

## The Importance of Early Education in Climate Change for SD Negeri 92 Rumbai, Pekanbaru

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### ABSTRACT

The increasing global impact of climate change necessitates early education to prepare future generations for sustainable living. This study focuses on raising awareness and promoting actionable behaviors related to climate change among students of SD Negeri 92 Rumbai, Pekanbaru. Early education at the elementary level is pivotal in shaping attitudes and fostering environmental responsibility from a young age. The primary objective was to enhance students' understanding and encourage proactive habits to address climate issues. The methods employed included socialization, interactive discussions, and practical activities like planting vegetable crops to promote family food security. A pre- and post-intervention questionnaire evaluated students' knowledge and attitudes toward climate change. The findings revealed a significant improvement in understanding. Initially, 36% of students were unaware of climate change, while 64% had basic knowledge. After the intervention, 94% demonstrated enhanced comprehension, with only 6% remaining uninformed. Students recognized issues such as erratic weather and rising temperatures but initially lacked actionable knowledge. Practical activities, such as planting and recycling, encouraged students to adopt sustainable practices. This study concludes that early climate change education significantly improves awareness and empowers students to adopt responsible behaviors. Recommendations include periodic evaluations and incorporating climate change education into school curricula, enabling students to act as environmental advocates within their communities.

## 1. INTRODUCTION

Sustainable development, as promoted by governments worldwide, includes addressing climate change as a crucial goal. Climate change significantly impacts all sectors and disrupts the balance of global life. Thus, education plays a pivotal role in preparing individuals to understand their responsibilities and develop competencies for environmental stewardship. Climate-based education, integrated into sustainable development curricula, should be emphasized across all levels of education, particularly at the elementary level, which serves as the foundation for instilling environmental consciousness.

Early education on climate change is vital as global weather patterns and climates have become increasingly unpredictable, affecting the quality of daily human life. The global issues of climate change and global warming have garnered widespread attention in regional, national, and international forums. Consequently, immediate mitigation and adaptation measures are essential to combat these challenges.

SD Negeri 92 Rumbai Pekanbaru, an elementary school accredited with an "A" rating, demonstrates a strong foundation in school management and student quality. This institution was selected for a climate change education program due to its proximity to Universitas Lancang Kuning and its potential to disseminate environmental awareness. The program aimed to enhance students' understanding, attitudes, and actions toward climate change through knowledge-sharing and practical activities such as cultivating vegetables. It is hoped that this initiative will foster students' awareness and encourage environmentally friendly habits, both at school and in their homes.

This initiative aligns with the tri dharma of higher education—community service—and underscores the importance of collaboration between educational institutions and the community to address pressing global challenges. By instilling climate change awareness early, this program aspires to nurture responsible individuals capable of contributing to a sustainable future.



## 2. METHOD

The community service activity conducted by Universitas Lancang Kuning (Unilak) represents one of the essential elements of the Tri Dharma of Higher Education, alongside teaching and research. Each faculty member is obligated to fulfill the Tri Dharma in every academic semester. Community service initiatives may be implemented within the faculty, university, surrounding community, or other contexts.

This community service project was executed by a cross-faculty team of three members from Unilak, possessing expertise in climate change, silviculture, and forest fires. The activity aimed to raise awareness of the importance of early education on climate change among primary school students. The program took place at SD Negeri 92 Rumbai Pekanbaru, located approximately 1 km from the Unilak campus, and involved 32 sixth-grade students, both male and female.

The program was conducted over a single day, on May 3, 2024, with activities held both in the classroom and through outdoor planting exercises. The methods employed by the Unilak team included direct interaction, question-and-answer sessions, and discussions with the students. The steps taken in this initiative were as follows:

- a. **Introduction:** The team introduced themselves to establish a two-way communication channel with the students.
- b. **Pre-Socialization Questionnaire:** The team distributed a questionnaire to the students before the socialization activity. This questionnaire aimed to gauge the students' initial knowledge of climate change.
- c. **Socialization Activities:** These activities comprised lectures, discussions, and Q&A sessions. Students were encouraged to ask questions and express their opinions. The team also posed questions to stimulate interaction.
- d. **Post-Socialization Questionnaire:** The same questionnaire was distributed to the students again after the socialization activity to assess the increase in their understanding, attitudes, and habits related to climate change.
- e. **Multimedia Presentation:** Several videos and YouTube clips on climate change were shown to provide tangible examples and enhance students' comprehension.
- f. **Vegetable Planting:** Students participated in planting various vegetables such as water spinach, mustard greens, tomatoes, and chilies in polybags.

### Approach and Implementation

The Unilak team employed a direct approach, engaging face-to-face with the students rather than using intermediaries or online methods. This allowed the team to communicate effectively, understand the students' aspirations, and gauge their expectations regarding climate change education. While some students had a general understanding of climate change from their teachers, media, or peers, many had not received detailed information on its causes, background, and effects.

Student participation was highly enthusiastic, with active engagement in discussions and readiness to answer questions. The team fostered a conducive and interactive environment by simplifying explanations and encouraging students to express their thoughts. Students were positioned as both subjects and objects in the learning process, granted the freedom to argue and opine while being guided and assessed by the team.

Stages of the Community Service Program:

- a. Distributing and analyzing pre-socialization questionnaires.
- b. Conducting socialization and providing a deeper understanding of climate change.
- c. Offering practical examples of actions and attitudes for addressing climate change.
- d. Screening multimedia content on climate change.
- e. Distributing and analyzing post-socialization questionnaires.
- f. Organizing planting activities with food crops.
- g. Analyzing the questionnaires descriptively to identify and address the underlying issues.

### Partners

The community service program partnered with sixth-grade students of SD Negeri 92 Rumbai Pekanbaru. These students were specifically chosen because sixth graders are considered capable of understanding, forming opinions, and analyzing issues. Additionally, this school was selected due to its close proximity to Universitas Lancang Kuning, being located only about 1 km away.

The students were provided with knowledge and information about climate change with the expectation that they would disseminate this information to their peers, family members, neighbors, and the broader community. This dissemination of information, knowledge, and understanding about climate change aims to foster behavioral changes towards environmentally ethical practices. Furthermore, it is hoped that the students will actively participate and directly engage in activities related to environmental issues.

### **Evaluation and Sustainability of Socialization**

The community service program conducted with the sixth-grade students of SD Negeri 92 Rumbai, Pekanbaru, requires evaluation to determine the effectiveness of the Unilak team's efforts. Follow-up evaluations should be planned to enhance the students' attitudes and habits toward the environment. Continuous evaluation and program sustainability are essential to develop new initiatives. These efforts may include:

- a. **Assessment of Understanding:** Analyzing data from pre- and post-socialization questionnaires to gauge the students' understanding.
- b. **Periodic Monitoring:** Regular follow-ups with the community service target group, conducted every three to six months.
- c. **Problem Analysis:** Identifying emerging challenges faced by the target group.
- d. **Solution Development:** Finding and implementing the best solutions to address identified problems.

## **3. RESULT AND DISCUSSION**

### **Questionnaire Completion on Early Education for Primary Students Regarding Climate Change**

The early education program on climate change for SD Negeri 92 Rumbai students was a central theme of the community service initiative by the Unilak Community Service Team. This activity took place on Friday, May 3, 2024, as part of the university's commitment to serving the local community. The program began with an introduction of the Unilak team, followed by introductions of the students and accompanying teachers. The agenda for the socialization session was then presented to the participants.

Before the session, the team distributed a questionnaire containing 10 questions related to climate change. The pre-socialization questionnaire aimed to assess the students' initial knowledge of climate change. Students completed the questionnaire twice, once before and once after the socialization session. This dual process sought to evaluate the students' progress in understanding, attitudes, and readiness to address climate change (Figure 1).



Figure 1. The process of completing the questionnaire by students of SD Negeri 92 Rumbai, Pekanbaru

As illustrated in Figure 1, the Unilak team provided clear instructions for completing the questionnaire. Students who did not understand the process were encouraged to seek clarification. The questionnaire completion took approximately 20 minutes.

### **Early Education Socialization for Primary Students Regarding Climate Change**

The one-day socialization program targeted 32 sixth-grade students from SD Negeri 92 Rumbai. The Unilak team began the session by screening YouTube videos about climate change, explaining the processes, mechanisms, causes, and impacts on the environment, health, and agricultural yields. Sixth-grade students were specifically selected to provide foundational knowledge and prepare them to respond effectively to climate change.

The questionnaire contained questions closely related to climate change. Most students had already heard the term "climate change" from friends, parents, television, newspapers, social media, or teachers. Nearly 100% of students reported awareness of climate change information, describing their experiences with rising temperatures and increasingly hot weather. However, while some students were familiar with the impacts of climate change, others were unaware or had not noticed them. Many students had not previously participated in any climate change education programs and were unfamiliar with the topic's prominence in national and international discussions.

The socialization materials covered definitions, mechanisms, and impacts of climate change, current climate issues, mitigation, and adaptation strategies, and preparations required to address climate change. Students who attended the program were expected to act as information disseminators, sharing knowledge with peers, family, and the broader community. Behavioral changes among students were anticipated, including adopting eco-friendly habits, conserving natural resources, and taking greater responsibility for the environment.

These behavioral changes could include conserving electricity and water, maintaining cleanliness, recycling waste, using organic fertilizers, reducing fuel consumption by walking or cycling, practicing moderation in consumption, and actively planting greenery. By instilling such positive attitudes, the program aimed to reduce pollution and environmental degradation.

The community service activity lasted from 8:00 AM to 12:00 PM. Students gathered in the classroom to listen to the Unilak team's presentations (Figure 2).



Figure 2. Early education socialization for primary students on climate change

During the activity, students were guided by the Unilak team and assisted by two undergraduate Forestry students. They were encouraged to ask questions and engage actively. The students showed remarkable enthusiasm, responding confidently and humorously to questions posed by the team. To keep the atmosphere lively, the team incorporated jokes and offered prizes for correct answers, making the session both educational and enjoyable.

The program concluded with a hands-on activity where each student was provided with a polybag containing soil and seeds for vegetables such as water spinach, mustard greens, chilies, and tomatoes (Figure 3). At the end of the event, the Unilak team and students posed for a group photo (Figure 4).



Figure 3. Planting Activities: Students Growing Various Vegetables in Polybags



Figure 4. The Unilak Community Service Team and Students: Group Photo Session

### Activity Evaluation

Evaluation was conducted to measure the program's success in enhancing students' understanding of climate change. This involved analyzing the results of pre- and post-socialization questionnaires. The first questionnaire showed that 36% of students were unaware of climate change, while 64% had some knowledge. Following the socialization program, the second questionnaire revealed a 30% improvement, with 94% of students demonstrating understanding and only 6% remaining uncertain about actionable steps to mitigate climate change.

Figures 5 and 6 depict the pre-test and post-test results, respectively, showcasing the program's effectiveness in fostering climate change awareness and preparedness among students.

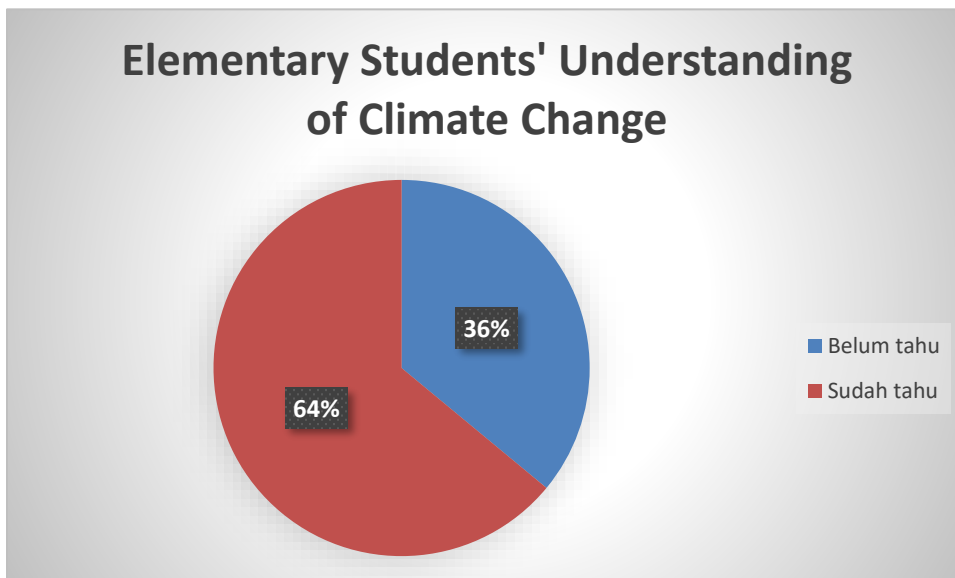


Figure 5. Pre-test results of the Unilak community service program

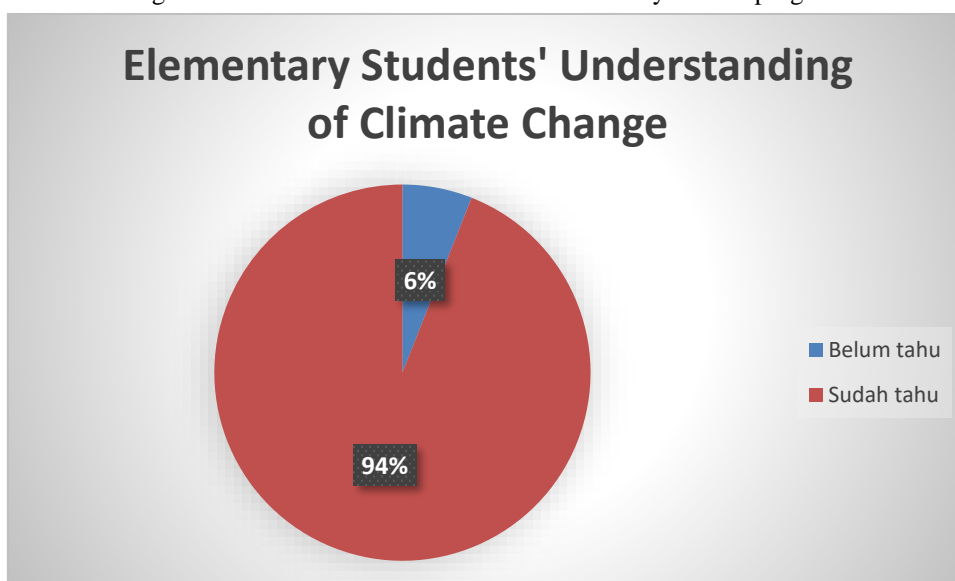


Figure 6. Post-test results of the Unilak community service program

#### 4. CONCLUSIONS

The socialization of attitudes and preparedness for addressing climate change, conducted by the Unilak community service team for the students of SD Negeri 92 Rumbai Pekanbaru, has yielded the following conclusions:

- a. The results of the community service activities indicate a significant improvement in students' understanding and readiness to confront climate change, with awareness increasing from 64% to 94%.
- b. The mitigation and adaptation actions communicated and to be adopted by the students include conserving water and electricity, proper waste disposal and recycling, maintaining environmental cleanliness, using organic fertilizers made from organic waste, reducing fuel consumption by walking or cycling, and developing a habit of planting.
- c. Students have gained practical skills in planting various vegetables such as water spinach, tomatoes, chilies, and mustard greens, fostering food security awareness.

Periodic evaluations are necessary to ensure that the understanding and preparedness for addressing climate change are deeply ingrained in the students. Teachers at SD Negeri 92 Rumbai, Pekanbaru, should also enhance their knowledge and dissemination of climate change information to instill environmental stewardship



in students from an early age. Teachers are encouraged to assign students more responsibilities to increase their awareness and care for environmental preservation. Additionally, cultivating a habit of planting should be emphasized to create a cooler environment and serve as a source of family food security..

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