

**SOCIALIZATION OF BASIC LAND TRANSPORTATION SAFETY CAMPAIGNS AS
AN EFFECTIVE STRATEGY FOR COMMUNITY-BASED TRAFFIC ACCIDENT
PREVENTION**

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ABSTRACT

Land transportation safety remains a critical public concern due to the persistently high number of traffic accidents, which are predominantly caused by human behavior, vehicle conditions, road infrastructure, and environmental factors. Addressing this issue requires not only regulatory enforcement but also community-based educational approaches. This community service program aims to strengthen public understanding, skills, and awareness through the socialization of basic land transportation safety campaigns as an effective strategy for traffic accident prevention. The primary objective is to equip participants with fundamental concepts, techniques, and regulatory-based strategies for designing safety campaigns that are effective, adaptive, and sustainable. The community partners involved in this program include local community groups and stakeholders concerned with traffic safety education. The methods applied consist of structured socialization sessions, interactive training, campaign design simulations, and the utilization of social media and artificial intelligence-based tools to enhance the dissemination of safety messages. The results indicate a significant improvement in participants' knowledge of traffic safety principles, practical skills in developing safety campaign media, and a strengthened commitment to promoting orderly and safe traffic behavior within their communities. These findings demonstrate that participatory and technology-supported safety campaign training can effectively empower communities as active agents of change. In conclusion, this community service activity highlights the importance of educational-based safety campaigns as a concrete and scalable approach to fostering a safer land transportation system and reducing traffic accident risks through sustained community involvement.

Keywords: community-based education; land transportation safety; public awareness; safety campaign; traffic accident prevention

INTRODUCTION

Traffic safety and road transport remain strategic issues in transportation development, particularly in developing countries such as Indonesia, which continues to face relatively high traffic accident rates. Based on Law Number 22 of 2009 on Road Traffic and Transportation and Government Regulation Number 37 of 2017, safety is defined as a condition in which all individuals are protected from the risk of accidents caused by human factors, vehicle conditions, road infrastructure, and environmental factors (Peraturan Pemerintah Republik Indonesia Nomor 37 Tahun 2017 Tentang Keselamatan Lalu Lintas Dan Angkutan Jalan, n.d.; Undang-Undang Nomor 22 Tahun 2019 Tentang Lalu Lintas Angkutan Jalan, n.d.). In line with these regulations, the government has established the National Road Traffic and Transportation Safety Master Plan (RUNK LLAJ), which emphasizes five main pillars: safety management systems, safe roads, safe vehicles, safe road users, and post-crash response and victim handling (Peraturan Presiden Republik Indonesia Nomor 1 Tahun 2022 Tentang Rencana Umum Nasional Keselamatan Lalu Lintas Dan Angkutan Jalan, n.d.).

Nevertheless, the existence of regulations and national policies has not yet been able to significantly reduce the number of traffic accidents. According to data from the Indonesian National Criminal Information Center (Pusiknas Polri), a total of 71,636 traffic accidents were recorded during the first half of 2025, involving 877,622 drivers nationwide, with motorcycle riders constituting the majority of those involved (Ridwan, 2025). In addition, the 2025 Zebra Operation report recorded 3,288 traffic accidents nationwide, resulting in 361 fatalities during the operation period (Traffic Accidents Drop 1.44% During 2025 Zebra Operation: Traffic Corps, 2025). These findings are consistent with research concluding that human factors remain the largest contributor to traffic accidents in Indonesia (Mardikawati et al., 2025). This condition indicates a gap between existing regulations and the actual behavior of road users, highlighting the need for non-regulatory approaches that more directly address public awareness and behavioral change.

One approach considered effective is community-based traffic safety campaigns. Safety campaigns aim to increase knowledge, shape attitudes, and encourage behavioral change among road users toward a culture of safe and orderly traffic behavior. Research indicates that traffic safety campaigns that actively engage audiences and are tailored to local contexts, including demographic characteristics and community needs, can significantly enhance their effectiveness in promoting positive changes in traffic behavior (Hamann et al., 2021). This underscores that the success of safety campaigns is determined not only by the messages conveyed but also by the appropriateness of the methods, media, and target audiences.

A common problem in the implementation of traffic safety campaigns is their lack of relevance to real field conditions. Many campaigns are designed in a generic manner without considering local accident causation data in the target areas. An empirical study indicates that traffic accidents are more frequently triggered by risky driver behavior and inadequate road infrastructure rather than by vehicle safety equipment alone; therefore, interventions should focus on behavioral aspects and road conditions that are relevant to the local context (Rifki et al., 2025). In addition, inappropriate targeting of safety campaigns also remains a significant challenge. Further research shows that accident patterns and responses to safety campaigns vary across age groups and regional contexts, suggesting that campaigns tailored to audience characteristics and local conditions are more effective in improving traffic compliance and safety-related behavioral change (Nicolls et al., 2025). This evidence demonstrates that accident patterns differ across regions and social groups, highlighting the need for safety campaigns to be adapted to the characteristics of high-risk groups in order to achieve greater effectiveness.

In this context, community service activities (PKM) play an important role as a bridge between safety policies and on-the-ground practices. Community service programs in the field of traffic safety not only enhance public knowledge but also encourage active community participation in behavioral change (Mardikawati & Mulyaningtyas, 2022). A study has shown that community involvement in the development and implementation of road safety campaigns contributes to improved public understanding and participation, which are essential steps in achieving sustained traffic safety behavior change (Hamann et al., 2021). Community-based campaign approaches, strengthened by persuasive communication and behavior change communication principles, have proven effective in increasing public awareness and commitment to traffic safety.

Based on the above discussion, the objective of this community service activity is to implement the socialization of basic land transportation safety campaigns that are contextual and community-based as an effective strategy for traffic accident prevention. This activity is expected to enhance public understanding and skills in designing and disseminating safety messages, encourage positive changes in traffic behavior, and make a tangible contribution to supporting efforts to reduce traffic accident rates at the local level.

METHOD

This community service activity was designed using a community-based educational and training approach, integrating public education, training, simulation, and diffusion of science and technology. This approach aligns with studies emphasizing that participatory and community-oriented interventions are effective in promoting traffic safety awareness and behavioral change (Hamann et al., 2021; Mardikawati et al., 2025).

1. Target Audience and Community Partners

The target audience consisted of members of local community groups, youth organizations, road users, and stakeholders concerned with traffic safety education. Community partners were selected based on their active involvement in daily traffic activities and their potential role as safety campaign agents within their respective communities. Participants represented diverse demographic backgrounds to ensure inclusivity and contextual relevance in campaign development. Previous studies have highlighted that targeting diverse community segments enhances the effectiveness of safety interventions (Nicolls et al., 2025).

2. Location and Duration of Activities

The activity was conducted at the Gianyar Campus community hall of the Bali Land Transportation Polytechnic. The program was implemented through several stages, including an initial socialization session providing an explanation of the basic principles of traffic safety campaigns, simulations of safety campaign design, simulations of campaign implementation through social media, and an evaluation session. Conducting the activities within a community-based environment has been shown to strengthen participant engagement and enhance contextual understanding of traffic safety issues (Hamann et al., 2021).

3. Methods of Implementation

The implementation employed a combination of methods as follows:

- a) Community Education and Socialization, delivered through structured presentations and facilitated discussions to introduce basic concepts of land transportation safety, traffic regulations, and accident risk factors. Research indicates that educational interventions tailored to the local context and participant characteristics, including culturally relevant content and delivery methods, significantly improve road safety knowledge and awareness among target groups (Setyowati et al., 2025);
- b) Interactive Training, involving group discussions and case studies derived from local accident data to enhance participants' understanding of real-world safety challenges. Contextual learning has been found to support stronger behavioral intentions (Rifki et al., 2025);
- c) Simulation of Safety Campaign Design, where participants practiced developing safety messages, visual media, and simple campaign strategies tailored to community characteristics. Simulation-based training provides a simulated environment that allows learners to practice and improve practical skills relevant to the training context, including safety-focused

scenarios, which supports the development of competencies and message relevance beyond traditional methods (Hulme et al., 2021);

d) Diffusion of Science and Technology, utilizing social media platforms and artificial intelligence, based tools to assist participants in creating and disseminating traffic safety campaign content. Studies indicate that technology-based diffusion, particularly through social media and digital platforms, can extend the reach of safety campaign messages and significantly increase audience engagement, enhancing the visibility and impact of road safety communications (Mishra & Dev, 2025).

4. Materials and Tools

Materials used included national traffic safety regulations, local accident statistics obtained from official reports, training modules prepared by the service team, presentation slides, printed handouts, and digital design tools. The quantity of materials was adjusted to the number of participants to ensure effective interaction and learning. The use of data-driven materials is recommended to improve the relevance and credibility of safety campaigns (Rifki et al., 2025).

5. Evaluation and Data Analysis

Program evaluation was conducted using pre- and post-activity questionnaires to measure changes in participants' knowledge, perceptions, and attitudes toward traffic safety. In addition, observations and participant feedback were collected to assess skill development and commitment to campaign implementation. Data were analyzed descriptively to identify improvements in understanding, practical skills, and safety awareness. Descriptive evaluation methods are commonly applied in community-based traffic safety programs to capture learning outcomes and behavioral intentions (Mardikawati & Mulyaningtyas, 2022).

Overall, the integration of education, training, simulation, and technology-supported methods enabled participants to actively engage in the learning process and apply traffic safety principles in a practical, contextual, and community-relevant manner, supporting their role as agents of change in promoting safer traffic behavior.

RESULTS AND DISCUSSION

1. Quantitative Results: Improvement in Participants' Knowledge and Understanding

The quantitative results were obtained through pre-tests and post-tests, as well as quiz-based evaluations conducted during the activity. Overall, the findings indicate a significant improvement in participants' understanding of land transportation safety regulations and the basic principles of safety campaigns after participating in the community-based education and training intervention. Based on the quiz results, the majority of participants demonstrated very high levels of accuracy, with most achieving perfect scores by answering all questions correctly. The average accuracy rate per question exceeded 80%, indicating a strong comprehension of the material delivered. The evaluation materials covered key regulatory frameworks, including the objectives of traffic administration as stipulated in Law No. 22 of 2009, safety strategies outlined in Government Regulation No. 37 of 2017, and safety standards regulated in various Minister of Transportation Regulations, as presented in Table 1.

Table 1.
 Accuracy of Participants' Level of Understanding of the Material

Question	Accuracy	Correct Answers	Incorrect Answers
One of the main objectives of Road Traffic and Transportation administration according to Law No. 22 of 2009 is	100%	8	0
According to Government Regulation No. 37 of 2017, one of the strategies to build a traffic safety culture is	88%	7	1
Under Minister of Transportation Regulation No. 24 of 2015, one of the obligations of railway operators is	75%	6	1
One of the safety standards regulated in Minister of Transportation Regulation No. 25 of 2015 is	88%	7	1
Salah satu aspek yang harus dipenuhi dalam standar keselamatan LLAJ menurut PM No. 26 Tahun 2015 adalah One of the aspects that must be fulfilled in the Road Traffic and Transportation (LLAJ) safety standards according to Minister of Transportation Regulation No. 26 of 2015 is	88%	7	1

Table 1 presents the participants' accuracy levels in understanding traffic safety material. The consistent high scores across various regulatory aspects indicate that a structured educational and socialization approach is effective in reinforcing the participants' cognitive domain, particularly regarding policies and fundamental concepts of safety campaigns. These findings align with previous studies highlighting that regulation-based educational interventions can significantly enhance traffic safety literacy (Mardikawati et al., 2025; Setyowati et al., 2025). Beyond the quiz results, the comparison between pre-test and post-test scores reveals a clear upward trend. Prior to the activity, participants' understanding levels were relatively varied. Following the intervention, post-test results show more uniform and higher comprehension, reflecting the effectiveness of combining education, training, and simulation methods within a community context, as illustrated in Table 2.

Table 2.
 Comparison of Pre-Test and Post-Test Results

No	Question	Question Accuracy		Improvement in Understanding
		Pre-Test	Post-Test	
1	The following is not a vehicle equipment...	61%	84%	38%
2	The following is not an equipment for vehicles with four wheels or more...	71%	95%	34%
3	The statement that is incorrect about the purpose of inspecting a vehicle's physical condition before a trip is...	11%	41%	273%
4	Some vehicle components that must be checked before driving, except...	61%	92%	51%
5	The correct classification of Driver's Licenses is...	24%	73%	204%
6	The national speed limits are established and indicated by the correct traffic signs...	26%	86%	231%
7	The following are the 4 proper times to use hazard lights, except...	32%	59%	84%
8	Observe the following image! The order of vehicles that should be given priority is...	32%	92%	188%
9	Observe the following image! The function of the yellow road marking line is...	16%	49%	206%
10	The color of signs used to warn of potential dangers or hazardous places ahead for road users is...	53%	76%	43%
11	The following is not an external factor causing accidents among school-age children...	13%	65%	400%

No	Question	Question Accuracy		Improvement in Understanding
		Pre-Test	Post-Test	
12	The following is not a factor causing traffic violations...	61%	78%	28%
13	The following is not an activity of the traffic police in addressing traffic violations through repressive measures...	47%	70%	49%
14	The following is not a common traffic violation frequently committed by Indonesians...	50%	76%	52%
15	The following is not an effort to prevent traffic violations...	21%	51%	143%
16	Observe the image of the Educational Facility Location Sign. This guide sign means...	13%	68%	423%
17	Observe the image of the Educational Facility Location Sign. This guide sign means...	50%	86%	72%
18	Observe the following image! When passing a three-way intersection as shown above, the vehicle that should be given priority is...	32%	92%	188%
19	The following is not one of the 5 Pillars of Road Traffic Safety...	11%	38%	245%
20	The following is not a cause of traffic accidents due to Human Error...	63%	76%	21%
Average		37%	72%	149%

Table 2, the comparison of pre-test and post-test scores for the 20 questions shows a significant improvement in understanding across nearly all tested indicators. The participants' average comprehension increased from 37% in the pre-test to 72% in the post-test, with an average improvement of 149%. These findings indicate that the socialization and training activities on road transport safety campaigns have a positive impact on enhancing participants' knowledge.

In the group of questions related to basic regulatory understanding and safety definitions, such as the objectives of traffic management, driver obligations, and vehicle safety standards (e.g., items 1, 4, 5, and 10), comprehension improvement ranged from 38% to 52%. This relatively moderate increase suggests that some participants already possessed preliminary knowledge of normative safety aspects, yet the training materials still played a role in reinforcing and clarifying previously incomplete understanding. This aligns with findings indicating that traffic safety education is effective in enhancing consistency of understanding regarding regulations, especially among individuals with prior driving experience (Setyowati et al., 2025).

Conversely, the highest improvement was observed in items related to technical, visual, and practical aspects, such as inspecting the physical condition of a vehicle before a trip (item 3), determining speed limits on toll roads (item 6), identifying road markings and traffic signs (items 8, 11, 16, and 18), and understanding the five pillars of road traffic safety (item 19). For these items, comprehension increased by over 200%, reaching as high as 423%. This indicates that prior to the activities, participants' understanding of technical and symbolic safety aspects was very low, but it improved drastically after simulation- and visual-based learning. These findings reinforce research demonstrating that simulation- and visual-based learning is highly effective in enhancing participants' practical understanding and interpretative ability regarding safety messages, particularly related to signs, markings, and traffic situations commonly encountered in the field (Hulme et al., 2021). Visual media and contextual case studies help participants connect theoretical knowledge with real-world situations, making the learning process more meaningful.

Additionally, questions related to the causes of traffic accidents, particularly human error factors (items 9 and 20), showed relatively lower improvements compared to other technical aspects, ranging from 21% to 206%. This suggests that while participants began to understand that accidents are not solely caused by technical factors, a deeper understanding of risky behaviors, fatigue, and decision-making on the road still needs to be strengthened. Changes in understanding behavioral factors require repeated and reflective approaches, as they are closely tied to drivers' habits and social norms (Rifki et al., 2025).

Overall, the variation in improvement across the test items indicates that the socialization activities were more effective in enhancing concrete and visual cognitive aspects than abstract aspects such as attitudes and behaviors. This finding is consistent with research concluding that early-stage safety campaigns generally have a greater impact on knowledge acquisition, whereas behavioral changes require continued intervention, message reinforcement, and environmental support (Nicolls et al., 2025). Thus, the item analysis confirms that the education, training, and simulation methods employed in the community service activities successfully improved participants' understanding, particularly in the technical and practical aspects of traffic safety. However, to achieve sustained behavioral change, safety campaigns need to be followed by more intensive, contextual approaches oriented toward shaping attitudes and real-world practices on the road, as recommended in recent traffic safety literature (Hamann et al., 2021; Mardikawati et al., 2025).

2. Qualitative Results: Changes in Awareness, Skills, and Engagement









Qualitative results were obtained through direct observation, participant feedback, and group discussions during the training and simulation sessions. The findings indicate that participants not only improved their understanding of regulations but also demonstrated increased awareness of the complexity of traffic accident causes, including risky driver behaviors, road infrastructure conditions, vehicle fitness, and environmental factors. Participants actively engaged in discussions about traffic safety issues in their respective areas and were able to connect normative knowledge with real-world conditions. This supports the argument that contextual learning based on local accident data can enhance participants' ability to understand safety issues more comprehensively, beyond mere compliance with written rules (Rifki et al., 2025). However, observations also revealed an important finding: high regulatory knowledge does not always translate into actual behavioral change. Some participants acknowledged that, despite understanding vehicle safety standards and traffic regulations, everyday practices such as routine vehicle maintenance or fatigue management were not consistently applied. These findings emphasize that safety campaigns should not focus solely on cognitive aspects but must also address affective (attitudes) and psychomotor (practical actions) domains to achieve sustainable behavioral change (Nicolls et al., 2025).

3. Activity Output: Safety Campaign Media and Social Media Utilization

One of the main outputs of this community service activity is the traffic safety campaign products, including campaign posters and digital content for social media. Through simulation sessions, participants worked in groups to design safety messages, visual elements, and brief campaign narratives tailored to the characteristics of the target community. The posters produced emphasize simple, clear, and contextual messages, focusing on local risk factors such as helmet use, driving speed, driver fatigue, and awareness of road conditions (e.g., sharp curves). The use of engaging visuals and concise slogans aims to enhance message retention and public appeal. These results support findings that simulation-based learning is effective in improving practical skills and the relevance of safety messages (Hulme et al.,

2021). Table 3 presents the activity outputs, including posters and links to social media platforms where the safety campaign was shared.

Table 3.
 Campaign Posters and Social Media Links for Traffic Safety

No	Area Conditions and Key Message	Poster	Road Safety Campaign Media Link
1	The area is characterized by a sharp curve with limited visibility that poses a high accident risk, conveying a message urging drivers to increase vigilance and reduce speed when passing through.		https://www.instagram.com/stories/jimbrootsx/3698841381767817963?igsh=MWwxMWx3cGlpMTIjdW==
2	The area is depicted as having a high potential for traffic accidents due to disorderly driving behavior, conveying a message that encourages road users to obey traffic regulations, prioritize safety, and drive responsibly.		https://www.instagram.com/stories/edwardaqa/3698845318121939333?igsh=MXd5eTdvNW15ZGRqcA==
3	The area is illustrated as a roadway with high traffic activity and frequent pedestrian crossings, conveying a message about the importance of complying with road safety rules to protect oneself and other road users.		https://www.instagram.com/stories/aries_efendy78/3698845130812893612?utm_source=ig_story_item_share&igsh=NXU3bHFidTIINjN2
4	The area is described as a roadway with a high risk of accidents caused by driver negligence, conveying a message emphasizing the importance of staying focused, obeying traffic signals, and avoiding mobile phone use while driving for collective safety.		https://www.instagram.com/stories/edian23/3698846762195755861?utm_source=ig_story_item_share&igsh=bjQxMzZ3Y2N1ajZo
5	The image represents an urban area with dense traffic and diverse road users, conveying a message about the importance of driving ethics, compliance with traffic signs, and shared road safety.		https://www.instagram.com/p/DNU8fdAP0p3/?igsh=MWEwZjZjMW5rY2t0dQ==
6	The image depicts an urban area with heavy traffic activity and emphasizes a message encouraging drivers to prioritize road safety through helmet use, adherence to traffic signs, and cautious driving behavior.		https://www.instagram.com/stories/rachmansyah_09/3698846335374244987?utm_source=ig_story_item_share&igsh=MXQ1NjR6ZnFvOW13bA==
7	The image illustrates a roadway located near wildlife habitats, conveying a message urging drivers to be more cautious and responsible in order to protect animals crossing the road.		https://www.instagram.com/stories/nhdini_c79/3698845739875542472?utm_source=ig_story_item_share&igsh=MTU1cHZ4dGNpZnJoNw==
8	The image portrays an urban area with dense traffic and active community movement, conveying a message encouraging drivers to prioritize safety through helmet use, compliance with traffic regulations, and awareness of protecting themselves and others.		Status WhatsApp

Participants were introduced to the use of social media and artificial intelligence–based tools to support the diffusion of safety campaigns. This approach helped participants understand how safety messages can reach a wider audience compared to conventional face-to-face methods. These findings align with research showing that technology-based diffusion can enhance audience reach and engagement in traffic safety campaigns (Mishra & Dev, 2025). Integrating social media into the campaign strategy also strengthens participants' sense of ownership and commitment, as they shift from being passive recipients of information to active change agents within their communities. This participatory dynamic is a key factor in the sustainability of community-based safety programs (Hamann et al., 2021).

Overall, this community service activity demonstrates that a participatory and structured community-based traffic safety campaign, integrating regulatory education, training, visual simulations, and digital technology utilization, is effective in enhancing participants' knowledge and cognitive understanding, particularly regarding regulations, safety standards, and technical and symbolic aspects of traffic. These findings reinforce evidence that community-based educational interventions can optimally improve traffic safety literacy when the materials are contextually designed and relevant to local conditions (Hinga et al., 2025; Pembuain & Mattitaputti, 2024; Rahmawati, 2020; Wahab & Hamidatul Aminah, 2025; Wang et al., 2025).

The most notable improvements were observed in visual, practical, and simulation-based materials, highlighting the effectiveness of simulation approaches and visual media in strengthening practical understanding and risk interpretation compared to conventional lecture methods (Ali et al., 2025; Erviana et al., 2025). Conversely, behavioral aspects and human error factors showed more limited changes, emphasizing that traffic behavior modification is a complex process influenced by psychological factors, social norms, and personal experience, requiring repeated and sustained interventions (Shukri et al., 2022; Tirla et al., 2026; Yang et al., 2025).

Qualitative results further support these findings, indicating that contextual learning based on local case studies promotes increased awareness, engagement, and a sense of ownership among participants regarding traffic safety issues (Anjelita et al., 2025; Hidayah et al., 2024; Mahmuti et al., 2025; Talib, 2022). In addition, outputs such as campaign posters and social media content show that participants' involvement as producers of safety messages strengthens the internalization of safety values and commitment as change agents, while the use of digital media proves strategic in expanding message reach and interaction with the community (Hermanto & Deslia, 2025; Kerr et al., 2021; Setyowati et al., 2025). Thus, the combination of community-based educational, simulation, and digital interventions has strong potential as a practical, adaptive, and replicable model for safety campaigns to support traffic accident prevention across various community contexts (Khan et al., 2021; Nawaz et al., 2025; Setyowati et al., 2025).

CONCLUSION

This community service activity demonstrates that a community-based road transport safety campaign, integrating regulatory education, participatory training, visual simulations, and digital technology utilization, can effectively enhance participants' understanding, awareness, and skills regarding traffic safety issues in a contextual manner. Participants not only strengthened their knowledge of regulations and technical safety aspects but were also able to relate the material to real conditions in their environment and actively take on roles as

designers and disseminators of safety messages through campaign media and social media platforms. The findings affirm that a participatory learning approach, relevant to the local context, is more effective than conventional one-way methods, particularly in fostering engagement and a sense of ownership among participants as change agents. However, the discussion also indicates that increased knowledge does not automatically guarantee sustained behavioral change in traffic practices. Therefore, further reinforcement is required through repeated campaigns, environmental support, and alignment with policies and law enforcement. Overall, the combination of educational, simulation-based, and digital interventions within a community framework has strong potential as a practical, adaptive, and replicable model to support traffic accident prevention efforts at both local and regional levels

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