# ENHANCING CONSTRUCTION WORKERS' AWARENESS OF OCCUPATIONAL SAFETY AND HEALTH (K3) THROUGH COMMUNITY SERVICE IN PANDEGLANG, BANTEN

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## ABSTRACT

Indonesia's construction sector still records many work accidents, many of which are caused by low awareness and knowledge of occupational safety and health (K3). This problem is also found in Pandeglang, Banten, where construction workers generally have low education levels, limited K3 training, and poor compliance with personal protective equipment (PPE) use. To address this issue, a community service program was carried out by Universitas Mercubuana in collaboration with PT Tunas Engineering using a participatory approach. The activities included K3 socialization, discussions, practical demonstrations, and distributing 21 PPE sets (helmets, gloves, and boots). Pre-test and post-test questionnaires were administered to evaluate participants' knowledge before and after training. The results showed a significant increase in awareness, with knowledge of PPE use, hazard recognition, and workplace communication improving by more than 50%. This program demonstrates that participatory training supported by hands-on practice and PPE provision effectively enhances workers' safety awareness and behavior. However, the program involved a limited number of participants and short-term evaluation, so further development is needed with larger groups, continuous mentoring, and collaboration with contractors and government to ensure sustainability.

**Keywords**: K3, Construction Safety, PPE, Community Service, Pandeglang

## 1. INTRODUCTION

The construction sector contributes a significant percentage of total work accidents in Indonesia. These accidents can be in the form of falls from a height, being hit by materials, or accidents involving heavy equipment. The number of these accidents not only results in physical injuries but also has the potential to cause death, which, of course, harms the welfare of workers and their families. Accidents can lead to lost productivity, high medical costs, and even lawsuits. In addition, accidents at construction sites can damage the company's reputation and reduce public trust in the construction industry (Isc, 2024; Putri et al., 2023). The high number of work accidents at construction sites is a serious concern, and one of the main factors contributing to this problem is the low knowledge of workers regarding occupational safety, health, and security (K3) (Sen et al., 2023; Suwandari et al., 2021).

Data from the Ministry of Manpower (Kemnaker) states that there were 370,747 cases of work accidents in Indonesia in 2023. Around 0.8% or 2,965 cases were from construction service workers (Maulidin, 2024). The number of work accidents in the construction sector in Indonesia is a complex problem and requires serious attention from all parties.

To overcome this problem, cooperation between the government, employers, and the community is needed to increase awareness of the importance of occupational safety, provide adequate training, and strengthen law enforcement related to K3. With these steps, the number of work accidents can be reduced and the safety of workers can be guaranteed so that the construction sector can operate more safely and efficiently (Konstruksi Media, 2022).

As a legal basis, Law No. 1 of 1970 is the main law on K3 in Indonesia, which also refers to the 1945 Constitution of the Republic of Indonesia, especially articles 5, 20, and 27. Law No. 1 of 1970 regulates occupational safety (including occupational health) in all workplaces, whether on land, on the ground, on the surface of water, in water, or the air , PP Number 50 of 2012 concerning the Implementation of Occupational Safety and Health Management Systems (Indonesia, 2012).

This study will explore community service activities in Pandeglang, Banten. Pandeglang Regency is located in Banten Province, at the westernmost tip of Java Island. It border Serang Regency to the north, Lebak Regency to the east, and the Indian Ocean to the west and south. This area is often affected by earthquakes due to two active faults, namely the Cimandiri Fault, the Lembang Fault, and the volcanic activity of Mount Krakatau. Considering that Indonesia is located in the Pacific Ring of Fire with hundreds of active faults in various regions, both land and sea, there is still a threat of new faults being discovered around Banten, including the Baribis Fault (Supendi et al., 2018) .


Figure 1. Pandeglang area

This area has quaternary deposits, including beaches, rivers, and local alluvial swamps. Generally decomposed, soft, loose, and unconsolidated, it is prone to earthquakes. Earthquake shocks are more pronounced in locations above soft ground. As a result, there is a lot of building damage and casualties. Pandeglang consists of 35 sub-districts, 13 urban villages, and 326 villages; the population in 2022 is estimated at 1,175,148 people, an area of 2,746.89 km2 with a density of 428 people/km2(8). Most of the population are farmers, fishermen, laborers, and builder (Lestari et al., 2021)s. The majority of the population has a low level of education. Most only graduated from elementary school to junior high school. From an economic aspect, income levels tend to be low, especially in the informal sector.

PT Tunas Engineering is the leading cooperator with Mercubuana University in implementing its project activities, and it uses a lot of labor or craftsmen recruited per project. Most of them utilize residents or craftsmen who are not far from the project location. If the project occurs in Banten, the craftsmen used to come from the Banten area. The problem is a craftsman who is not yet aware of K3, which can cause safety problems in the future. The builders do not use personal safety PPE equipment such as safety helmets, gloves, glasses, or masks. Several work accidents in the field include workers being hit by nails so that they are scratched or injured by other sharp objects. Therefore, community service is focused on increasing workers' safety awareness.

## 2. METHOD

The method of implementing the Domestic Cooperation community service activity with partners is as follows:

1. Activity Design
   This Community Service Program (PKM) is implemented using a participatory approach, with partners actively involved from the planning stage through implementation and evaluation (Creswell, 2018; Sugiono, 2019). This approach is appropriate because it supports the reciprocal exchange of knowledge and strengthens partners' acceptance of the activity's results.
2. Implementation Procedure
   - Activity stages include:
     Initial survey and partner signing. This stage results in a partner commitment in the form of a letter of intent to collaborate.
   - Identification of data and learning tool needs. This stage aims to gather information regarding the problems faced by partners.
   - Distribution of material related to Occupational Safety and Health (K3). The material covers using PPE, seat belts, understanding safety signs, and first aid for workplace accidents.
   - Discussion and Q&A. Partners can ask questions and provide input to ensure two-way communication.
3. Evaluation Method

Measurements were conducted using simple pre-test and post-test questionnaires to assess workers' knowledge of K3 before and after training (Putra et al., 2021). The results were then analyzed descriptively and quantitatively to determine how much partners' understanding of K3 implementation had improved.

4. Publication and report preparation.
   The activity concluded with preparing a publication article and a PKM report.

## 3. RESULTS AND DISCUSSION

1. Social Mapping
   The mapping was conducted through offline discussions with construction workers at the project site in Menes District, Pandeglang, on March 28, 2025. This mapping determined how much construction workers understand K3 (K3) at the project site. The mapping results indicated that most construction workers in Menes District, Pandeglang, have a low level of education (elementary school–junior high school) and have never received K3 training. This situation impacts their low awareness of using personal protective equipment (PPE) and understanding of occupational safety standards. This data formed the basis for the need for intervention in the form of K3 socialization.
2. Implementation of K3 Socialization
   The socialization activity was held on May 17–18, 2025, on the UNMA campus and was attended by 21 construction workers.
   a. The materials provided included:
   b. Knowledge of the importance of K3 (knowledge aspect).
   c. Practical use of PPE (attitude aspect).
      As a form of concrete support, the implementation team also assisted in 21 sets of PPE (helmets, safety gloves, and boots).


(a) (b)

(c) (d)

Figure 2. Implementation of K3 socialization activities

3. Evaluation

The results of field observations and a short questionnaire showed increased participants' understanding of the function and benefits of PPE.

Table 1. Result of pre-test and post-test

| Rated aspect | ***Pre-Test (% understanding)*** | ***Post-Test (% understanding)*** | ***Improvement*** |
|---|---|---|---|
| Understanding APD function | 28.6 | 85.7 | +57.1 |
| Awareness use helmet in work area | 33.3 | 90.5 | +57.2 |
| Understanding the importance of safety gloves and shoes | 23.8 | 81.0 | +57.2 |
| Knowledge of safety signs/signs | 19.0 | 76.2 | +57.2 |
| Understanding of simple first aid procedures | 14.3 | 74.7 | +60.4 |
| Awareness of maintaining safe work postures on projects | 23.8 | 75 | +51.2 |
| Understanding the risk of falling when working at heights | 28.6 | 74,5 | +45.9 |
| Knowledge of electrical hazards in construction areas | 19.0 | 76.2 | +57.2 |
| Understanding the importance of communication between workers regarding K3 | 28.6 | 85.7 | +57.1 |
| Overall awareness of the importance of K3 | 23.8 | 90.5 | +66.7 |
| Average | 24.3 | 81.0 | +56.7 |

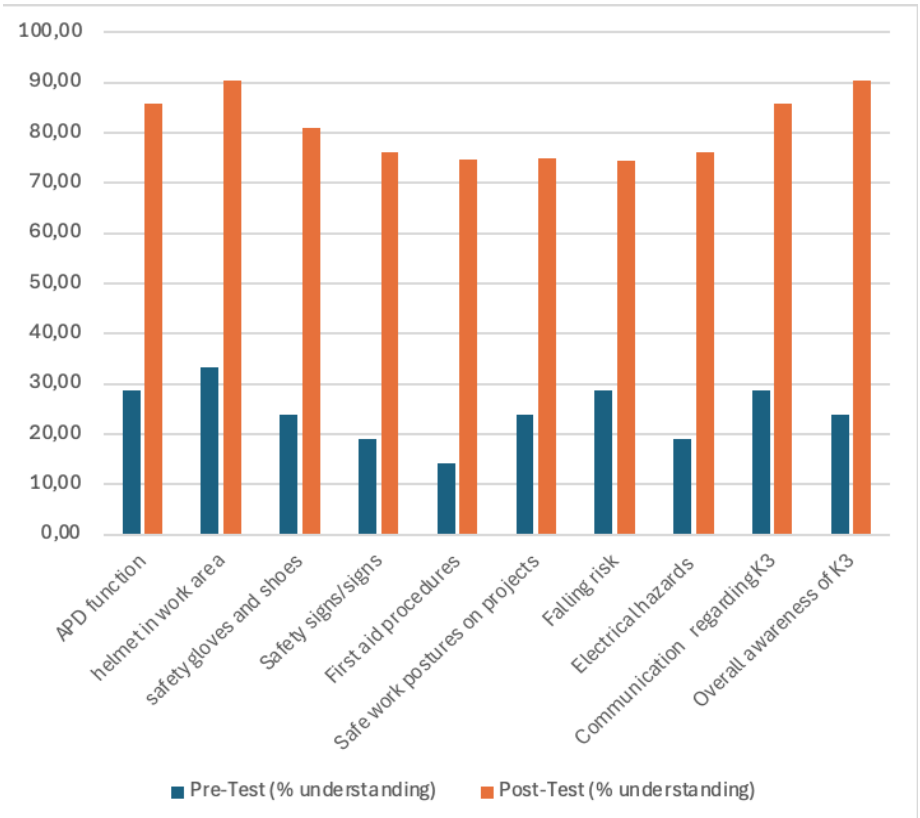


Figure 3. Comparison of the understanding of K3 before and after socialization

The results of the evaluation using a questionnaire regarding K3 understanding before and after training indicate that low formal education and lack of prior training are the main factors contributing to low K3 awareness among construction workers. This is in line with research by Widiatmoko et al. (2025) which confirmed that minimum education and training levels influence compliance with K3 standards. The implementation of outreach using the Learning Methodology proved effective because it combined classical learning (material delivery) and experiential learning (hands-on practice). Participants more easily understood the importance of OSH through direct experience using PPE. This is consistent with participatory learning theory, where active participant involvement increases knowledge retention and behavioral change Kolb, 2015; Nugroho & Widodo, 2020). Furthermore, the direct provision of PPE served as a form of behavioral reinforcement, accelerating worker behavioral changes to become more disciplined in implementing OSH. Thus, this activity improved conceptual understanding and encouraged positive attitudinal changes in participants, addressing the problem of low OSH awareness at project sites (Adi & kushartomo, 2023; Sarasanty et al., 2025).

## 3.1 Future Development Opportunities

Based on the results of the activity implementation, further training is required: Activities can be developed with tiered training, for example, advanced training for senior craftsmen or foremen, so that they can become agents of change regarding OHS in their environment.

a. Routine mentoring: Periodic monitoring and evaluation to ensure OHS implementation continues after socialization.
b. Strengthening collaboration: Collaboration with construction associations can expand the program's reach.
c. Developing digital media: Video-based OHS training modules or simple applications can be created to make them more accessible to workers with limited formal education.

## 4. CONCLUSION

This community service program has successfully increased the awareness and understanding of Occupational Safety and Health (K3) among construction workers in Pandeglang, Banten, as demonstrated by a more than 50% increase in knowledge regarding the use of PPE, safety signs, and hazard awareness after the training. The participatory and experiential learning approach, accompanied by direct provision of PPE, has proven effective in strengthening conceptual understanding and encouraging positive behavioral changes.

The main advantage of this program is its practical application, combining theory and practice. Workers receive theoretical knowledge and practice safety measures directly on-site, and PPE is provided.

However, the program also faced limitations. The number of participants was relatively small (21 workers), which restricts the generalizability of the findings. In addition, the evaluation was conducted in the short term, so long-term sustainability of behavioral change could not be fully measured.

For further development, future programs should involve larger groups of workers across different project sites, integrate continuous monitoring and mentoring, and collaborate more closely with contractors and local governments to ensure consistent enforcement of K3 standards. Expanding and institutionalizing such initiatives can strengthen construction safety awareness, reduce accidents, and improve worker welfare in the long run.

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