
Socialization of Scientific Attitude as an Effort to Strengthen Civic Engagement among Gen-Z in the Era of Society 5.0

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Abstract

This community outreach activity was carried out with the aim of providing an understanding of Generation Z known as the digital native generation who grew up in the era of technology and information. Despite having wide access to information, this generation faces challenges in civic engagement due to the crisis of national identity and low critical literacy. The population in this study were 25 students of SMK Negeri 2 Rantau Utara. The SMK students still have minimal understanding of Scientific Attitudes and Civic Engagement that grow in the digitalization era and the challenges they face in the future. The use of this socialization is expected to reduce the negative influence of digital era and the role of Generation Z in facing these challenges. This study aims to provide an understanding and socialization of Scientific Attitudes as an effort to Strengthen Civic Engagement in the younger generation, especially Gen-Z in an effort to form a character based on Science and Pancasila with a qualitative descriptive approach. Research data were obtained through Socialization and interviews with Students of SMK Negeri 2 Rantau Utara, North Antau District, Labuhanbatu Regency using qualitative descriptive methods. Data were collected through interviews with vocational high school students and field observations, and supported by related literature studies. The results of the study indicate that Generation Z's lack of understanding of Scientific Attitudes and Civic Engagement in the current digital era. With the support of socialization, technology, and promotion, the understanding of vocational high school students can be further developed as in-depth information as an effort to strengthen Scientific Attitudes and Civic Engagement in the digital era.

Keywords: *Scientific Attitude, Civic Engagement, Gen-Z, Era Society 5.0*

INTRODUCTION

In 21st-century learning, individuals must possess the skills known as the 4Cs: critical thinking, creativity, collaboration, and communication. Creative thinking is the ability to think in new ways and generate different solutions to problems. Elementary school students are trained in scientific creativity to identify those who possess scientific thinking skills. This allows students to see new perspectives and find new solutions or solutions to problems.

Based on the concept of generational grouping, current high school (SMA) and vocational high school (SMK) students can be categorized as Generation Z. In terms of their birth year, Generation Z, a continuation of Generation Y (millennials), was born between 2001 and 2010 (Abidin, Yunus, 2018). A study on Generation Z's information-related behavior among high school (SMK) students shows that this generation utilizes digital internet technology more as a source of information (Akmalia, Hafidha Asni, and Pranatami, Dwimel Ayudwandari, 2021). This is understandable, as this generation was born when internet access was already a global culture, influencing the values, perspectives, and life goals of high school and vocational school students. For this generation, internet-based social media is crucial.

A scientific attitude plays a crucial role for Generation Z, helping them become critical thinkers, effective problem solvers, and able to discern valid information in the digital age. This scientific attitude encourages them to constantly ask questions, seek evidence, and resist blindly accepting information, which is highly relevant to the challenges of disinformation faced today.

Strengthening civic engagement among Gen Z (Generation Z) is crucial for the future of democracy and community development. Gen Z, as digital natives, has great potential to actively participate in various social and political activities, both online and offline.

Civic Engagement consists of two words: civic and engagement. In essence, in various references, civic is defined as citizenship or citizenship. Engagement, on the other hand, is defined as "...typically, engagement is understood as discipline-based work (a course assignment, a research project, an internship, fieldwork, a clinical placement, and so on) that occurs in non-academic communities (local, national, global)" (Saltmarsh & Zlotkowski in Karliani, n.d., p. 75). Meanwhile, the American Psychological Association (in Karliani, n.d., p. 75) defines civic engagement as "Individual and collective actions designed to identify and address issues of public concern."

Civic engagement, often referred to as civic participation, is everything related to the actions of citizens, both individually and collectively, to participate in government policymaking and various activities within the community. Civic engagement is doing something to make a difference in the lives of citizens within a community and developing a combination of knowledge, skills, values, and motivation to make a difference.

Civic engagement is formed from civic awareness and civic participation. Civic engagement is based on a conscious, initiative, and sincerity without coercion from others. Therefore, in practice, involvement is based on the individual's own drive to involve themselves in solving problems within their community.

Citizen involvement in social life is the hope for realizing the ideals of society. Civic engagement is one of the main concepts in Community Civics, which promotes participation in public life. Jacoby & Associates states that civic engagement encompasses actions in which individuals participate in activities of personal and public concern that are both individually life-enriching and socially beneficial to the community. This opinion explains that civic engagement includes actions in which individuals Participating in personal and public care activities that are individually enriching and socially beneficial to the community (Gusmadi, 2018). Civic engagement has been defined as the process of believing that one can and should make a difference in improving one's community. To improve one's community, one needs the knowledge, skills, and values necessary to make a difference. The possession and demonstration of this knowledge, skills, and values are expressed through attitudes and behavior. Civic engagement has been defined as the process of believing that one can and should make a difference in improving one's community. To improve one's community, one needs the knowledge, skills, and values necessary to make a difference. The possession and demonstration of this knowledge, skills, and values are expressed through attitudes and behavior (Gusmadi, 2018).

RESEARCH METHODS

This community service activity was conducted in July 2025 at SMK Negeri 2 Rantau Utara, Rantau Utara District, Labuhanbatu Regency. The study employed a socialization method, providing material on Scientific Attitudes and Civil Engagement among Gen-Z in the Society 5.0 Era. This study employed a qualitative descriptive approach to understand and explain the phenomenon of Understanding Scientific Attitudes and Strengthening Civil Engagement in the Society 5.0 Era, particularly among Gen-Z. This method was chosen because it can in-depth describe Gen-Z's understanding, mindset, and challenges in understanding Scientific Attitudes and strengthening Civil Engagement in the Society 5.0 Era through non-numerical data collection, such as interviews, observations, and literature studies. Qualitative research provides flexibility in exploring the perspectives of Gen-Z students in depth.

The research subjects were students of SMK Negeri 2 Rantau Utara, Rantau Utara District, who were given socialization on Scientific Attitudes as an effort to strengthen Civic Engagement among Gen-Z in the Society 5.0 Era, to provide in-depth basic concepts.

RESULTS AND DISCUSSION

This study aims to provide an understanding and socialization of Scientific Attitude as an effort to Strengthen Civic Engagement in the younger generation, especially Gen-Z, in an effort to form a character based on Science and Pancasila using a qualitative descriptive approach. Research data were obtained through Socialization and interviews with Students of SMK Negeri 2 Rantau Utara, Antau Utara District, Labuhanbatu Regency. In addition, secondary data in the form of literature and related research also support this analysis.

A. Characteristics of Scientific Attitudes in Generation Z

Generation Z has varying levels of ability in reading, understanding, and applying scientific concepts. Research shows that students' scientific literacy skills still need improvement. One study developed a scientific literacy-based test instrument to measure students' ability to explain scientific phenomena related to energy (Adawiyah & Wisudawati, 2017). Generation Z, born between 1997 and 2012, are known as digital natives who grew up with digital technology as an integral part of their lives (Alruthaya et al., 2021; Ameen & Anand, 2020). These characteristics have significant implications for their learning styles and Scientific Attitudes.

Generation Z has a preference for interactive, technology-based learning. They tend to multitask and seek gratification and rewards in ubiquitous computing environments. Their learning style is more visual, relying on graphics for communication, and they have a positive attitude toward technology (Alruthaya et al., 2021). In the context of Scientific Attitudes, this means they are more responsive to teaching methods that utilize digital media, interactive applications, and social media platforms (Fadlan et al., 2023). Although Generation Z is considered technologically adept, this assumption may be overstated. While they are comfortable with technology, their technical proficiency may be limited. This suggests the need for a balanced approach in integrating technology into science education, ensuring that the focus remains on understanding scientific concepts and not solely on the use of digital tools. In conclusion, the relationship between scientific literacy and Generation Z's characteristics as

digital natives demands innovative learning approaches. Educators need to capitalize on Generation Z's preference for visual and interactive content, while still ensuring the development of critical thinking and a deep understanding of scientific concepts. Educational programs that combine digital technology with traditional teaching methods can bridge the gap between knowledge and practice, fostering better Scientific Attitudes among Generation Z (Fadlan et al., 2023).

B. The role of Civic Engagement in Generation Z

Civic engagement is the voluntary participation of citizens in community organizations, driven by their desire to achieve a specific goal. Civic engagement can be defined as the way individuals, through collective action, influence the larger civil society. The concept of civic engagement, currently used primarily in the context of youth, suggests that young people participate in volunteering or community service as part of their development. (Murtiningsih & Wijaya, 2024)

Generation Z, born between 1997 and 2012, is known as digital natives because they grew up in an environment rich with digital technology. They possess a high level of ability to access and utilize information technology, which influences how they interact and participate in social and political life. (Kholiza et al., 2024) state that Generation Z relies heavily on the internet and digital devices in their daily lives, making them patrons of progressive politics. Their ability to use technology also allows them to quickly share ideas and views with others (Raidifi & Emiyati, 2024). Despite having broad access to information, Generation Z faces challenges in civic participation, particularly related to the spread of misinformation and the potential for social polarization. (Kholiza et al., 2024) noted that misinformation can damage social order and lead to fragmentation within society. In addition, (Wulansari et al., 2023) showed that although Generation Z is active in using social media for political participation, there is still variation in their level of participation, with some individuals remaining passive. Despite the existing challenges, Generation Z has great potential in increasing civic participation through the use of digital technology. (Wulandari et al., 2025) showed that Pancasila education has a strategic role in shaping the character of Generation Z, especially in facing the challenges of globalization and the development of the digital era. In addition, (Wulansari et al., 2023) highlighted how Generation Z uses social media to organize and promote participation in social movements, such as the Kamisan Action in Semarang, which shows a high level of political participation through digital platforms. Civic Education Civic Education (PKn) is an important pillar in the national education system, because it plays a role in shaping the character of ethical, democratic, and responsible citizens. Civic values such as tolerance, justice, and active participation cannot grow naturally without structured education. Therefore, PKn is present to instill the basic values of national life from an early age (Faizah, 2019).



Figure 1. Presentation of Scientific Attitude Socialization by the Speaker



Figure 2. Presentation of Civic Engagement Strengthening Material by Speaker II



Figure 3. Question and Answer Session with Participants (Students of State Vocational School 2 North Rantau



Figure 4. Presentation of award certificates to the school

CONCLUSION

This research emphasizes the importance of scientific literacy for Generation Z in facing complex global challenges in the digital age. Scientific Attitude encompasses not only scientific understanding but also critical thinking and problem-solving skills. Generation Z, as active users of digital technology, requires learning strategies relevant to their characteristics, such as technology integration, project-based learning, and digital literacy skill development as a manifestation of the implementation of Scientific Attitude. This research also reveals that Generation Z in Indonesia prefers formal, group, and direct (offline) activities. In engaging in civic engagement activities, the majority of Generation Z members receive support from their environment despite facing financial and time constraints. Nevertheless, Generation Z in Indonesia is highly motivated and has a strong intention to continue engaging in civic engagement activities in the future.

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