

Enhancing Maritime Safety Awareness through Safety Culture Education for Fishermen and Coastal Communities

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Abstract

This Community Service activity aimed to improve the understanding, safety awareness, and preparedness of the Karan Aur Village Fishermen's Group in implementing a maritime safety culture during their activities at sea. The activity employed a participatory educational approach involving material delivery, discussions, and question-and-answer sessions covering hazard identification, pre-departure preparedness, the use of safety equipment, awareness of weather conditions, and emergency response at sea. The activity was conducted on September 7, 2026, in the coastal area of Karan Aur Village, Pariaman Tengah District, involving 30 respondents from the fishermen's group. The activity was evaluated using a questionnaire consisting of 10 indicators to measure the achievement of the activity objectives. The evaluation results showed that all indicators achieved a 100% level of attainment, indicating a positive response to the activity and supporting improvements in participants' understanding, knowledge, safety awareness, and preparedness to apply maritime safety principles. In addition to the quantitative evaluation results, discussions with participants identified several practical needs related to vessel accident response, operational costs, interactions with large vessels, local sea conditions, and the availability of safety facilities. These findings indicate that strengthening fishermen's safety culture requires continuous education, practical safety training, adequate safety facilities, and synergy among higher education institutions, fishermen's groups, government authorities, and relevant agencies. Therefore, future Community Service programs should be further developed through regular mentoring integrated with practical safety training, institutional strengthening, and continuous evaluation.

Keywords: Safety Culture, Maritime Safety, Participatory Education, Coastal Communities.

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INTRODUCTION

Maritime safety is a fundamental aspect of sustaining small-scale fishing activities, as fishing operations take place in a work environment characterized by considerable uncertainty and exposure to various hazards. The International Maritime Organization (IMO) identifies fishing as one of the most hazardous occupations at sea, while a large proportion of the world's fishing fleet consists of small vessels that face distinct safety challenges (García-lorenzo et al., 2024; Amelia et al., 2025). These risks are associated not only with vessel and marine environmental conditions but also with crew competence, safety behavior, the use of safety equipment, emergency response capabilities, and decision-making when sailing conditions change. The FAO guidelines on the safety of small-scale fishers specifically emphasize the importance of pre-departure checks, navigational safety, the use of lifesaving equipment, lighting, personal safety, and preparedness for emergency situations as integral components of developing a safety culture (Kincl et al., 2023; Ananta & Cabral, 2026). Therefore, fishermen's safety should not be understood merely as the provision of safety

equipment but rather as a combination of knowledge, attitudes, habits, and practices that are consistently applied before, during, and after fishing activities at sea.

In Indonesia, this issue has become increasingly important because small-scale fisheries play a significant role in the socioeconomic activities of coastal communities, while fishermen are exposed to a wide range of operational and environmental risks. A study of risk perceptions among small-scale fishermen in Indonesia demonstrated that fishermen face a broad spectrum of risks, indicating that risk understanding is an essential component of managing fishing activities (Turner, 2025; Holmen et al., 2025). At the national level, the Ministry of Marine Affairs and Fisheries has also identified the improvement of fishermen's capacity as part of efforts to protect and empower fishing communities, including through the provision of fishermen competency programs and Basic Safety Training Fisheries. In 2024, the Ministry reported facilitating competency training for 2,271 fishermen and Basic Safety Training Fisheries for 2,247 participants. These policies demonstrate that improving fishermen's safety capacity remains an ongoing priority, particularly for communities whose livelihoods directly depend on marine activities (Lindley, 2023; Holmen et al., 2025). At the same time, the limited resources available to small-scale fishermen require safety improvement approaches to be designed in a simple, practical, contextualized manner that reflects their field-based experiences.

Safety issues also have a behavioral dimension that cannot be separated from knowledge and risk perception. A study of fishermen in Indonesia identified significant relationships between safety knowledge, safety perceptions, safety training, and fishermen's safety behavior, whereas educational level was not significantly associated with safety behavior. These findings reinforce the argument that safety interventions should focus on improving knowledge, developing appropriate risk perceptions, and strengthening practical experience through training (Riyadi & Erliyani, 2025; Uddin & Siska, 2026). In the broader maritime context, research on safety climate in Indonesian shipping companies has also shown that competence, the use of safety equipment, and safety training positively influence safety climate. These findings indicate that providing safety equipment without ensuring adequate understanding of its functions and proper use may result in suboptimal safety interventions (Rosnani, 2023; Riyanto et al., 2026). Therefore, safety education for fishermen should integrate knowledge, hazard perception, proper use of safety equipment, and preparedness as interconnected components of safety culture development.

This approach is consistent with the development of the safety culture concept in the maritime industry, which regards safety as a shared value manifested through organizational and individual behaviors and practices. Several studies have demonstrated that safety culture is associated with seafarers' safety behavior, indicating that safety improvement should be pursued by creating an environment that supports safe behavior rather than relying solely on formal rules and regulations (Levin et al., 2023; Riyanto et al., 2026). In the context of small-scale fishermen, the application of the safety culture concept requires adaptation because operational patterns, vessel sizes, available resources, and social characteristics differ substantially from those of commercial shipping companies. A recent synthesis of operational behavior among small-scale fishermen also indicates considerable behavioral diversity influenced by economic conditions and vessel size, suggesting that safety approaches should account for local social and operational contexts (Rosnani, 2024; Wickman et al., 2025). Accordingly, effective safety education should not merely deliver safety norms in a one-way manner but should connect safety principles with the experiences, needs, and actual conditions encountered by fishing communities.

Previous Community Service activities have demonstrated that safety education and the provision of safety equipment can provide meaningful benefits to fishing communities. Safety socialization programs for fishermen have positioned safety education as a means of improving community understanding of safe navigation and operational practices (Nishanthan et al., 2025). Other activities have combined safety education with the provision of safety equipment, particularly life jackets, to increase traditional fishermen's awareness of the importance of personal safety equipment (Cyr & Sagoonick, 2024). Meanwhile, other initiatives have adopted a more practical approach by combining theoretical instruction, life jacket-use simulations, hazardous weather identification, emergency response training, and the provision of safety equipment; their evaluations demonstrated increased participant knowledge scores following the intervention (Grøn et al., 2025). These findings indicate a shift in this Community Service approaches from conventional socialization toward the integration of education, practical training, and safety-support facilities. However, there remains room to develop educational models that specifically

integrate safety knowledge with fishermen's operational challenges and local experiences through a participatory learning process.

The need to strengthen capacity is also consistent with Indonesia's policies on community development in the marine and fisheries sector. Regulation of the Minister of Marine Affairs and Fisheries Number 23 of 2024 governs the implementation of community training in the marine and fisheries sector as part of community capacity development. At the international level, the FAO, ILO, and IMO consistently emphasize the importance of education, training, crew protection, and vessel safety in the management of small-scale fisheries. The IMO further emphasizes that safety instruments for fishing vessels need to be translated into education and training materials that are appropriate to fishermen's needs and local conditions. The FAO/ILO/IMO guidelines reinforce the view that strengthening safety competence is an integral component of accident prevention rather than an additional measure taken after an accident has occurred (Barasa et al., 2025; Oktari et al., 2025). Therefore, the involvement of maritime vocational higher education institutions in providing safety education to coastal communities has strategic relevance because such institutions possess academic and practical expertise that can be transferred to fishing groups through contextualized learning.

Based on the aforementioned state of the art, an important gap remains to be addressed through Community Service activities. Some previous initiatives have focused primarily on increasing knowledge through socialization, whereas others have emphasized simulations or the provision of safety equipment. In practice, however, fishing communities require a combination of knowledge, awareness, preparedness, access to safety equipment, and the ability to respond to safety problems that are specific to their operational areas (Powell et al., 2025; Jurkovi & Satler, 2025). This gap is particularly relevant to the Karan Aur Village Fishermen's Group, whose members operate in a coastal area characterized by interactions between fishing vessels and larger vessels, changing marine conditions, and the need for an appropriate response to emergency situations. The novelty of this activity lies in the implementation of a participatory and contextual safety culture education approach that integrates instructional materials, experience-based dialogue with fishermen, preparedness enhancement, and the provision of life jackets as a means of connecting safety knowledge with practical application (Veltsin et al., 2025). This approach does not position fishermen merely as recipients of information but as active partners whose experiences and local knowledge should be integrated into the learning process. Accordingly, the activity is expected to make a practical contribution to the development of a community-based maritime safety Community Service model that can be adapted and replicated among other coastal fishing groups.

Based on these problems and gaps, this Community Service activity aimed to improve the understanding, safety awareness, and preparedness of members of the Karan Aur Village Fishermen's Group in applying safety culture principles to their fishing activities at sea. The educational materials focused on hazard identification, pre-departure readiness checks, the use of safety equipment, awareness of weather and sea conditions, emergency communication, and basic actions to be taken when facing hazardous situations. The activity employed a participatory educational approach through instructional delivery, discussion, and question-and-answer sessions, allowing participants to relate safety concepts to their operational experiences. The achievement of the activity objectives was evaluated using a questionnaire measuring participants' responses and the level of attainment based on predetermined indicators. This approach was expected not only to improve participants' understanding during the activity but also to serve as an initial foundation for developing more sustainable safety mentoring through practical training, institutional strengthening, and collaboration among higher education institutions, fishermen's groups, government authorities, and relevant maritime safety agencies. More broadly, the activity is expected to contribute to strengthening community-based safety culture as part of efforts to promote safer, more resilient, and sustainable fishing activities at sea.

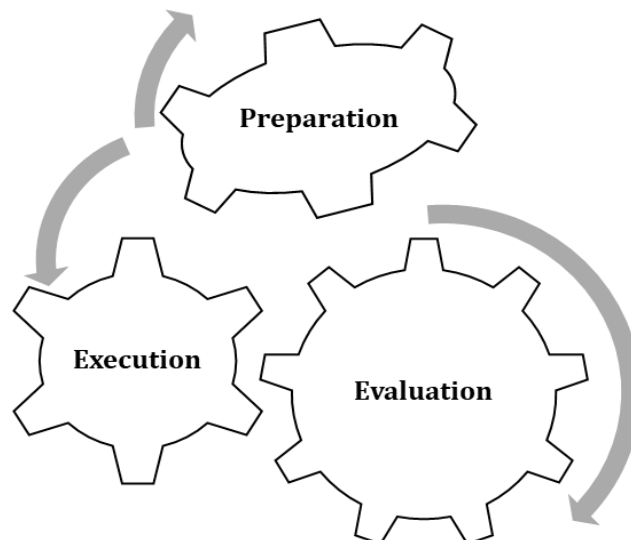
METHOD

This Community Service activity employed a participatory educational approach designed to actively engage the community partner in the process of knowledge transfer, discussion, problem identification, and reflection on maritime safety. The activity was conducted on September 7, 2026, in the coastal area of Karan Aur Village, Pariaman Tengah District, Pariaman City, Indonesia, with members of the Karan Aur Village Fishermen's Group serving as the target population and

community partner. All participants who attended and were actively involved in the activity were included as evaluation respondents. A total of 30 participants were involved; therefore, total sampling was employed as the respondent selection technique.

The preparation stage was carried out through a visit to the Karan Aur Village Office to submit the invitation letter and assignment letter and to coordinate with the village head, the leader of the fishermen's group, and the neighborhood association (RT) leader regarding the schedule, venue, participants, and technical requirements of the activity. The implementation stage consisted of educational sessions on identifying potential hazards at sea, pre-departure preparedness, the use of safety equipment, awareness of weather and sea conditions, emergency communication, and safety measures relevant to fishing activities. These sessions were delivered through presentations, interactive discussions, and question-and-answer sessions. A participatory approach was adopted because it enabled formal safety knowledge to be connected with participants' operational experiences and the practical safety problems they encounter in their daily activities (Mashartanto et al., 2026). To reinforce the educational materials, life jackets were also distributed to the participants, while activity T-shirts and transportation assistance were provided as forms of activity support for the community partner. The combination of competence, safety training, and the availability of safety equipment is relevant to efforts to strengthen the safety climate in the maritime sector.

Figure 1. Stages of the Community Service Activity



The activity was evaluated using a questionnaire consisting of 10 indicators to obtain an overview of the achievement of the educational objectives from the participants' perspectives. The questionnaire was administered after the main activity had been completed. Supporting data were obtained from attendance records, documentation of life jacket distribution, evidence of transportation assistance, activity documentation, and notes from discussions and question-and-answer sessions conducted during the activity. Quantitative data were analyzed descriptively using the percentage of achievement for each indicator by comparing the number of responses indicating achievement with the total number of respondents. Meanwhile, participants' open-ended feedback was analyzed descriptively to identify their needs, safety-related problems, and recommendations for the development of subsequent activities. The use of participant-response-based evaluation is consistent with the characteristics of this Community Service activities oriented toward community capacity building. Nevertheless, subsequent programs may employ pre- and post-intervention measurements to provide a stronger assessment of changes in knowledge, as demonstrated in several fishermen safety training programs.

The validity of the instrument in this activity was limited to the alignment of the indicators with the educational objectives and the context of the activity. Accordingly, the evaluation results were interpreted primarily as measures of program achievement and participant responses rather than as causal evidence of long-term behavioral change. This methodological limitation provides a basis for the development of future Community Service activities using longitudinal evaluation

designs, pre-test and post-test assessments, direct observation of safety equipment use, and periodic measurement of changes in safety behavior.

RESULT AND DISCUSSION

The Community Service activity was conducted on Monday, September 7, 2026, along the coastal shoreline of Karan Aur Village, Pariaman Tengah District, Pariaman City, Indonesia. The activity was organized by the Community Service team of the Politeknik Pelayaran Sumatera Barat, with lecturers serving as the principal facilitators of the educational and safety awareness sessions. In addition to the lecturer team, the activity was supported by the public relations team, which assisted with coordination and activity documentation. Several students were also involved to support the smooth implementation of the activity in the field, together with technicians who provided technical assistance throughout the program. The involvement of these various elements contributed to the orderly implementation of the activity and fostered a communicative and collaborative atmosphere between the Community Service team and the fishermen's group as the community partner.

The activity began with an opening address delivered by the Head of Community Service Team, Dr. Capt. Rosnani, S.S.I.T., MAP., M.Mar. In her remarks, she emphasized that safety is a fundamental aspect that must be prioritized in every navigation and fishing activity at sea. She also explained that this activity represented the contribution of the Politeknik Pelayaran Sumatera Barat to transferring maritime knowledge and professional experience to coastal communities. The opening session also provided an opportunity to establish closer communication between the Community Service team and members of the Karan Aur Village Fishermen's Group. Participants were encouraged to actively engage throughout the activity and to share their experiences and concerns related to safety during their operations at sea.

Figure 2. Opening of the Activity by the Head of Community Service Team



The activity continued with remarks from the Head of the Karan Aur Village Fishermen's Group, representing the community partner. In his remarks, the Head of the Fishermen's Group expressed his appreciation to the Politeknik Pelayaran Sumatera Barat for conducting a safety education program for local fishermen. He emphasized that such an activity was highly needed because fishermen require additional knowledge, information, and guidance to help them deal with various risks encountered during their activities at sea. According to him, fishermen's practical experience at sea needs to be supported by a better understanding of safety aspects so that decisions made during fishing operations can be more appropriate and well informed. The Head of the Fishermen's Group also expressed the hope that similar activities could be conducted continuously, with increasingly relevant materials tailored to the needs of small-scale fishermen in coastal areas.

Figure 3. Remarks by the Head of the Fishermen's Group



The activity then proceeded with an educational presentation delivered by a member of the Community Service team, Mr. Rizal Rochmansyah, S.Tr.Pel., M.Tr.T. The material focused on strengthening the maritime safety culture and the importance of developing safety awareness as an integral part of fishermen's routine practices during activities at sea. The presentation covered several basic safety aspects, including the identification of potential hazards, pre-departure preparedness, the use of safety equipment, awareness of weather conditions, and appropriate actions in emergency situations. The material was presented in a simple and contextual manner to facilitate understanding and enable participants to relate the content to their actual experiences as fishermen. The presenter also encouraged participants not only to understand safety procedures but also to consistently incorporate them into every fishing and navigation activity. During the presentation, participants demonstrated considerable attention and enthusiasm by actively engaging in discussions and sharing various experiences related to safety at sea.

Figure 4. Educational Presentation Delivered by the Community Service Team



The discussion and question-and-answer session were conducted concurrently with the presentation to ensure a participatory learning process and enable participants to relate the educational materials to the actual conditions they encounter. The first question concerned the experience of a fisherman who had experienced four vessel sinking incidents and had reported these incidents but had not received the expected response. The participant therefore asked what

steps should be taken when facing such situations. The second question concerned the high cost of fuel and the possibility of fuel assistance for small-scale fishermen, given their limited operational budgets and information indicating that government support may be constrained by budget availability. The third question was raised by the Head of the Fishermen's Group, who asked about the precautions that should be taken by small-scale fishermen when operating near or encountering large vessels. These three questions demonstrated that participants were not merely seeking to understand the material theoretically but were also attempting to relate it to the safety and operational problems they directly encountered in the field. The discussion was conducted openly and provided an opportunity for the Community Service team to offer explanations and guidance based on maritime safety principles and the practical conditions faced by fishermen.

Figure 5. Question from a Fishermen's Representative



In response to the first question, the Community Service team explained that every safety incident or problem occurring at sea should be reported immediately through clear communication with the relevant authorities or port officials to ensure an appropriate response and follow-up. If a report does not receive an adequate response, the Head of the Fishermen's Group was advised to coordinate directly with the Regional Disaster Management Agency (BPBD) or the Port Authority and Harbor Master's Office (KSOP), depending on the nature of the incident and the respective jurisdiction of each institution.

Regarding the second question concerning high fuel costs, the team explained that limited operational funding is one of the common challenges faced by small-scale fishermen. Therefore, coordination with relevant government agencies is necessary to obtain information on available assistance programs, subsidies, or other forms of support in accordance with applicable regulations. Fishermen were also encouraged to communicate these needs collectively through their fishermen's group so that their concerns could be properly documented and submitted as proposals to local government authorities or other relevant agencies.

In response to the third question, particularly concerning the presence of large vessels at night, the team explained that small-scale fishermen need to exercise increased vigilance because small boats without adequate lighting may be difficult for other vessels to detect, including through radar systems under certain conditions. Fishermen should also pay close attention to announcements and regulations issued by the Ministry of Transportation concerning restrictions on deploying fishing nets within large-vessel shipping lanes and at port entrance areas, although such shipping routes may also be areas with considerable fishery potential. Therefore, mutual awareness, effective communication, and vigilance between small-scale fishermen and larger vessels are necessary to ensure that fishing activities can continue while maintaining maritime safety and minimizing the risk of accidents at sea.

Figure 6. Response from a Member of the Community Service Team



After the presentation and question-and-answer session had been completed, the activity continued with the distribution of community service souvenirs in the form of T-shirts from the Politeknik Pelayaran Sumatera Barat to the participants. In addition, the Community Service team distributed life jackets as an essential piece of maritime safety equipment that should be available and properly used by fishermen during activities at sea. The distribution of life jackets was expected to increase participants' awareness of the importance of using safety equipment while encouraging the application of safety culture principles in fishing activities. The Community Service team also provided transportation assistance to participating fishermen as a form of operational support and compensation for the time spent attending the activity, thereby reducing the need for participants to forgo their fishing activities without any operational support. This assistance was expected to provide direct benefits to small-scale fishermen, particularly by helping to address operational needs associated with their fishing activities. All forms of assistance and materials provided to the community partner were distributed in an orderly manner and aligned with the objectives of this program as part of the higher education institution's commitment to supporting coastal communities.

Figure 7. Distribution of Safety Equipment to Fishermen



team. Meanwhile, participants' suggestions were used as reflective input to identify their needs and expectations regarding future maritime safety education programs. The results of the quantitative evaluation are presented as achievement percentages in Table 1.

Table 1. Results of the Community Service Activity Evaluation

No.	Indicator	Respondents (n)	Achievement Level (%)
1	Ease of understanding the maritime safety culture materials	30	100%
2	Increased knowledge of safety during fishing activities at sea	30	100%
3	Understanding of the use of safety equipment	30	100%
4	Understanding of emergency response at sea	30	100%
5	Ease of following safety demonstrations/practical activities	30	100%
6	Increased awareness of prioritizing safety	30	100%
7	Increased attention to weather conditions and navigational risks	30	100%
8	Applicability of the knowledge gained to fishing activities at sea	30	100%
9	Clarity of the presentation and interaction with the facilitator	30	100%
10	Usefulness of the activity for fishermen	30	100%
Average		30	100%

Based on Table 1, all evaluation indicators for this activity achieved an attainment level of 100%. These results indicate that all 30 Community Service participants responded positively to the aspects of material comprehension, increased safety knowledge and awareness, practical skills, and the usefulness of the educational program for fishing activities. Overall, the average achievement level of 100% indicates that the maritime safety culture education activity was implemented effectively and was considered relevant to the needs of the Karan Aur Village Fishermen's Group.

The suggestions and feedback provided by participants further demonstrated the positive response of the Karan Aur Village Fishermen's Group to this activity. Participants expressed their appreciation and gratitude to the Community Service team of the Politeknik Pelayaran Sumatera Barat for continuing to provide attention to small-scale fishermen who require knowledge support and guidance related to safety at sea. Participants also stated that the educational materials were highly relevant because some fishermen still engage in fishing activities by relying primarily on courage and experience without adequate safety knowledge. The assistance provided during the activity, including safety equipment and transportation support, was perceived as helpful in reducing the financial burden faced by small-scale fishermen in carrying out their daily activities. Participants expressed the hope that similar activities could be conducted on a continuing basis, at least once a year, so that knowledge of maritime safety could be regularly updated and reinforced. In addition, participants requested more appropriate field equipment, such as tower lights and other supporting safety facilities, to improve visibility and enhance fishermen's safety during activities in coastal waters. These various inputs indicate that the community partner requires not only educational interventions but also sustained mentoring and access to safety facilities that can provide tangible benefits for fishing operations.

This entire activity concluded with a group photograph involving the Community Service team from the Politeknik Pelayaran Sumatera Barat and members of the Karan Aur Village Fishermen's Group. The session served as part of the activity documentation and also helped strengthen the relationship between the implementing team and the community partner. Following the group photograph, participants were provided with snacks and lunch as an expression of appreciation for their active participation throughout the activity. The activity concluded in a positive atmosphere characterized by a sense of togetherness and constructive communication between the Community Service team and the fishing community.

The implementation of this activity demonstrates that safety education for fishing communities should be positioned as a continuous learning process rather than merely as a one-

time information-delivery activity. The nature of fishing work, which is strongly influenced by sea conditions, weather, the activities of other vessels, and limited resources, makes the need for safety knowledge dynamic (Kincl et al., 2023; Albert et al., 2025). In this context, an educational approach that combines technical knowledge with local community experience is important because it enables safety materials to be more readily connected to situations actually encountered by fishermen (Yang et al., 2026; Alim et al., 2026). This type of activity also demonstrates that higher education institutions can serve as knowledge partners that assist communities in translating maritime safety principles into simpler and more applicable practices. Previous Community Service experiences indicate that active involvement of community partners in the learning process tends to facilitate more open communication regarding their needs and challenges. Therefore, the participatory education model should be maintained and further developed as a primary approach for future maritime safety Community Service programs.

From a capacity-building perspective, safety education for fishermen should not be limited to improving knowledge but should be directed toward developing observable and sustainable safety behavior. Such changes can be reinforced through practical activities, including pre-departure safety equipment inspections, safety equipment-use training, emergency communication simulations, and familiarization with basic rescue procedures (Shi et al., 2024; Poulain, 2025). A practice-based approach provides participants with opportunities to test their understanding in situations that resemble real operational conditions, allowing errors to be identified and corrected at an early stage. Subsequent activities could also employ pre- and post-training assessments to obtain a more objective picture of changes in participants' knowledge and preparedness (Fan & Yang, 2023; Xue et al., 2024). With more systematic measurement, program effectiveness would not be assessed solely on the basis of participant satisfaction but also in terms of changes in competence and the safety habits that are developed (Bhagat et al., 2026). This provides an opportunity for subsequent Community Service activities to adopt more measurable evaluation designs oriented toward behavioral change.

The issues raised by the community also demonstrate that fishermen's safety is related to broader institutional and support-system dimensions. Individual knowledge may have limited effectiveness when communities face restricted access to weather information, communication facilities, safety equipment, and mechanisms for reporting and responding to emergency situations (Fabinyi, 2024; Warner et al., 2025). This condition highlights the importance of establishing collaborative networks among higher education institutions, fishermen's groups, local governments, port authorities, disaster management agencies, and other relevant stakeholders (Korowi et al., 2025). Cross-sector collaboration can be directed toward more concrete activities, such as establishing emergency communication channels, mapping high-risk areas, strengthening safety information systems, and identifying the supporting facilities required by small-scale fishermen (Acevedo-rodriguez et al., 2025; Smith et al., 2026). Such partnership models have the potential to generate greater impact than interventions focused solely on socialization activities. In subsequent Community Service implementation, strengthening institutional networks could therefore serve as a key strategy to ensure that educational outcomes are supported by an adequate enabling system.

Sustainability is another important consideration in the development of Community Service programs because a safety culture cannot be established through short-term interventions alone. Subsequent programs could be designed as periodic mentoring initiatives through which previously acquired knowledge is reinforced through repetition, practice, and progressive evaluation (Pilbeam & Karanikas, 2023; Fauzi et al., 2026). Higher education institutions could also develop simple educational materials that can be used independently by fishermen's groups, such as safety guides, posters, pre-departure check cards, or digital materials that can be easily accessed via mobile phones (Wahl & Hybertsen, 2025; Baskoro et al., 2026). Such materials could help expand the reach of safety education while maintaining the continuity of safety messages beyond face-to-face activities. This approach would also enable fishermen who did not participate in previous activities to access the same safety materials (Purcell et al., 2024; Riyadi et al., 2026). Accordingly, program sustainability could be directed toward establishing a community-based safety learning system that can operate with greater independence.

In the future, Community Service activities could be developed into more comprehensive programs integrating education, field practice, institutional strengthening, and continuous evaluation. Such program development could begin with a safety needs assessment for each

fishermen's group so that the educational materials and intervention strategies can be adapted to vessel characteristics, operational patterns, local sea conditions, and participants' levels of experience. Future Community Service programs could also expand their target groups beyond fishermen to include fishermen's families, group managers, coastal communities, and young people in the local area as part of efforts to strengthen a community-based safety culture. Furthermore, the outcomes of these activities could be developed into a mentoring model that can be replicated among fishermen's groups in other coastal areas of West Sumatra. Such development would strengthen the contribution of the Politeknik Pelayaran Sumatera Barat to the practical application of maritime knowledge in addressing community needs.

CONCLUSION

The maritime safety culture education activity conducted for the Karan Aur Village Fishermen's Group confirms that strengthening the safety capacity of coastal communities requires an approach that is closely aligned with fishermen's actual experiences and needs. The outcomes demonstrate that participatory education can serve as a relevant means of strengthening understanding of maritime hazards, pre-departure preparedness, the use of safety equipment, awareness of sea conditions, and preparedness for emergency situations. These findings reinforce the view that safety culture is shaped not only by the existence of rules and equipment but also by knowledge, awareness, communication, and safety practices that are consistently applied. At the same time, the needs identified through interaction with the community partner indicate that sustaining a safety culture requires support beyond a one-time educational intervention, particularly through continued mentoring, access to safety facilities, and coordination among communities, higher education institutions, government authorities, and relevant agencies. Thus, the principal contribution of this activity lies in strengthening the foundation of a community-based safety culture that can serve as a basis for future Community Service programs that are more practical, sustainable, and responsive to the characteristics of small-scale fishermen. Continuous program development is expected not only to maintain the knowledge acquired but also to encourage more consistent safety practices and, ultimately, strengthen the resilience of coastal communities in managing maritime risks.

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