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The Influence of Community Empowerment Training for Inland Water Transport Ship Loaders on Students' Knowledge and Skills

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Abstract The causes of shipping accidents, as identified by the KNKT investigation, included technical, weather, and human factors. As a result, community empowerment training was conducted in 2023 for loaders of inland waterway transport vessels Class I. This training aimed to enhance participants' knowledge, insight, and skills regarding loading arrangements and stability testing of inland waterway vessels. The study employed a quantitative descriptive method using primary data from evaluations, including pretests and posttests administered to 30 training participants. The analysis technique utilized was the paired t-test. Results obtained through the Wilcoxon Matched Pair test indicated a significant difference between pretest and posttest scores, leading to the conclusion that participants' knowledge improved after completing the training. The findings revealed that, out of 30 training participants, only 2 experienced a decrease in scores. Conversely, 28 participants showed positive results (positive rankings), indicating an increase in scores. The average pretest score was 73.67, which increased to an average posttest score of 92.50 following the training. These results were further supported by the significant difference shown in the paired t-test analysis. In conclusion, there was a significant improvement in participants' knowledge after the training. It is recommended that the program be expanded to include more participants to ensure that the broader community, particularly ship operators, benefits from increased knowledge of shipping safety and proper ship loading practices.

1. INTRODUCTION

Palembang, known as a river city due to the presence of the Musi River—the longest river on the island of Sumatra that divides Palembang into two parts—hosts a river port that is part of the Ministry of Transportation's quick win program. This program aims to enhance service facilities, infrastructure, and the quality of human resources (Amanda et al., 2020). One critical factor in shipping safety is ship stability, defined as the ability of the ship's hull, whether partially or fully submerged, to float upright and regain balance when tilted. A stable ship can return to an upright position if it tilts while sailing. Good stability is essential for a ship to withstand external forces such as weather and currents, particularly during loading and unloading activities. Ensuring ship stability is a key responsibility of loading and unloading officers on river and lake vessels. Ship stability plays a vital role in ensuring transportation safety in the shipping industry (Amanda & Febriansyah, 2022). According to Komite Nasional Keselamatan Transportasi (2021), factors contributing to shipping accidents include technical issues, weather

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conditions, and human error. Given the critical importance of shipping safety, it is imperative for relevant stakeholders to optimize their efforts in improving safety measures. This includes enhancing facilities, providing necessary infrastructure, and strengthening operational activities alongside human resource development. Effective supervision of inland water transportation on rivers and lakes is crucial for ensuring shipping security and safety, enabling these activities to be conducted optimally, effectively, and efficiently.

Community empowerment training for inland water ship loaders, organized by the Palembang Polytechnic of Inland Water and Ferries Transport, aligns with the government's program to enhance human resource quality by providing knowledge to the general public. According to Instruksi Presiden Republik Indonesia (2016), in the context of strengthening synergy between stakeholders to revitalize vocational secondary schools (VSS) and improve the competitiveness of Indonesian human resources, a special mandate was issued to the Minister of Transportation. This mandate includes increasing access to certification for vocational school graduates in the transportation sector, improving related vocational schools, facilitating students, educators, and staff in conducting fieldwork (PKL) and internships, sharing resources, and accelerating the establishment of Indonesian National Job Competency Standards.

The River and Lake Ship Loader Training program aims to develop human resources capable of understanding and implementing proper loading procedures for river, lake, and ferry ships. Awareness of the importance of safety in inland water transportation is a government priority as the transportation sector's regulator. Service users demand not only comfort, reliability, speed, and affordability but also safety and security. Therefore, this transportation mode deserves significant attention from stakeholders to optimize facilities, infrastructure, operations, and human resource development, ensuring order, security, and safety.

Knowledge is a critical factor in community readiness, as it often influences attitudes and concerns regarding accident prevention, particularly in ship loading arrangements (Yudiantri et al., 2021). Understanding the concept of ship stability is crucial to avoiding accidents and reducing risks, especially in the context of community-based shipping (Rizky et al., 2018). According to Ilham et al. (2022), education programs aimed at increasing knowledge and skills in fire handling for ship operators showed that 33.3% of participants experienced significant knowledge improvement at high levels, while 66.7% exhibited moderate improvement. Similarly, Setiawan et al. (2023) highlighted that providing knowledge and training on safety equipment in outreach programs enhances participants' abilities, attitudes, and awareness regarding public transport safety on river waters, including self-rescue techniques in accidents.

This aligns with the findings of Banuwa & Susanti (2021), who observed significant improvements in participants' scores following technical training in 2022, indicating increased knowledge of ship stability and loading procedures. Such education is essential for enhancing insights and skills, ultimately reducing the risk of premature and accidental incidents on inland water vessels.

To achieve this goal, it is crucial to provide training for the general public, particularly those involved in ship operations, such as stevedores in river and lake transportation. Training programs should focus on equipping participants with the knowledge and skills needed to implement safe and effective loading procedures for river, lake, and ferry ships.

2. METHOD

The River and Lake Transport Loader Training Program aimed to develop competent human resources capable of understanding and implementing loading procedures on river and lake vessels properly and accurately. A total of 30 participants from the general public attended the River and Lake Ship Loader Training. The Community Empowerment Education and Training (CEET) program for Class I Inland Water Transport Ship Loaders was part of a community service initiative to develop human resources skilled in understanding and executing proper procedures for loading inland water vessels. The CEET for Class I Inland Water Transport Ship Loaders in 2023 was held at the Duta Hotel from October 16 to 18, 2023, with a total duration of 30 class hours. The training program spanned three days and involved 30 participants from the general public. The program was conducted by lecturers from the Palembang Polytechnic of Inland Water and Ferries Transport, in collaboration with the South Sumatra Class II Land Transportation Management Center (LTMC). The learning process in the River and Lake Transport Ship Loader Training was conducted using several methods explained in the following.

1. Exposure: This method was used to present material on concepts, foundations, and topics related to the training curriculum.

2. Questions and Answers: This approach provided participants with the opportunity to ask questions about the material or any topics they did not fully understand.

3. Discussion: This method facilitated discussions and the sharing of information on topics related to the training materials, including challenges or realities faced in participants' respective regions.

4. Evaluation: This was conducted to assess the extent to which participants understood the training material. Evaluations were carried out at the end of the learning session through academic tests, including a pretest and posttest, based on the material presented.

5. Field Practice: This involved practical exercises or field visits to apply the concepts and skills learned during the training.

This research method is quantitative, using a descriptive analytical design according to (Arikunto, 2019). The data used is primary data obtained from pretest and posttest scores from 30 respondents who are all participants in the community empowerment training for class I inland water transport loader ships in 2023. Furthermore, the research model is one group pretest posttest, there is a present, before giving treatment. This formula can be describe as follow (Sugiyono, 2019):

This research employed a quantitative method with a descriptive analytical design, as outlined by Arikunto (2019). The data used consisted of primary data obtained from pretest and posttest scores of 30 respondents, all of whom participated in the Community Empowerment Training for Class I Inland Water Transport Loader Ships in 2023.

The research utilized a one-group pretest-posttest design, where measurements were taken before and after the intervention. This approach allowed for assessing the impact of the training. The formula for this design, based on Sugiyono (2019), can be described as follows.

$$O_1 X O_2$$

O_1 = initial test (pretest value before being given treatment
X = forms of exercise
O_2 = final test (posttest score after being given treatment

The pretest and posttest assessments consisted of 20 multiple-choice questions aligned with the Community Empowerment Training (CEET) curriculum for Class I Inland Water Transport Ship Loaders in 2023. The respondents were 30 CEET participants, all of whom were members of the general public from the city of Palembang.

In this research, the data were collected using a ratio measurement scale and analyzed using SPSS software. The analysis involved both descriptive statistics and a paired t-test to evaluate the effectiveness of the training program.

3. RESULT AND DISCUSSION

The profile of the respondents and the results of the data analysis on the pretest and posttest assessments are summarized as follows.

The respondents in this study were characterized by gender, age, education level, and employment status. In terms of gender, 60% of the respondents were male. Regarding age, 77% of the respondents were between 20 and 30 years old, representing both the productive age group and the middle age group. Educationally, 93% of the respondents had completed high school. Additionally, 77% of the respondents were unemployed at the time of the study. These demographic characteristics are visually represented in the Figure 1.

The pretest assessment was conducted before the respondents participated in CEET activities, while the posttest was conducted after the completion of the CEET activities. The data were then analyzed to determine whether there was a significant difference in the average scores between the pretest and posttest results. The graphical representation of the respondents' pretest and posttest scores is presented below.

Figure 2 illustrates that the pretest and posttest results do not overlap, indicating a difference between the two sets of scores. However, statistical testing must still be conducted using paired tests (paired t-tests) to determine whether the differences between the respondents' pretest and posttest results are statistically significant. Additionally, to assess whether the differences represent an increase or decrease in values, the statistical data can be further analyzed in the accompanying Table 1.

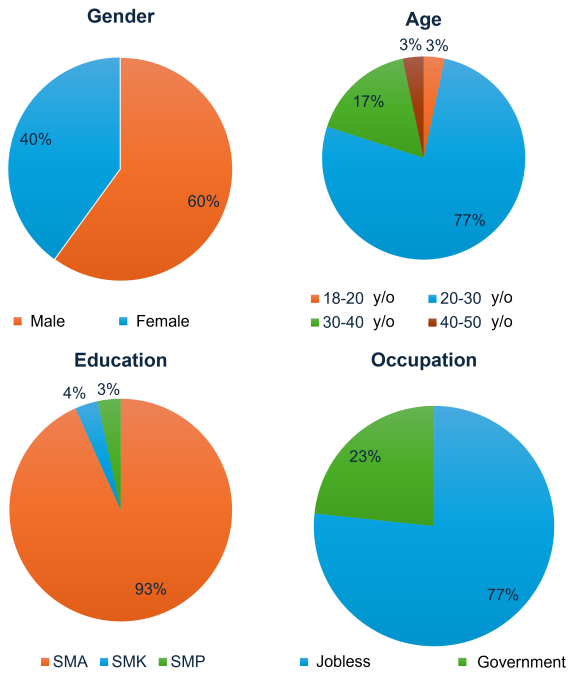

Figure 1 . Respondents' profile

Table 1 presents the descriptive statistics for the pretest and posttest data. According to the table, the pretest scores had an average of 73.67, while the posttest scores had an average of 92.50. This indicates a noticeable difference in the average scores of the participants, demonstrating an improvement after participating in the 2023 Class I Inland Water Transport Ship Loader CEET. However, to validate this finding, a paired t-test must be conducted to confirm the statistical significance of the observed increase.

In parametric testing with a paired t-test, the data used must have a normal distribution to obtain valid results. Table 2 shows the results, testing the distribution of data The results of the respondents' pretest and posttest using the Kolmogorov-Smirnov and Shapiro-Wilk test statistics showed that the significant value (p-value) from both the Kolmogorov-Smirnov and Shapiro-Wilk tests on the pretest data had a significance value of > 0.05 so that the assumption of normality was met. . However, testing on the posttest data showed a significance value of <0.05 so that in the posttest data the assumption of normality was not met. Thus, the parametric paired t test cannot be carried out on the pretest and posttest data. In accordance with the results of the normality assumption test, it is known that the

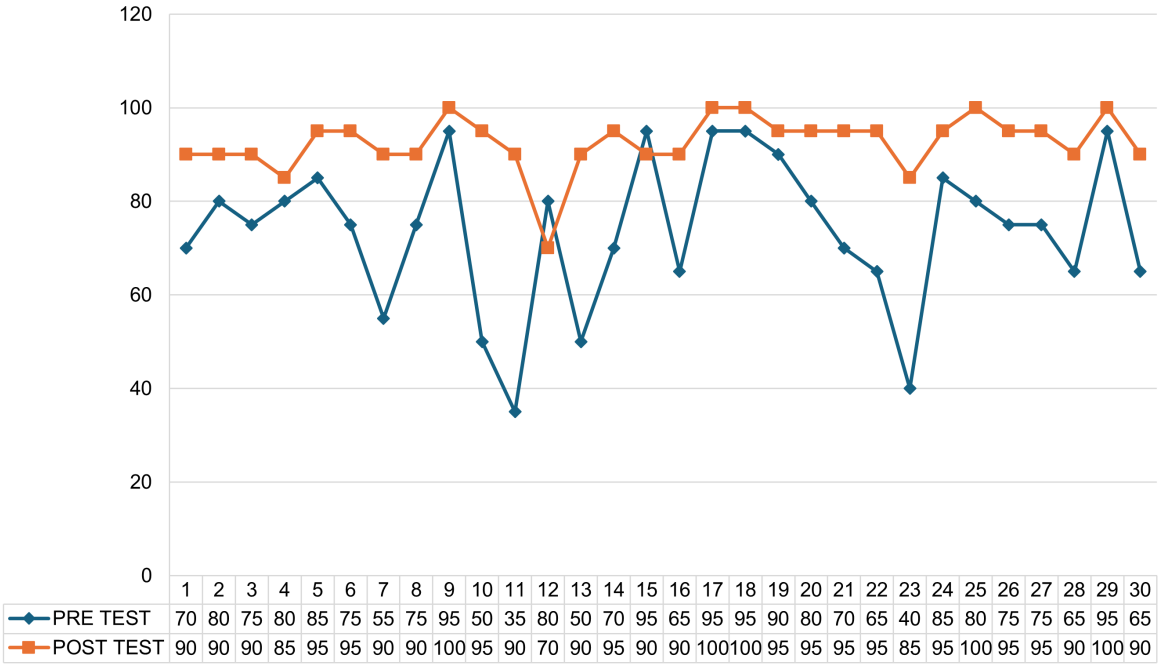

Figure 2 . Graph of pretest and posttest scores

posttest scores are not normally distributed so that non-parametric analysis is used to analyze the pretest and posttest data. The test used to test whether there is an average difference between the pretest and posttest scores is the Wilcoxon matched-pairs test, which is carried out by changing the pretest and posttest data on a ratio scale into ordinal data (ranking). Table 3 shows the ranking results of the pretest and posttest.

Table 3 shows that, in the comparison of pretest and posttest results, there were 2 cases with a negative difference (negative rank), indicating that 2 participants in the 2023 Class I Inland Water Transport Ship Loader CEET experienced a decrease in their scores. In contrast, 28 cases showed positive differences (positive rank), meaning that 28 participants experienced an increase in their scores. However, these differences may be attributed to sampling error. To address this, statistical decision-making regarding the pretest and posttest results was conducted using the Wilcoxon Matched-Pairs statistical test, which accounts for potential sampling errors and ensures robust analysis.

Table 1 . Data descriptive statistics pretest and posttest results

	N	Range	Minimum	Maximum	Sum	Mean	Std. Deviation
Pretest	30	60	35	95	2210	73.67	16.024
Posttest	30	30	70	100	2775	92.50	5.981
Valid N (Listwise)	30						

Table 2 . Data normality of pretest and posttest results

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistics	**df**	**Sig.**	**Statistics**	**df**	**Sig.**
Pretest	0.133	30	0.185	0.934	30	0.061
Posttest	0.238	30	0.000	0.802	30	0.000

A. Lilliefors Significance Correction

Table 3 . Data ranking pretest and posttest results

		N	Mean Rank	Sum of Ranks
Posttest - Pretest	**Negative Ranks**	2	6.75	13.50
	Positive Ranks	28	16.13	451.50
	Ties	0		
	Total	30		

a. posttest < pretest

b. posttest > pretest

c. posttest = pretest

Table 4 . Wilcoxon matched-pairs test results for pretest and posttestdata

	Posttest - Pretest
Z	-4.518
Asymp. Sig. (2-tailed)	0.000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks

Based on Table 4, which presents the results of the Wilcoxon Matched-Pairs test, the significance value (p-value) for the pretest and posttest data was 0.000 ($p < 0.05$). This indicates a statistically significant difference between the pretest and posttest scores of the participants in the 2023 Inland Water Transport Ship Loader CEET. Therefore, it can be concluded that the participants' knowledge improved significantly after completing the 2023 Class I CEET for Inland Water Transport Ship Loaders.

4. CONCLUSION

This study has found that, out of a total of 30 training participants, only 2 experienced a decrease in their scores. Conversely, 28 participants showed positive results (positive ranking), indicating an increase in their scores. The average pretest score was 73.67, which improved to an average posttest score of 92.50 after the training. These findings were further supported by the significant difference observed in the paired t-test results. It can be concluded that there was a significant improvement in participants' knowledge following the training. To enhance the impact of the program, it is recommended to expand the number of empowerment training participants, thereby increasing knowledge of shipping safety and ship loading procedures among the general community and ship operators specifically.

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CONFLICT OF INTERESTS

The authors declare that there is no conflict of interest.

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