



Mineral Water Bottle Waste as a Project to Strengthen the Pancasila Student Profile in 21st Century Paradigm-Based Learning

Sakman¹, Abdul Hadjranul Fatah², Siti Hayati³,
^{1,2}Universitas Palangka Raya, Palangka Raya, Indonesia
³SMA Negeri 2 Muara Teweh, Indonesia



DOI: <https://doi.org/10.46245/ijorer.v7i2.1086>

Sections Info

Article history:

Submitted: September 02, 2025

Final Revised: Dec. 05, 2026

Accepted: January 06, 2026

Published: March 31, 2026

Keywords:

Plastic Waste; Green

Chemistry; STEAM;

Strengthening the Pancasila

Student Profile Project; 21st

Century Paradigm



ABSTRACT

Objective: This study aimed to describe the development of students' character in the dimensions of Loyalty, Piety to God Almighty, Mutual Cooperation, Independence, and Critical Thinking. This study used a qualitative method involving 31 students of class X.A at SMA Negeri 2 Muara Teweh. Data were collected through observations, interviews, and documentation. Observational data tracked character development, while interview data gathered insights into room comfort from students. Data analysis included presentation and verification of the data. The results showed that based on the assessment rubric, 38.70% of students were at the "starting to develop" stage, 48.38% were at the "developing" stage, and 12.90% were in the "developing as expected (skilled)" category. Among the 11 students interviewed, 32.25% reported the room was "somewhat warm," 41.93% "quite cool," and 25.80% "cool." These findings indicate that awareness of waste utilisation and environmentally friendly character development still needs to be improved. Novelty: The novelty of this study lies in the integration of improving classroom air quality with character building that aligns with the six dimensions of the Pancasila Student Profile: Faith, Piety to God Almighty, Mutual Cooperation, Independence, and Critical Thinking, which adds a green environmental dimension to this educational initiative.

INTRODUCTION

Education is a process by which a group of people (society) acquires knowledge, skills, and attitudes that can be passed down from one generation to the next (Ferdianto et al., 2022). Student-centered learning positions students as learning subjects, requiring them to be more active in learning activities. Teachers act as facilitators, providing students with the resources and support they need. For example, the STEAM (Science, Technology, Engineering, Art, and Mathematics) model is one example of a student-centered learning model.

The STEAM learning model is a learning model directs students to produce a product through a learning activity. In addition, students will also be stimulated through the utilization of the environment around them because the STEAM model gives students the freedom to express themselves and the freedom to explore more contextual learning in creating a product (certain work). In addition, students are stimulated to develop scientific attitudes, understand basic technology, and hone their problem-solving skills. They also appreciate the aesthetic values of creating measurable works in solving challenges in project-based learning.

The Independent Curriculum (Curriculum Merdeka) is an educational reform in Indonesia designed to shape the profile of Pancasila-based students into a generation with noble character, critical thinking, creativity, and global competitiveness. This curriculum no longer focuses on memorizing material but rather on developing character, competencies, and 21st-century skills aligned with Pancasila values.

One of its main goals is to create students with integrity, mutual cooperation, justice, diversity, and courage in facing contemporary challenges. Through a flexible, project-based learning approach, students are given the space to discover their interests, think critically, and develop real solutions to social problems.

The Independent Curriculum also emphasizes learning based on student potential, not just academic achievement. With flexibility in time, subjects, and content, students can learn at their own pace and interests while remaining within the framework of the nation's noble values..

The independent implementation of the Merdeka curriculum at SMA Negeri 2 Muara Teweh has changed. The Merdeka Curriculum structure consists of intracurricular, co-curricular, and extra-curricular activities. Co-curricular activities in the Pancasila Student Profile Reinforcement Learning Curriculum apply the STEAM method of learning through a problem-based approach. Learning with the STEAM method creates a learning environment that builds students' motivation to connect knowledge from various disciplines.

Co-curricular activities in the Independent Curriculum include the Pancasila Student Profile Strengthening Project. Implementation of the Pancasila Student Profile Strengthening Project by choosing the theme of Sustainable Living with the topic of Green Chemistry. The application of the STEAM method with a problem-based approach as a co-curricular activity. SMA Negeri 2 Muara Teweh class XA Academic Year 2023–2024 "Green Chemistry was chosen as the Pancasila Student Profile Strengthening Project in 21st Century Paradigm-Based Learning"

RESEARCH METHOD

This study used a qualitative method to describe the implementation of P5 as the basis for STEAM learning in class XA students of SMA Negeri-2 Muara Teweh. According to Bogdan and Taylor (in Austin & Sutton, 2014), qualitative research is a research procedure that collects descriptive data in the form of words or writing, as well as observed behavior from research subjects. The research subjects were all class XA students of SMA Negeri 2 Muara Teweh in the 2023/2024 academic year, totaling 31. In this study, the research subjects were selected using a purposive sampling technique.

Data collection techniques were carried out through observations, interviews, and documentation. The implementation of the Merdeka Curriculum at SMA Negeri 2 Muara Teweh was carried out independently in accordance with the Merdeka Curriculum structure in the form of intracurricular, co-curricular, and extracurricular activities. Co-curricular activities in the Pancasila Student Profile Reinforcement Learning Curriculum apply learning using the STEAM method through a problem-based approach. Learning with the STEAM method creates a learning environment that builds student motivation to connect knowledge across various disciplines.

Co-curricular activities in the Independent Curriculum are the Pancasila Student Profile Strengthening Project. The implementation of the Pancasila Student Profile Strengthening Project by choosing the theme of Sustainable Living with the topic of Green Chemistry. The application of the STEAM method with a problem-based approach as a co-curricular activity. SMA Negeri 2 Muara Teweh class XA Academic Year 2023/2024 "Green Chemistry as a Project to Strengthen the Pancasila Student Profile in 21st Century Paradigm-Based Learning"

The application of the method in STEAM learning with a problem-based project approach is described in the following steps.

1. The project theme chosen was "Sustainable Lifestyle," which aimed to reduce plastic waste in the school environment, maintain cleanliness, and provide students with learning to utilize waste mineral water bottles into useful and beneficial items. Plastic waste in the environment is utilized in the form of mineral water bottles used as air vents.
2. The context of the disciplines applied in the STEAM model using a problem-based project approach. Plastic waste is the largest amount that cannot be denied. In phase E, one of the chemistry materials is Green Chemistry, and the important material of green chemistry is waste management and global warming. Before discussing waste management, one of the principles of green chemistry, waste prevention, will be studied. The implementation of waste prevention involves managing waste by utilizing waste mineral water bottles for ventilation. Waste management involves reducing the environmental impact of chemical product pollution. Green chemistry contains materials related to the Pancasila Student Profile Strengthening Project (P5), including self-potential, which is closely related to local wisdom.
3. Planning activities for the Pancasila Student Profile Strengthening Project. The project being implemented is the utilization of waste mineral water bottles for air ventilation in the school. The planned activities for utilizing waste mineral water bottles are as follows.

- a. Choose a theme and determine time allocation

The theme was chosen based on the school's condition, as SMA Negeri 2 Muara Teweh is a green school. A green school must possess characteristics such as cleanliness and greenery. Based on the school's condition, the chosen theme was Sustainable Living, with waste management as the topic. This theme was determined over one semester.

- b. Compiling project modules

Developing a project module with the facilitator team. A project module was developed on utilizing waste Aqua bottles as ventilation with the following flow: developing topics, determining objectives, project duration, and project assessment. The aim of this project is for students to be able to utilize waste mineral water bottles as air vents as a container and means of strengthening P5 by having a character of faith, devotion to God Almighty, mutual cooperation (collaboration), independence, critical thinking (creative, environmental care) in accordance with the dimensions of the Pancasila Student Profile Strengthening Project. The formative assessment instrument was in the form of an assessment rubric and presentation results.

- c. Designing mineral water bottle waste management and project result report

The design of the processing of waste mineral water bottles as air ventilation started by looking at the trellis pattern on the window, calculating the number of trellis vents, and the number of waste mineral water bottles. The project results were reported by each group.

- d. Supporting activities in the classroom included placing flower pots (ornamental plants), in this case, tongue martua plants. There are two types of flower pots: pots attached to the wall made from waste mineral water bottles, filled with water, and planted with small tongue martua plants. Flower pots scattered in the room were

- filled with soil and medium-sized tongue martua plants. Tongue martua plants are green and can absorb CO₂ and produce oxygen. The leaves are water-rich.
4. Implementation of mineral water bottle waste management activities
 - a. Students are heterogeneously grouped (one group consists of five to six students).
 - b. The prepared modules were provided to the students in the form of PDF files.
 - c. Designing a method for utilizing mineral water bottle waste. The duration (project implementation stage) was set to a maximum of 12 weeks.
 - d. Each group provides a number of waste mineral water bottles (then cut to a size that matches the size of the trellis wire)
 5. The relationship between scientific disciplines in the processing of mineral water bottle waste through the Profile Strengthening project:
 - a. The concept of chemistry is green chemistry, and one of its principles of green chemistry is waste management by utilizing waste aqua bottles as air ventilation. Integrated character building involves critical thinking and caring for the environment.
 - b. The concept of physics is based on air circulation. Aqua bottles were used as air vents. The bottles were attached to the trellis wire to allow air circulation through a hole. The part of the bottle in the large hole will take air from outside the room, and the change in pressure in the neck of the bottle or the smaller hole makes the air cooler when it enters the room, where there is a reduction in heat. The measurement concept is applied when cutting waste Aqua bottles. In this process, the characters that are instilled are critical thinking and independence.
 - c. The artistic concept, related to the artistic concept, is the complete ventilation design, from cutting to attaching bottles to the trellis wire using small wires. The instilled character is mutual cooperation.
 - d. Mathematical concept, the existence of a mathematical concept in the use of waste mineral water bottles as air ventilation with precise calculations is the result of critical thinking (one dimension of character).
 6. Assessment process of the Pancasila Student Profile Strengthening Project.

The assessment process is carried out in two stages, namely the assessment process stage each time a meeting is carried out through direct observation. Assessment of presentation results at the end of project implementation. The assessment reference is in accordance with the dimensions of the project topic being implemented. Project dimension assessment rubric.

RESULTS AND DISCUSSION

Results

The results of the study show that strengthening the Pancasila student profile through project-based learning with a STEAM approach using mineral water bottle waste as a project can be seen in the following table:

Table 1. Results of observations on strengthening the dimensions of the Pancasila student profile

Dimension	Indicator	Observation
Have faith, be devoted to God Almighty, and have noble character	Religious morals	Performing worship rituals on one's own awareness
	Personal Morals	Affection for yourself and others
	Morals towards others	Respect & appreciate different opinions
	Morals in nature	A sense of love and concern for preserving the environment Be grateful for the gift of the environment and take care of it
Global Diversity	National morals	Maintain the unity & safety of the Nation
	Knowing & Appreciating Culture	Recognize and appreciate different cultures
Mutual cooperation	Intercultural communication skills in interacting with others	Speak politely & build networks
	Collaboration	Forming groups for collaboration
Independent	Share	Always share in joy and sorrow
	Concern	Proactive in Helping Others
	Confident, resilient and adaptive	Responsible for the learning process and results.
Creative	Doing self-development	Take advantage of opportunities to broaden your knowledge
	Self-regulation	Self-control (don't get emotional easily)
	Various Ideas	Good at modifying
Critical Thinking	Produce works	Simple materials are transformed into useful products
	Original idea	Creating something new and different
	Ask a question	Always ask
	Identifying and processing information	Analyze complex ideas and information
	Make informed decisions based on relevant information	Deciding on the location & position of indoor flower pots

Furthermore, based on the observation results, it shows: (1) monitoring and observation data on 31 students regarding the character education dimensions of Faith, Piety to God Almighty, mutual cooperation, independence, and critical reasoning based on the assessment rubric consists of 3 (three) categories, namely starting to develop 38.70%, already developing 48.38%, and developing according to expectations (proficient) 12.90%; (2) interview data from 31 students stated that the room conditions were not cool enough at 32.26%, cool enough at 41.94%, and cold at 25.81%; (3) interview data from 11 educators stated that the room conditions were not cool enough at 22.27%, cool enough at 45.45%, and cold at 27.27%; The above data is more clearly illustrated in the attached graphs 1 and 2. The results of this study illustrate that awareness of the utilization of used mineral water bottles and the development of environmentally friendly characters still need to be improved.



Discussion

The Indonesian Minister of Education and Culture (Mendikbud) initiated the concept of 'Merdeka Belajar' (Freedom to Learn). This is expected to solve problems in the Indonesian education system. Merdeka Belajar aims to instill bravery, independence, and critical thinking in students, as well as politeness, civility, and good morals. The concept of Merdeka Belajar has several differences from previous educational concepts; for example, educators in the previous concept tended to be passive, while in the Merdeka Belajar concept, educators tend to be active, called the Driving Teacher. The system of this concept overhauls Teaching and Learning Activities that are usually fixed in the classroom, now can experience something new, namely outside the classroom as a learning strategy used by the Driving Teacher. Students/learners are more active in exploring new information that can improve the quality of their learning outcomes. Improving the quality of students is accompanied by educators in accordance with the Merdeka Belajar concept, and teachers are required to take the initiative as providers of material and examples for students. According to the Ministry of Education and Culture, learning will never occur if there is no process of translation of basic competencies and existing curriculum by teachers in competencies at any level. There are 6 (six) aspects/dimensions of the Pancasila Student Profile formulated by the Ministry of Education and Culture: 1) Faithful, Devout to God Almighty and Noble Morals, 2) Creative, 3) Mutual Cooperation, 4) Global Diversity, 5) Critical Thinking, and 6) Independent. According to (Notoatmodjo, 2003) supporting factors for the formation of the Pancasila Student profile consist of internal and external indicators as follows: 1) Inheritance (internal). Human nature is possessed since birth in the world. The nature of the support is reducing juvenile delinquency, worshipping God Almighty obediently, not only prioritizing worldly things, and focusing on ideals. 2) Personality (internal factors). Personality development is experienced when humans have experienced an event or incident that has been passed through. A person's ability to understand religious issues or religious teachings is greatly influenced by their intelligence in understanding the teachings of the religion they adhere to. Personality with supporting factors (e.g., manners) is characterized by being polite, diligent, disciplined, and diligent. 3) Family (External) examples as a motivating factor are paying attention to children about their education and always supporting children's decisions if they are good for them. 4) Teachers/educators (external). Teachers must be able to demonstrate noble morals in everyday life because the role and influence of an educator on students is very strong. 5) Environment (external) supporting factors in the environment, if the environment they live in is positive, it directs children to have traits such as the noble values of Pancasila.

The dimensions of faith, devotion to God Almighty, and noble character are key elements of faith and spirituality. These two keywords are important to implement because they can serve as a guide and a place for humans to rely on due to the presence of a more powerful force than humans. Faith and spirituality help humans and provide the strength to solve problems. Personal morality is a benchmark for what we do in our daily lives. Whether what we have done is right or wrong. This is also in accordance with the opinion of Faqihuddin (2021) that religious content in character education will shape humans in their natural state as servants of God. Character education emphasizes psychological and spiritual education. The application of personal morality will eliminate the seeds of corruption, now and in the future. However, this must be based on students'



ability to understand and comprehend the real form of personal morals. Morals towards humans can be said to be our actions as fellow human beings and attitudes towards fellow human beings. After applying morals to fellow human beings, it is also important to apply them to nature. Nature is a part of our lives in terms of clothing, food and shelter. Therefore, we must be able to live side by side without harming each other. National Morals refers to our attitudes and actions towards good state governance. So the first characteristic of the Pancasila Student Profile is the most important thing to apply because no matter how great a human being is and how successful a human being is, if they do not apply this point then it is useless. A generation that does not apply this point will certainly damage the state order in terms of character, morals, society, and nature. According to Abdillah and Syafe'i (2020) and Anam (2019), the religious aspect of this learning process will further strengthen the formation of student character because character education is not only physical but also psychological and heart.

The dimensions of faith, devotion to God Almighty, and noble character have key elements: faith and spirituality. These two keywords are important to implement because they can serve as a guide and a place for humans to rely on due to the presence of a more powerful force. The existence of faith and spirituality will help humans and provide strength to solve all problems. Personal morality is a benchmark for what we do in our daily lives. Whether what we have done is right or wrong. This is also in accordance with the opinion (Faqihuddin, 2021) through the religious content in character education will shape humans who are in their natural state as servants of God. Character education will emphasize psychological and spiritual education. The application of personal morality will eliminate the seeds of corruption now and in the future. However, this must be based on the ability of students to understand and comprehend the real form of personal morals. Morals towards humans can be said to be our actions as fellow human beings and our attitudes towards fellow human beings, after applying morals to fellow human beings it is also important to apply morals to nature. Nature is a part of our lives in terms of clothing, food and shelter. So we must be able to live side by side without having to harm each other, National Morals mean our attitudes and actions towards good state governance. So the first characteristic of the Pancasila Student Profile is the most important thing to apply because no matter how great a human being is and how successful a human being is, if they do not apply this point then it is useless. A generation that does not apply this point will certainly damage the state order in terms of character, morals, society and nature. According to (Komalasari & Yakubu, 2023; Muzakki & Nurdin, 2022; Nur et al., 2023) states that the religious aspect in this learning process will further strengthen the formation of student character because character education is not only physical but also psychological and heart.

The strengthening of the Pancasila Student Profile in the global diversity dimension is understood by students through two indicators: the ability to recognize and appreciate culture and intercultural communication skills in interacting with others. These two indicators can evoke feelings of responsibility for the experience of diversity. From the indicator (recognizing and appreciating culture) joint activities, even though they come from different backgrounds. For example, in the silaturahmi activity with the principal, teachers, and students, through the farewell of grade 12 (twelve) students. The global diversity dimension hopes that Indonesian students maintain noble culture, locality, and identity, and remain open-minded when interacting with other cultures. This can foster and arouse mutual respect, and there is a possibility of the occurrence or formation of a



new culture that is positive and does not conflict with the nation's noble culture. Another indicator that is still related to the global diversity dimension is the ability of intercultural communication in interacting with others by paying attention, understanding, accepting the existence, and appreciating the uniqueness of each culture as a wealth of perspectives so that mutual understanding and empathy are built towards others. Social gatherings among school elements, regardless of religious, ethnic, or cultural backgrounds, foster a sense of mutual respect and appreciation. This is because student-centered education focuses on the individual, their experiences, perspectives, backgrounds, talents, interests, capacities, and learning needs of the individual of the individual. In this context, new educational strategies must encourage interaction between teachers and students. Social gatherings strengthen warm interactions between teachers and students (Sibagariang et al., 2021). These activities will build a school culture, namely, a forum for consistent social gatherings. Culture is an institutional product rooted in the mental attitude, commitment, dedication, and loyalty of each institution's personnel. School culture plays a crucial role in improving school quality and education quality. School culture is closely related to the behavior and habits of school members in adapting to the environment and how they view and solve problems within the school environment. It can provide a foundation and direction for an effective and efficient educational process in the future. A positive school culture will provide its own color and be in line with the implementation of school-based management (Cahyani et al., 2020).

Mutual cooperation has a popular characteristic, similar to the use of unity, openness, togetherness, and/or democracy itself (Derung, 2019; Harefa & Fatolosa Hulu, 2020; Wati & Al Hudawi, 2023). The word gotong-royong is synonymous with Indonesian society. Therefore, gotong royong is very suitable and has become a part of daily life for Indonesian people. Gotong royong must foster an attitude of caring for one another. The attitude of sharing is also important for the success of the formation of the character of gotong royong. The value of gotong royong teaches students to empathize with others. Empathy aims to understand and comprehend the emotions of others. Gotong royong is a work system adopted from crawling animals (for example, ants) that should be maintained and continued in the current era (Wati & Al Hudawi, 2023). The application of the value of gotong royong becomes a habit for students in their daily lives, even later in their residential environment and even in their future workplace.

Mutual cooperation, as a Pancasila student profile, can be formed by guiding students to become social beings with humility to help one another. The sub-elements contained in the element of mutual cooperation are character values that emphasize helping and assisting one another in goodness (Hanafiah et al., 2023; Pramesti & Hidayat, 2023; Utomo, 2018). They have a sensitive feeling toward their surroundings. The character of mutual cooperation is important to instill in students so that they are trained, accustomed to, and able to work with others, build relationships in teams, and work together to achieve certain goals. Willingness to cooperate shows a relationship of mutual give and take to achieve a common goal (Sitompul et al., 2022).

Cooperative and collaborative behaviors can help students build friendships and develop positive emotional responses. The attitudes they adopt at school can carry over into their interactions at home and within the family. Therefore, it is crucial for educational institutions to play a strategic role in instilling the spirit of mutual cooperation, including through campus-based teaching activities. The value of mutual



cooperation also aligns with the goal of civics education, which is to empower students to become good, responsible citizens (Jamaludin et al., 2022).

The fourth profile of Pancasila students is the independent dimension of the student. Students with initiative and knowledge of the protocol practice as flag ceremony officers on Mondays, alternating with other classes. The value of independence can be implemented in students as flag ceremony officers. Campus students teach and train students to perform their duties well and responsibly. A free atmosphere, free from pressure or coercion, is a requirement for independent learning. In this free atmosphere, motivation, curiosity, courage, activeness, self-confidence, and a lack of fear of making mistakes will emerge. The next activity is to find, choose, discover, analyze, and solve problems independently (Bastari, 2021). Independence is also a character developed by the Ministry of National Education, which consists of being religious, honest, tolerant, disciplined, hardworking, creative, independent, democratic, curious, having a national spirit, love of the homeland, appreciating achievement, friendly/communicative, peace-loving, loving reading, caring for the environment, caring for the social, and responsible (Rotari, 2017). Students' independence is evident in their efforts to practice flag ceremonies successfully. This is in line with the meaning of independent Pancasila students, namely, students who are responsible for the process and outcomes of their learning. Students learn how to be ceremony officers so that they can carry out their duties on flag ceremony day. Sub-elements of the value of independence include building awareness of themselves and the situations they encounter. They reflect on their condition and the situations they face, starting with understanding their emotions, strengths, and limitations, so they can recognize and realize their self-development needs in accordance with the changes and developments that occur. Second, self-regulation, namely the ability to regulate one's thoughts, feelings, and behavior to achieve learning goals. The profile of Pancasila students aligns with Indonesia's integrity as a nation, that of the existence of a common goal (Sitompul et al., 2022).

The fourth profile of Pancasila students is the independent dimension. Students, with initiative and knowledge of protocol, practice as flag ceremony officers on Mondays alternately with other classes. The value of independence can be implemented in students as flag ceremony officers. Campus students teach and train students to carry out their duties well and responsibly. A free atmosphere, free from pressure or coercion is a requirement for independent learning. In this free atmosphere, motivation, curiosity, courage, activeness, self-confidence, and unafraid of making mistakes will emerge. The next activity is to find out, choose, discover, analyze, and solve problems on their own (Bastari, 2021). Independence is also a character developed by the Ministry of National Education, which consists of being religious, honest, tolerant, disciplined, hardworking, creative, independent, democratic, curious, having a national spirit, love of the homeland, appreciating achievement, friendly/communicative, peace-loving, loving reading, caring for the environment, caring for the social, and responsible (Rotari, 2017). Students' independence is evident in their efforts to practice successfully performing flag ceremonies. This is in line with the meaning of independent Pancasila students, namely students who are responsible for the process and outcomes of their learning. Students progress to understand how to be ceremony officers, so they can carry out their duties on flag ceremony day. Sub-elements of the value of independence include building awareness of themselves and the situations they face. They reflect on their condition and the situations they face, starting with understanding their emotions and their strengths

and limitations, so they can recognize and realize their self-development needs in accordance with changes and developments that occur. Second, self-regulation, namely the ability to regulate one's thoughts, feelings, and behavior to achieve their learning goals. The Pancasila Student Profile aligns with Indonesia's integrity as a nation, stating that the existence of a nation is determined by its character. The Pancasila Student Profile serves as an ethical value for the youth in Indonesia. The Pancasila Student Profile is a social movement that aligns with the development of the national character by referring to Pancasila as the foundation of the state (Hidayah & Suyitno, 2021).

Pancasila students are creative learners capable of modifying and producing original, meaningful, useful, and impactful work. The key elements of creativity include generating original ideas and producing original works and actions (Ismail et al., 2021). Generating original ideas means generating ideas that range from the simplest, such as expressing thoughts and/or feelings, to complex ideas, and then applying new ideas according to their context to address problems and generate various alternative solutions to those problems. Producing original works and actions means producing work driven by one's interests and preferences for a subject, the emotions they feel, and considering the impact on the surrounding environment.

The Pancasila Student Profile expects students to possess critical thinking skills, as these are fundamental skills that function effectively in various aspects of life. Critical thinking skills are crucial and must be instilled from an early age at home, school, and in the community (Lestari & Annizar, 2020). Indonesian students who reason critically think fairly and can make informed decisions by considering many factors based on data and facts. Indonesian students who reason critically can objectively process both qualitative and quantitative information, establish connections between various pieces of information, analyze information, evaluate it, and draw conclusions. Therefore, the key expectation of Pancasila and Citizenship Education in education, both at school and in the community, is the democratic attitude of citizens who possess critical-thinking skills (Slam, 2021).

CONCLUSION

Fundamental Finding: The fundamental findings of this study are as follows: Waste mineral water bottles can be used as a container and means of Strengthening the Profile of Pancasila Students through project-based STEAM learning Strengthening the Profile of Pancasila Students with the theme of sustainable living and the topic of waste management for the dimensions of Faith, Devotion to God Almighty, mutual cooperation, independence, and critical reasoning are obtained and developed according to expectations (proficient). **Implications:** Implications for curriculum policy: Integration of environmental projects into thematic/interdisciplinary learning. Pedagogical implications: Project-based learning (PBL) approaches and environmental literacy. Social implications: Environmental awareness and sustainability values for students and school communities. **Limitations:** Limited sample coverage (location, number of participants), short project duration, dependence on waste availability, and teacher support. **Future research** should explore similar learning models in different contexts (rural, urban, and at various levels) and conduct longitudinal studies of the project's impact on long-term character development.

REFERENCES

- Abdillah, A., & Syafe'i, I. (2020). Implementasi pendidikan karakter religius di SMP Hikmah Teladan Bandung. *Jurnal Pendidikan Agama Islam*, 17(1), 17–30.
- Anam, W. K. (2019). Pembentukan Karakter Religius Siswa di Madrasah. *Dimar: Jurnal Pendidikan Islam*, 1(1), 148–163.
- Austin, Z., & Sutton, J. (2014). Qualitative research: Getting started. *The Canadian Journal of Hospital Pharmacy*, 67(6), 436.
- Bastari, K. (2021). Belajar mandiri dan merdeka belajar bagi peserta didik, antara tuntutan dan tantangan. *ACADEMIA: Jurnal Inovasi Riset Akademik*, 1(1), 68–77.
- Cahyani, R. R., Wulandari, P. A., & Jannah, I. M. (2020). Implementasi budaya sekolah dalam pengembangan karakter peserta didik di MTs mambaus sholihin. *Jurnal Administrasi Pendidikan Islam*, 2(2), 124–140.
- Derung, T. N. (2019). Gotong royong dan Indonesia. *Sapa: Jurnal Kateketik Dan Pastoral*, 4(1), 5–13.
- Faqihuddin, A. (2021). Building Character in Islamic Education Perspective. *Al-Risalah: Jurnal Studi Agama Dan Pemikiran Islam*, 12(2), 372–382.
- Hanafiah, D., Martati, B., & Mirnawati, L. B. (2023). Nilai Karakter Gotong Royong Dalam Pendidikan Pancasila Kelas IV di Sekolah Implementasi Dasar. *Al-Madrasah: Jurnal Ilmiah Pendidikan Madrasah Ibtidaiyah*, 7(2), 539–551.
- Harefa, D., & Fatolosa Hulu, M. M. (2020). *Demokrasi Pancasila di era kemajemukan*. Pm Publisher.
- Hidayah, Y., & Suyitno, S. (2021). Kajian Media Pembelajaran Berbasis Interaktif Untuk Memperkuat Profil Pelajar Pancasila Di Sekolah Dasar. *Jurnal Pendidikan Kewarganegaraan*, 11(2), 22–30.
- Ismail, S., Suhana, S., & Zakiah, Q. Y. (2021). Analisis kebijakan penguatan pendidikan karakter dalam mewujudkan pelajar pancasila di sekolah. *Jurnal Manajemen Pendidikan Dan Ilmu Sosial*, 2(1), 76–84.
- Jamaludin, J., Amus, S., & Hasdin, H. (2022). Penerapan nilai profil pelajar pancasila melalui kegiatan kampus mengajar Di Sekolah Dasar. *Jurnal Cakrawala Pendas*, 8(3), 698–709.
- Komalasari, M., & Yakubu, A. B. (2023). Implementation of student character formation through Islamic religious education. *At-Tadzkir: Islamic Education Journal*, 2(1), 52–64.
- Lestari, A. C., & Annizar, A. M. (2020). Proses berpikir kritis siswa dalam menyelesaikan masalah PISA ditinjau dari kemampuan berpikir komputasi. *Jurnal Kiprah*, 8(1), 46–55.
- Muzakki, Z., & Nurdin, N. (2022). Formation of student character in Islamic religious education. *EDUKASIA Jurnal Pendidikan Dan Pembelajaran*, 3(3), 937–948.
- Notoatmodjo, S. (2003). *Pengembangan Sumber Daya Manusia*, Jakarta: PT. Rineka Cipta. Open University Press & Chicago, IL: Dorsey Press.
- Nur, R. J., Wildan, D., & Komariah, S. (2023). Kekuatan budaya lokal: Menjelajahi 3s (sipakatau, sipakalebbi, dan sipakainge') sebagai simbol kearifan lokal. *Mimesis*, 4(2), 166–179.
- Pramesti, S. R., & Hidayat, M. T. (2023). Analisis Nilai Karakter Gotong Royong pada Film Animasi A Bug's Life. *Jurnal Pemikiran Dan Pengembangan Sekolah Dasar (JP2SD)*, 11(1), 44–58.



-
- Rotari, S. (2017). Peran Program Adiwiyata Mandiri dalam Meningkatkan Kepedulian Lingkungan Peserta Didik. *Citizenship Jurnal Pancasila Dan Kewarganegaraan*, 5(1), 42-54.
- Sibagariang, D., Sihotang, H., & Murniarti, E. (2021). Peran guru penggerak dalam pendidikan merdeka belajar di indonesia. *Jurnal Dinamika Pendidikan*, 14(2), 88-99.
- Sitompul, E., Dhieni, N., & Hapidin, H. (2022). Karakter gotong royong dalam paket pembelajaran sema. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, 6(4), 3473-3487.
- Slam, Z. (2021). Pembelajaran Make A Macth Online untuk Meningkatkan Kemampuan Bernalar Kritis Mahasiswa dalam Pendidikan Pancasila. *Elementar: Jurnal Pendidikan Dasar*, 1(1), 124-140.
- Utomo, E. P. (2018). Internalisasi nilai karakter gotong royong dalam pembelajaran IPS untuk membangun modal sosial peserta didik. *Jurnal Teori Dan Praksis Pembelajaran IPS*, 3(2), 95-102.
- Wati, S. R., & Al Hudawi, U. (2023). Profil pelajar pancasila dalam pengembangan kreativitas pembelajaran ppkn. *Jurnal Serunai Pancasila Dan Kewarganegaraan*, 12(1), 14-23.

***Sakman (Corresponding Author)**

Universitas Palangka Raya,
Kampus Unpar Tunjung Nyaho, Jalan Yos Sudarso, Kelurahan Panarung, Kecamatan Pahandut,
Kota Palangka Raya, Provinsi Kalimantan Tengah, Indonesia
Email: Sakman@gmail.com

Abdul Hadjranul Fatah

Universitas Palangka Raya,
Kampus Unpar Tunjung Nyaho, Jalan Yos Sudarso, Kelurahan Panarung, Kecamatan Pahandut,
Kota Palangka Raya, Provinsi Kalimantan Tengah, Indonesia
Email: Abdul.fatah@pps.upr.ac.id

Siti Hayati

SMA Negeri 2 Muara Teweh,
JL. Negara Muara Teweh - Banjarmasin Km. 7 No. 43, Kec. Teweh Baru, Kab. Barito Utara, Prov.
Kalimantan Tengah, Indonesia
Email: siti.hayati@gmail.com
