

Improving Safety and Risk Management Skills in Adventure Tourism through Rock Climbing Training for Recreation Business Management Students at Politeknik Negeri Pontianak

¹*Setya Aristu Pranoto, ² Zulkifli

¹² Recreation Business Management Study Program, Department of Business Administration, Politeknik Negeri Pontianak, Pontianak, Indonesia
setyaaristu@gmail.com

Abstract

Adventure tourism is one of the fastest-growing sectors of the tourism industry and is characterized by a relatively higher level of risk compared to other tourism activities. This condition requires the availability of human resources equipped with adequate safety awareness and risk management competencies. The Recreation Business Management Study Program at Politeknik Negeri Pontianak is responsible for preparing graduates who are capable of managing recreation and adventure tourism activities in a safe and professional manner. This Community Service Program aimed to enhance students' understanding and practical experience regarding safety procedures and risk management in rock climbing activities. The program was conducted in June 2026 at the rock climbing facility of Politeknik Negeri Pontianak and involved students from the Recreation Business Management Study Program as participants. The implementation employed an experiential learning approach consisting of theoretical sessions, safety equipment demonstrations, climbing practices, belaying simulations, and reflective discussions. Program evaluation was carried out through participatory observation, group discussions, and activity documentation. The findings indicate that participants gained a better understanding of safety procedures, the proper use of personal protective equipment, climbing safety techniques, and the importance of risk management in adventure tourism operations. The program provided contextual learning experiences that contributed to strengthening students' competencies as prospective managers of recreation businesses and adventure tourism destinations.

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Introduction

Over the past few decades, the tourism industry has undergone substantial transformation driven by changing tourist preferences and the increasing demand for unique and meaningful travel experiences. Contemporary tourists are no longer satisfied with passive sightseeing activities; instead, they seek immersive experiences that involve active participation, personal challenges, emotional engagement, and interaction with natural environments. This trend has contributed to the rapid growth of experiential tourism, a tourism paradigm that emphasizes learning, participation, and memorable experiences as core components of travel (Buckley, 2010). Within this context, adventure tourism has emerged as one of the fastest-growing sectors of the global tourism industry.

Adventure tourism combines elements of physical activity, exploration of natural or artificial environments, cultural interaction, and perceived risk. Unlike conventional tourism products, adventure tourism offers experiences that challenge participants physically and mentally while simultaneously providing opportunities for personal achievement and self-development (Swarbrooke, J., Beard, C., Leckie, S., & Pomfret, 2011). Activities such as rock climbing, trekking, rafting, mountaineering, and caving have become increasingly popular among tourists seeking authentic and challenging experiences. As a result, many destinations around the world have incorporated adventure tourism into their tourism development strategies as a means of enhancing destination competitiveness and diversifying tourism products.

The growth of adventure tourism has generated significant economic opportunities for tourism destinations and service providers. Adventure tourism contributes not only to tourism revenues but also to employment creation, local business development, and community empowerment. Nevertheless, the expansion of this sector is accompanied by a number of challenges, particularly those related to visitor safety and operational risk management. Adventure tourism activities inherently involve higher levels of uncertainty and risk compared to conventional tourism products. Risks may originate from environmental conditions, equipment malfunction, inadequate supervision, insufficient participant preparation, or human error during activity implementation (Page, S. J., Bentley, T. A., & Walker, 2005).

Safety has therefore become one of the most critical factors influencing the sustainability and success of adventure tourism operations. Previous studies have emphasized that effective safety management is essential for minimizing accidents, protecting participants, maintaining organizational reputation, and ensuring visitor satisfaction (Cater, 2006; Tsaur, S. H., Lin, Y. C., & Liu, 2013). Failure to implement proper safety procedures can result in serious consequences, including physical injuries, legal disputes, financial losses, and declining public trust in tourism operators. Consequently, tourism organizations are increasingly required to develop comprehensive risk management systems that address both preventive and responsive safety measures.

Risk management in adventure tourism extends beyond the availability of safety equipment. It involves systematic processes of hazard identification, risk assessment, risk mitigation, emergency preparedness, communication management, and continuous monitoring of operational activities. Effective risk management also requires human resources who possess not only technical competencies but also strong safety awareness and decision-making abilities (Haddock, 2004). Therefore, the development of competent professionals capable of managing adventure tourism activities safely and responsibly has become a strategic priority for educational institutions that prepare future tourism practitioners.

As a vocational higher education institution, Politeknik Negeri Pontianak has a significant responsibility in preparing graduates who are capable of responding to the evolving needs of the tourism industry. Through the Recreation Business Management Study Program, students are expected to acquire competencies related to recreation planning, tourism operations, facility management, customer service, and outdoor recreation management. However, the dynamic nature of adventure tourism requires students to develop additional competencies in safety management and risk management, particularly in activities involving physical challenges and outdoor environments.

Despite the inclusion of relevant theoretical content in the curriculum, practical exposure to safety management remains limited for many students. Classroom-based instruction provides foundational knowledge regarding tourism management concepts; however, it often lacks opportunities for students to experience real-life situations involving risk identification, safety procedures, and operational decision-making. As a result, students may understand safety management conceptually while lacking confidence and practical competence when confronted with actual operational challenges. This gap between theoretical

learning and practical application represents an important issue that needs to be addressed through experiential educational interventions.

Experiential learning has been widely recognized as an effective pedagogical approach for bridging the gap between theory and practice. According to (Ewert, A., & Sibthorp, 2014), experiential learning enables participants to acquire knowledge and skills through direct involvement in meaningful activities. Through practical experiences, students can better understand the consequences of their decisions, develop problem-solving abilities, improve communication skills, and strengthen their awareness of safety-related issues. In the context of adventure tourism education, experiential learning provides opportunities for students to engage with realistic operational scenarios that cannot be fully replicated through classroom instruction alone.

Among various adventure tourism activities, rock climbing represents an effective educational medium for introducing students to the principles of safety management and risk management. Rock climbing requires participants to follow strict safety protocols, utilize specialized equipment correctly, communicate effectively with team members, and continuously assess environmental and operational risks. These characteristics make rock climbing an appropriate learning platform for developing both technical and managerial competencies relevant to adventure tourism operations. Furthermore, the activity encourages participants to build self-confidence, responsibility, teamwork, and leadership skills, which are essential attributes for future tourism professionals.

In addition to its educational value, rock climbing provides opportunities for students to understand the relationship between visitor safety and service quality. In adventure tourism, safety is not merely an operational requirement but also a key determinant of customer satisfaction and business sustainability. Tourists are more likely to participate in adventure activities when they perceive that operators are competent, professional, and committed to maintaining high safety standards (Williams, P., & Soutar, 2009). Therefore, developing safety competencies among tourism students contributes not only to accident prevention but also to the long-term competitiveness of tourism enterprises.

Considering the growing importance of safety management in adventure tourism and the need to strengthen students' practical competencies, lecturers from the Recreation Business Management Study Program at Politeknik Negeri Pontianak organized a Community Service Program in the form of rock climbing training. The program was designed to provide students with direct learning experiences related to safety procedures, equipment utilization, hazard identification, teamwork, and risk management practices in adventure tourism activities.

The objective of this program was to enhance students' understanding and practical competencies in safety management and risk management through an experiential learning approach. Specifically, the program aimed to improve students' awareness of safety principles, strengthen their ability to utilize safety equipment correctly, and develop their capacity to identify and manage potential risks in adventure tourism operations. The outcomes of this program are expected to contribute to the development of competent, responsible, and professional graduates who are capable of supporting the sustainable growth of the adventure tourism industry.

Method

The Community Service Program was conducted in June 2026 at the rock climbing facility of Politeknik Negeri Pontianak. The target participants were students of the Recreation Business Management Study Program who were involved in competency enhancement activities related to outdoor recreation and adventure tourism.

The program employed an experiential learning approach that emphasizes learning through direct experience. The implementation consisted of several stages.

The first stage involved preparation activities, including program coordination, inspection of the rock climbing facility, safety equipment checks, and the development of training materials. The second stage focused on the delivery of theoretical materials covering the concepts of adventure tourism, risk management, outdoor activity safety, the use of safety equipment, and the importance of implementing standard operating procedures in adventure tourism activities. The third stage consisted of demonstrations of safety equipment, including helmets, harnesses, safety ropes, carabiners, and other protective devices. During this stage, participants received explanations regarding the functions of the equipment, proper usage techniques, and inspection procedures prior to use. The fourth stage involved practical field activities. Students participated in climbing simulations and safety management exercises under the supervision of instructors. This stage provided participants with opportunities to apply the knowledge acquired during the theoretical sessions in a real-world setting. The final stage consisted of reflection and evaluation activities. Evaluation was conducted through participatory observation, group discussions, and activity documentation to assess participants' understanding of the materials and practical exercises that had been completed.

Results and Discussion

The rock climbing training program was successfully implemented at the rock climbing facility of Politeknik Negeri Pontianak and received a highly positive response from students of the Recreation Business Management Study Program. The activity was designed not only to introduce participants to rock climbing techniques but also to strengthen their understanding of safety management and risk management principles in adventure tourism operations. Throughout the program, participants actively engaged in theoretical sessions, equipment demonstrations, climbing simulations, and reflective discussions.

The initial stage of the program focused on the delivery of theoretical materials related to adventure tourism, safety management, risk identification, and standard operating procedures (SOPs) in outdoor recreation activities. During the discussion sessions, participants demonstrated a growing awareness that safety is not merely a technical requirement but a fundamental component of recreation business management. This understanding is particularly important because adventure tourism activities involve inherent risks that require systematic planning and management to ensure visitor safety and service quality (Tsaur, S. H., Lin, Y. C., & Liu, 2013).



Figure 1. Rock Climbing Training Activities for Recreation Business Management Students at Politeknik Negeri Pontianak

As shown in Figure 1, participants were actively involved in both climbing and safety management activities. The photograph illustrates students participating in practical climbing exercises while other participants observed and learned safety procedures under the supervision of instructors. The activity created an interactive learning environment in which students could directly observe the relationship between theoretical concepts and practical implementation.

The equipment demonstration session played a crucial role in enhancing participants' technical understanding of safety devices used in rock climbing activities. Students were introduced to various types of equipment, including helmets, harnesses, safety ropes, carabiners, and belay devices. Participants learned how each piece of equipment contributes to accident prevention and visitor protection. They also practiced conducting pre-activity inspections to ensure that all equipment was functioning properly before use. This stage reinforced the importance of preventive safety measures as a core element of risk management in adventure tourism.

The practical climbing session constituted the most significant component of the program because it enabled students to gain direct experience in applying safety procedures. Participants alternated between different roles, including climbers, belayers, and safety supervisors. By performing these roles, students developed a broader understanding of operational responsibilities in adventure tourism management. The experience helped participants recognize that safety management is a shared responsibility involving effective communication, teamwork, and continuous monitoring of potential hazards.

Observational findings indicated that students demonstrated improved confidence in explaining the functions of safety equipment, identifying potential hazards, and describing the stages of operational safety inspections. More importantly, participants began to view rock climbing not only as a recreational activity but also as a tourism product that requires professional management. This shift in perspective is particularly relevant for students preparing for careers in recreation and tourism management.

The experiential learning approach employed in this program proved effective in bridging the gap between classroom theory and field-based practice. Through direct participation, students were exposed to realistic situations that required critical thinking and decision-making. Previous studies have emphasized that perceptions of risk in adventure tourism are often developed through direct experience and active participation rather than through theoretical instruction alone (Carnicelli-Filho et al., 2010; Kane & Tucker, 2004). The findings of this program support these observations by demonstrating that hands-on learning activities can significantly enhance students' understanding of risk-related issues.

Another important outcome of the program was the development of safety awareness among participants. Students increasingly recognized that safety is closely linked to service quality, visitor satisfaction, and business sustainability. In adventure tourism, tourists are more likely to trust operators who consistently implement safety standards and demonstrate professional risk management practices. Therefore, safety competencies are not only operational requirements but also strategic assets that contribute to organizational reputation and customer confidence (Williams, P., & Soutar, 2009).

The program also strengthened participants' understanding of safety culture. Safety culture refers to shared values, attitudes, and behaviors that prioritize safety in all aspects of organizational operations. During the reflection sessions, students discussed various scenarios involving equipment failure, human error, and emergency situations. These discussions encouraged participants to consider the broader implications of safety management beyond technical procedures. Consistent with the findings of (Wilde, 2014) and (Tsaur, S. H., Lin, Y. C., & Liu, 2013), effective risk management depends not only on the availability of safety equipment but also on behavioral commitment, communication effectiveness, and adherence to operational standards.

Several challenges emerged during the implementation of the program. One of the most notable challenges was the variation in participants' confidence levels when engaging in climbing activities. Some students had little or no previous experience with height-related activities and initially displayed hesitation during practical exercises. To address this issue, instructors provided continuous guidance, encouragement, and peer-assisted support. This approach successfully created a supportive learning environment and enabled participants to gradually build confidence in their abilities.

Overall, the program demonstrated that rock climbing training can serve as an effective educational medium for strengthening students' competencies in safety management and risk management within the context of adventure tourism. The combination of theoretical instruction, practical experience, and reflective learning contributed to a more comprehensive understanding of professional responsibilities in recreation business management. The program therefore represents a valuable model for competency development in vocational higher education, particularly for students preparing to enter the adventure tourism industry.

Conclusion

The Community Service Program in the form of rock climbing training, organized by lecturers of the Recreation Business Management Study Program at Politeknik Negeri Pontianak, successfully provided students with practical learning experiences related to safety and risk management in adventure tourism.

Through the experiential learning approach, students gained a better understanding of safety equipment utilization, operational procedures in rock climbing activities, risk identification, and the importance of safety culture in recreation business management. The program contributed to strengthening students' competencies as prospective recreation business managers who are capable of applying safety principles and risk management practices in the implementation of adventure tourism activities in a professional and sustainable manner.

Recommendation

Based on the implementation and outcomes of this community service program, several recommendations can be proposed to enhance the sustainability and impact of similar activities in the future.

First, the Recreation Business Management Study Program is encouraged to integrate safety management and risk management training more systematically into practical learning activities. This integration will help strengthen students' competencies in managing outdoor recreation and adventure tourism activities.

Second, similar training programs should be conducted regularly to provide students with continuous opportunities to develop practical skills related to safety procedures, equipment handling, and risk assessment. Repeated exposure to real-life scenarios can improve students' confidence and preparedness for professional practice.

Third, collaboration with professional organizations, tourism operators, and outdoor recreation practitioners is recommended to provide students with broader learning experiences and exposure to industry standards. Such partnerships may also support competency certification and professional development opportunities for students.

Finally, future community service programs may be expanded to involve local tourism communities, tourism awareness groups (*Pokdarwis*), and adventure tourism operators. This expansion would contribute to promoting safety culture and strengthening risk management practices within the broader tourism sector.

These recommendations are expected to support the development of competent human resources capable of managing adventure tourism activities safely, professionally, and sustainably.

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