



Science Innovation in Youth Organization: Building Social Awareness for Sustainable Development

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Abstract: This study aims to analyze the role of youth organizations in increasing youth social awareness in Sei Kandis Village and identify science innovations applied to support sustainable development. The method used is qualitative with a phenomenological approach. Data were collected through observation, interviews, and documentation, with informants determined by purposive sampling. The results showed that *Karang Taruna* plays an important role in increasing social awareness through science innovation-based programs, such as environmentally friendly technology training. Factors that influence youth social awareness include internal factors, such as enthusiasm and commitment, and external factors, such as adequate facilities and infrastructure. The conclusion of this study is that the application of science innovation in *karang taruna* programs can increase youth participation in social activities and support sustainable development in the village.

Keywords: Science innovation; Social awareness; Youth organization.

Introduction

Sustainable development demands the active role of various parties, including the younger generation, in preserving the environment and enhancing social welfare (Petzolt & Seckler, 2025; Runhui et al., 2025; Toro et al., 2024). *Karang Taruna*, as a youth organization, plays a strategic role in realizing this by contributing through social empowerment, skill development, and increasing social awareness. Scientific innovation can be an effective tool in achieving sustainable development goals, as it utilizes technology and scientific knowledge to address various social and environmental issues ((Jnr, 2024; Souza et al., 2025; Wei et al., 2024).

According to Law No. 40 of 2009 concerning youth organizations, the role of youth is crucial in supporting national interests, empowering their potential, and developing leadership and entrepreneurship. This is reinforced by the Minister of Social Affairs Regulation No. 25 of 2019, which states that *Karang Taruna* aims to develop youth creativity, prevent social delinquency, and address social problems. One of the main focuses of *Karang Taruna* is to build social awareness in order to

tackle existing social issues, such as poverty, education, and the environment (Mouncey & Ciobotaru, 2025; Pardede, 2020; Silva et al., 2020).

In Sei Kandis Village, Pendalian IV Koto District, Lokan Hulu Regency, *Karang Taruna* has played an important role in increasing social awareness and empowering youth through various programs. These programs include food security management through catfish ponds, as well as other social activities aimed at fostering a sense of social responsibility among teenagers. Although there have been good efforts, there are still several challenges in optimizing the role of *Karang Taruna*, one of which is the lack of social awareness among youth, as well as limitations in utilizing science and technology to support existing social programs.

For example, in the management of catfish ponds supported by the village government, despite high enthusiasm from the youth, the implementation of the program still faces several obstacles. This indicates the importance of innovation, both in terms of methodology and the utilization of science, to improve expected outcomes and address social issues more effectively.

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This research aims to examine the role of scientific innovation in *Karang Taruna* in building social awareness among youth in Sei Kandis Village, as well as to explore how scientific innovation can be applied to support sustainable development. By tapping into the scientific potential of the youth, it is hoped that more sustainable and efficient solutions can be created to face various existing social challenges. This research also refers to previous studies that show that youth involvement in social organizations and the utilization of science can strengthen the potential of the younger generation to become agents of change in society.

Method

This research employs a qualitative approach with a phenomenological design, aimed at understanding, exploring, and interpreting the meanings of events and phenomena occurring within the context of *Karang Taruna* activities in Sei Kandis Village. Phenomenology was chosen because this study focuses on the experiences of individuals and groups within the *Karang Taruna* organization, as well as their efforts to implement scientific innovations to enhance social awareness for sustainable development (Scully et al., 2024).

The population involved in this study consists of all the management members of *Karang Taruna* in Sei Kandis Village, totaling 24 individuals. Sampling was conducted using purposive sampling techniques, which select informants based on specific criteria, such as active involvement in *Karang Taruna* activities and their understanding of the role of scientific innovation in social development. With this technique, the researcher can obtain relevant and in-depth information regarding the application of scientific innovations in the work programs of *Karang Taruna* (Paola et al., 2025).

Data collection techniques in this study involve gathering documentation of *Karang Taruna* activities, such as program reports, photographs of activities, and administrative records. Additionally, primary data were obtained through in-depth interviews with all the management members of *Karang Taruna* and several community members. These interviews aim to explore their views on the role of *Karang Taruna* in enhancing social awareness, particularly concerning scientific innovations and their impact on sustainable development in the village.

To analyze the data, this research uses qualitative descriptive analysis techniques. The data obtained from interviews and documentation are analyzed through three main stages: data reduction, which involves filtering and sorting relevant information; data presentation, which involves organizing the data in a form that is easy to understand and analyze; and

conclusion drawing, which involves interpreting the findings that demonstrate the role of scientific innovation in building social awareness and supporting sustainable development. This analysis will provide a deeper understanding of the contributions of *Karang Taruna* in utilizing scientific innovations to improve the quality of social life in Sei Kandis Village.

Result and Discussion

The Role of Karang Taruna

Karang Taruna plays a very important role in developing social awareness among youth, particularly in Sei Kandis Village. As a youth organization, *Karang Taruna* not only focuses on social activities but also serves as a means to cultivate a strong social spirit through various activities that involve the community. According to Yusuf et al. (2024), *Karang Taruna* functions as a place for nurturing the social spirit of the younger generation by involving them in various community activities.

Implementation of Social Programs

Karang Taruna organizes social programs such as community service and providing assistance to those in need. These programs aim to provide direct benefits to the community while introducing youth to social realities. Through these activities, young people are trained to care for others, enhance their empathy, and understand the needs of others. The social activities carried out by *Karang Taruna* play a crucial role in shaping the character of youth to be more socially responsible (Prasetya et al., 2024).

According to Lawrence Kohlberg's theory of moral development Mayunita et al. (2024), involvement in social activities can help individuals reach higher stages of moral development, where values such as justice and concern for others become increasingly internalized. Additionally, these activities strengthen the sense of solidarity among members, as explained by Durkheim Tambunan et al. (2024), who emphasizes the importance of social solidarity in creating close social relationships among members and the community.

Training and Education

In addition to social activities, *Karang Taruna* also implements skill training programs that focus on social issues such as poverty, unemployment, and social inequality. These programs not only equip youth with practical skills but also provide a deeper understanding of the social problems surrounding them. In this context, Albert Bandura's social learning theory Amalia et al. (2024) explains that youth learn through direct

experiences, enabling them to design solutions to address social issues.

Through discussions, seminars, and training, young people are encouraged to think critically and analyze existing social issues. Research by Sunarsi et al.

(2025) shows that group discussion activities can enhance participants' critical understanding of complex social problems and prepare them to actively seek innovative solutions (Husna et al., 2023).



Figure 1. Scientific Innovation Through Training Programs

Utilization of Scientific Innovation

Karang Taruna in Sei Kandis Village has implemented several scientific innovations in their social activities, such as managing fish ponds based on sustainability principles. Through this innovation, youth are not only involved in social activities but are also taught environmentally friendly methods to enhance community welfare. By utilizing simple technology in managing natural resources, *Karang Taruna* not only helps create new job opportunities but also participates in sustainable development efforts in the village (Nafaida et al., 2023).

Enhancement of Skills and Knowledge through Training Programs

Through training programs that leverage technology and scientific innovation, the youth of *Karang Taruna* in Sei Kandis Village are equipped with practical knowledge and skills in various fields, ranging from natural resource management to technology-based entrepreneurship. This innovation introduces youth to the concept of sustainable development that prioritizes resource efficiency and long-term sustainability (Eljinsa & Zamhari, 2024).

Thus, *Karang Taruna* not only acts as an agent of change in raising social awareness but also plays a crucial role in introducing sustainable development concepts to the younger generation. Through the application of scientific innovations, youth have the opportunity to not only understand the importance of

sustainability but also to actively participate in realizing it in their daily lives (Fajar et al., 2023).

Based on the results obtained, it can be concluded that *Karang Taruna* in Sei Kandis Village plays a very important role in enhancing social awareness among youth. Various social activities carried out encourage youth to understand community needs and participate in social development. This aligns with the theory explained by Saputri & Sukmawati (2024), which states that *Karang Taruna* serves as a place to nurture the social spirit of the younger generation.

The increase in social awareness through these activities supports the moral and character development of youth, in accordance with Lawrence Kohlberg's moral development theory (Afikah et al., 2022), which states that involvement in social activities helps individuals reach higher stages of moral development.

Albert Bandura's Social Learning Theory in Agung et al. (2024) is also relevant in this context, as youth learn through observation and direct experience. Through skill training and education, youth not only learn about social theory but also how to identify and address social problems through concrete actions. The application of Durkheim's theory of social solidarity Fontenele et al. (2024) within *Karang Taruna* shows that through joint activities, members not only strengthen personal relationships but also enhance their sense of belonging to the community.

These findings have important implications for the development of youth programs at the village level. The

activities carried out by *Karang Taruna* in Sei Kandis Village have a broader positive impact in building social awareness among youth, as well as helping them develop skills that are useful for personal and community life. These programs can serve as examples for other youth organizations that wish to enhance social awareness among the younger generation.

This research has limitations in terms of location, as it focuses solely on Sei Kandis Village. Therefore, the results obtained may not be generalizable to other areas with different social conditions. Additionally, time constraints in data collection reduce the possibility of obtaining a more comprehensive picture of the long-term impacts of these programs.

Based on the findings of this study, it is recommended that *Karang Taruna* in other villages adapt the methods applied in Sei Kandis Village. Social programs that involve technology and scientific innovation in their implementation can be an alternative to attract more youth attention and increase their impact. Furthermore, *Karang Taruna* can enhance community involvement in entrepreneurship training programs to create more economic opportunities and improve collective welfare.

Conclusion

Based on the research findings, *Karang Taruna* in Sei Kandis Village, Pandalian IV Koto District, Rokan Hulu Regency, plays an important role in enhancing social awareness among youth through various programs. Social programs such as community service and assistance to underprivileged communities have a positive impact on society and foster empathy and a sense of social responsibility among youth. Additionally, the skill training and education organized by *Karang Taruna* help youth understand social issues and develop practical skills that are beneficial for economic empowerment. Cooperation among members is also strengthened through collective activities, which build solidarity and trust both among members and with the community. Overall, *Karang Taruna* has successfully implemented scientific innovations in its social activities, supporting sustainable development by empowering youth and making a positive contribution to society.

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