	Minimum	Maximum	Average	Deviation
Understanding	72	38.00	85.00	73.7639	9.93712
Implementation	72	63.00	80.00	73.1467	4.18392

Table 4 presents the results of descriptive statistical tests for the comprehension and implementation variables in this study. Based on data obtained from 72 students, comprehension scores ranged from 38.00 to 85.00, with an average score of 73.76 and a standard deviation of 9.94. This shows that most students have a good understanding of the 5R/S work culture, although there are variations between students. Meanwhile, for the implementation variable, the scores obtained ranged from 63.00 to 80.00, with an average score of 73.15 and a standard deviation of 4.18.

Normality Test

The normality test is used to determine whether the data obtained is normally distributed or in a normal distribution. The test uses the analysis of the one-sample Kolmogorov-smirnov test. The data is said to be normally distributed if the value of Asymp. Sig. (2-tailed) > 0.05 .

Table 5. Normality Test Results

One-Sample Kolmogorov-Smirnov Test		
N		72
Normal Parameters	Mean	.0000000
	Std. Deviation	3.47063008
Most Extreme Differences	Absolute	.090
	Positive	.090
	Negative	-.081
Test Statistic		.090
Asymp. Sig. (2-tailed)		.200

Table 5 shows the results of the normality test with Asymp. Sig. (2-tailed) obtained in this study of 0.200. So it can be said that the data is distributed normally or in a normal distribution because it is above the minimum value of 0.05.

Linearity Test

The linearity test is used to determine whether two variables have a linear relationship or not. The test uses *ANOVA Table analysis* with the provision of *Sig. Deviation From Linearity* > 0.05. The results of the linearity test can be seen in Table 6.

Table 6. Results of the Linearity Test

ANOVA Table						
		Sum of Squares	df	Mean Square	F	Sig.
Implementation	(Combined)	713.317	27	26.419	2.411	.005
x	Linearity	340.286	1	340.286	31.052	.000
Understanding	Deviation from Linearity	373.031	26	14.347	1.309	.211

Based on the results of the anova table above, the sig. deviation from linearity value is 0.211. If the minimum requirement for the linearity test is > 0.05, the significance value is 0.211 > 0.05, then it can be said that the data has a linear relationship.

Correlation Test

The correlation test is used to find out whether the two variables have a significant relationship or not. The correlation test is analyzed using person correlation. Table 7 is the result of the correlation test analysis.

Table 7. Correlation Test Results

Correlation			
		Understanding	Implementation
Understanding	Pearson Correlation	1	.534**
	Sig. (2-tailed)		.000
	N	72	72
Implementation	Pearson Correlation	.534**	1
	Sig. (2-tailed)	.000	
	N	72	72

From table 7 above, the value of sig. (2-tailed) of the two variables is 0.000. If the maximum significance value is 0.05, then it can be said that the two variables have a significant relationship. The correlation between the understanding and implementation of the 5R/S work culture can be seen based on the pearson correlation of 0.534. Table 8 is the interpretation of the value of person correlation (Sugiyono, 2023).

Table 8. Interpretation of the correlation value of persons

Value	Categories
0.800-1.000	Very Strong
0.600-0.799	Strong
0.400-0.599	Currently
0.200-0.399	Weak
0.000-0.199	Very weak

Based on Table 5, the value of 0.534 is included in the medium category. The person correlation number has a positive value so that if the value of the independent variable increases, the value of the dependent variable will also increase.

Percentage of 5R/S relationship achievement

The results of the questionnaire and student observations can be seen through the table of the average percentage of 5R/S work culture in bowplank learning as follows Table 9.

Table 9. Percentage of understanding and imitation of work culture 5R/S

No	Aspects	Acquisition Results		Categories
		Comprehension (%)	Implementation (%)	
1.	Concise	88.60	85.00	Very Good - Very Good
2.	Tidy	85.83	83.47	Good - Good
3.	Clean	88.60	86.11	Very Good - Very Good
4.	Caring	81.87	88.68	Good - Very Good
5.	Diligent	88.67	86.20	Very Good - Very Good
Average		86.71	85.89	Very Good - Very Good

Based on the results of the calculation of the percentage of 5R/S work culture on the variables of understanding and implementation, it can be seen that the average level of understanding of 5R/S work culture in bowplank practice learning obtained a score of 86.71% which is included in the very good category. In addition, the percentage of the level of implementation of 5R/S work culture in bowplank practice learning obtained a score of 85.89% which is included in the very good category.

Discussion

The results of the study showed that there was a positive relationship between the understanding of the 5R/S work culture and its application in the practice of bowplank installation. The correlation coefficient value of 0.534 indicates a relationship in the middle category, which means that an increase in understanding of the 5R/S principle is likely to be followed by an improvement in the quality of its application in the field. These findings are in line with previous research which stated that the understanding of work standards has a significant influence on the consistency of work implementation and the quality of results (Mahyudin & Hermawan, 2025; Mulyo et al., 2020). In determining the work, a good understanding of the systematic work principle will support accuracy in determining the shaft and elevation of the building (Fadillah, 2025).

However, the strength of correlation that exists in the medium category suggests that the implementation of 5R/S is not only influenced by comprehension factors but also by other factors such as work habits, work environment, and the influence of colleagues in the field. Previous research has stated that work culture is formed not only from cognitive aspects but also from habituation processes and social interactions in the work environment (Mauludi et al., 2026; Aziz et al., 2026; Anwar & Junaidin, 2026). In construction practice, team coordination factors and collective work habits have an important role in maintaining consistency in the implementation of work procedures and safety standards (Sanjaya et al., 2024; Gumilar & Hendrayana, 2024).

An analysis of every aspect of the 5R/S work culture shows that the concise principle has been adequately applied, evidenced by the ability to select and use measuring equipment according to the needs of the job. This is important in bowplank work, as the use of irrelevant tools can increase the potential for measurement errors (Hutasuhut et al., 2025; Amir et al., 2024). The tidy

principle also shows relatively good results, where most of the equipment has been placed regularly, although there is still a reliance on the habit of following colleagues. This condition indicates that the work arrangement system is not entirely standard-based, but is still influenced by field adaptation factors (Mu'arif et al., 2026; Septiari et al., 2023).

In the clean aspect, the condition of the work area and equipment is generally maintained, but it is not consistent in the final stage of the work, especially in the final inspection activities. In fact, in civil engineering practice, the cleanliness and regularity of the work area are part of the quality control that affects the accuracy of the reading of the measuring instrument (Santosa et al., 2022; Miftaql Aqyar & Indro Kirono, 2023). Meanwhile, in the maintenance aspect, there are beginning to be efforts to maintain the condition of the equipment, such as checking the feasibility of the tool before use, although it has not been done systematically. As for the aspect of perseverance, discipline in following work procedures and the use of personal protective equipment began to form, although it was not completely consistent.

However, optimal implementation requires a continuous habituation process and consistent supervision. In the context of bowplank work, inconsistent implementation of 5R/S can have a direct impact on measurement deviations, axismic misdetermination, and inaccurate elevation (Yolanda Sari et al., 2024; Mahasin & Suyitno, 2022). Thus, it can be concluded that although the understanding of 5R/S work culture is already in the good category, its implementation is still influenced by external factors such as the work environment and team interaction. Therefore, it is necessary to strengthen the systematic and continuous implementation of 5R/S work culture as part of standard operating procedures to improve the quality of construction work, especially at the bowplank installation stage.

Conclusion

The research conducted on 72 phase E students of the Construction and Housing Engineering Expertise Program of SMKN 3 Semarang in studying bowplank practice using this descriptive quantitative method, involved the distribution of questionnaires and observations for about one month. The results of the study showed that the level of students' understanding of the 5R/S work culture in bowplank practice reached 86.71%, which was included in the very good category. Meanwhile, the level of implementation of the 5R/S work culture by students was recorded at 85.89%, also in the very good category. In addition, it was found that there was a positive relationship between students' understanding of the 5R/S work culture and its implementation, which showed an intermediate and one-way relationship. Based on these results, there are several suggestions that can be used as input for further research and development. First, for further research, it is recommended to investigate other factors that can affect the understanding of 5R/S work culture, especially in the context of other learning objectives or practices. Second, it is important to research the factors that affect the implementation of the 5R/S work culture and its impact on learning outcomes and the effectiveness of student practice, in order to improve the quality of learning and the implementation of work culture at SMKN 3 Semarang.

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