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Article

Implementation of Design Thinking in The P5PPRA Project: Strengthening Critical Thinking Abilities of Madrasah Students

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Abstract: This study investigates the integration of the Design Thinking approach within the Strengthening the Profile of Pancasila and Rahmatan lil Alamin Students Project (P5P2RA) under the Sustainable Lifestyle theme at Madrasah Aliyah Negeri (MAN) Sukoharjo. Employing a qualitative descriptive approach and case study design, data were collected through direct observation, in-depth interviews, and documentation analysis to explore how students' critical thinking skills develop through project-based learning. Findings indicate that the Design Thinking process, empathize, define, ideate, prototype, and test, promotes students' awareness and sensitivity toward environmental issues while enhancing their analytical and problem-solving capacities. Students demonstrated growth in critical thinking dispositions such as interpretation, evaluation, inference, and reflective judgment, as seen through their engagement with real-world problems and the creation of sustainable products, including eco bricks, eco-enzymes, and eco print designs. The approach encouraged students to collaboratively formulate problem definitions, generate innovative ideas, and produce contextual solutions, leading to deeper ownership of learning and stronger ecological commitment. Their reflective narratives and product outcomes reveal a shift from passive understanding to active participation, especially in addressing sustainability within their community. This study suggests that integrating Design Thinking into Islamic character education fosters not only academic competencies but also spiritual, social, and civic values. The model offers a relevant and replicable pedagogical framework for advancing student agency, sustainability awareness, and critical thinking in faith-based school contexts.

Keywords: Design Thinking; P5P2RA; critical thinking; sustainable lifestyle; madrasah education; project-based learning; student innovation

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1. Introduction

P5PPRA and the Challenges of 21st Century Education

The challenges of the 21st century require students to have critical thinking skills as a provision for facing the complexities of social life. Lukum in Putriani & Hudaidah [1] states that there are three major competencies in the 21st century, namely the competencies of thinking, acting, and living in the world. Thinking competencies include

critical thinking, creative thinking, and problem solving. Acting competencies include communication, collaboration, digital literacy, and technological literacy. Meanwhile, living competencies include initiative, self-direction, global understanding, and social responsibility. These competencies are the basis for facing increasingly dynamic social, economic, and environmental changes. Amidst technological developments and globalization, education is not only focused on the transfer of knowledge, but also on the formation of character and life skills.

In the context of Indonesian education, the Independent Curriculum, through the Pancasila Student Profile Strengthening Project (P5), presents a systematic effort to actualize character values aligned with the needs of the Indonesian nation. Meanwhile, educational institutions under the auspices of the Ministry of Religious Affairs have added values of religious moderation, which share a similar spirit of character development, but with different terminology: Rahmatan lil Alamin Student Profile (PPRA)[2]. These two frameworks place character building and the ability to respond to 21st-century challenges as the main focus in P5PPRA co-curricular activities.

The Ministry of Education and Culture explained that the Pancasila Student Profile Strengthening Project (P5) with a choice of various themes allows students to explore more about existing social life. The Pancasila Student Profile Strengthening (P5) comes with 7 different theme choices, namely (1) Sustainable lifestyle, (2) Local wisdom, (3) Bhinneka Tunggal Ika, (4) Build your body and soul, (5) Voice of Democracy, (6) Engineering and Technology and (7) Entrepreneurship [3]. One of the themes in P5 that is very relevant to current global challenges is Lifestyle Sustainable. This theme not only guides students to understand environmental issues but also encourages reflection and responsible changes in consumption, production, and daily lifestyle patterns. This issue aligns with the Sustainable Development Goals (SDGs), particularly Goal 12 (*Responsible Consumption and Production*), which is a global agenda to reduce the negative impacts of natural resource exploitation.

Sustainable Lifestyle Project addresses SDGs Issues

The issue of sustainability has become a major global agenda., included in the Sustainable Development Goals (SDGs), especially goal number 12:*Responsible Consumption and Production*. In other words, building awareness of a sustainable lifestyle from an early age is not only a local need, but also part of a global movement to save the future of the earth. Strengthening environmental awareness through education can increase students' awareness in determining actions that can save the future of the environment. This is in line with research conducted by Rizkala, et al., [4] which explains that students who receive education related to environmental sustainability have a higher concern for others and the environment. This concern is demonstrated by using environmentally friendly goods.

Environmental sustainability in Indonesia faces serious challenges. Based on BPS data (2023), household waste production increases by 5.9% per year, with 60% not yet managed optimally. In addition, Indonesia is the second largest contributor of plastic waste in the world, with 1.29 million tons of plastic polluting the oceans every year (World Bank, 2022) [5]. Problems related to industrial and household waste, instant lifestyles, poor waste management and excessive emission production are evidence that the country needs to foster environmental sustainability awareness among its people. SDGs are a shared responsibility that is not only borne by the government, so all parties need to actively participate in facilitation, coordination, advocacy, socialization, and dissemination efforts to achieve synergy in achieving SDG targets [6]. A clear division of roles among all stakeholders is very important in the implementation of SDGs.

In this context, education is a key strategy for developing a generation capable of critical thinking and proactive action on environmental issues. A major challenge in today's learning is how to make learning material concrete and applicable to everyday life. P5PPRA's curricular activities are one alternative project-based learning approach

that is expected to contextualize knowledge to address everyday challenges. To achieve this goal, an approach is needed to identify the appropriate steps. One strategic and effective approach that can be used in approach *Design Thinking*.

Approach *Design Thinking* It focuses on solving problems in a creative and empathetic way through five main stages: *empathize, define, ideate, prototype*, And *test*. Razzouk, R., & Shute, V explained that by using the approach, design *thinking* can train someone to have "design thinking." Among these are the ability to visualize ideas, pay attention to human and environmental needs, have a systemic view, and the ability to work in a team [6]. These characteristics are considered important foundations that support creative and innovative processes in solving problems.

In education, *Design Thinking helps* students understand problems in depth, design meaningful solutions, and reflect on their impact. *Design thinking is* not just an innovative method for generating creative solutions, but rather an approach that aims to change perspectives and ways of thinking that help students and educators to collaboratively identify problems, explore various possibilities, and test and develop prototypes that can be adapted to real situations [7]. Thus, design thinking in education has the potential to prepare students to face the challenges of the 21st century by increasing creativity, collaboration, and problem-solving skills.

By developing design thinking skills, students not only learn to solve problems creatively, but also adapt quickly to change, work collaboratively in teams, and apply their knowledge in real-world contexts. This, in line with the SDGs and the environmental challenges discussed previously, demonstrates that implementing design thinking in education can enhance critical and innovative thinking skills, which are crucial in today's competitive global era.

This research is important to do because even though *Design Thinking* Although it is starting to be widely used in the world of global education, its implementation in the context of P5PPRA with the theme of sustainable lifestyles has not been widely researched, especially regarding how this approach strengthens students' critical thinking skills This study aims to describe the implementation of the approach *Design Thinking in* the P5PPRA Project with the theme of sustainable lifestyle and examines how this approach strengthens the critical thinking skills of Madrasah students.

Although DT has been widely used in global education, its implementation in the context of the P5PPRA (Public Education Program) with a sustainable lifestyle theme remains minimal, especially in Indonesia. A recent study by Pratiwi et al. (2023) showed that the implementation of DT in public schools enhances student creativity, but has not explored the strengthening of critical thinking or the context of religious-based education (Madrasah). This study fills this gap by answering the questions "How is the implementation of the DT approach in the P5PPRA Project with a sustainable lifestyle theme?" and "What is its impact on the critical thinking skills of Madrasah students?" The results of this study are expected to provide theoretical and practical contributions to the development of sustainability-based character education in Indonesia.

2. Materials and Methods

This study uses a descriptive qualitative approach to gain an in-depth understanding of the implementation of the Pancasila and Rahmatan lil Alamin Student Profile Strengthening Project (P5PPRA) program at the State Islamic Senior High School (MAN) Sukoharjo. The qualitative approach was chosen because it allows researchers to fully and contextually explore the experiences and perceptions of participants in undergoing the project-based learning process. With this approach, the social, cultural, and value dimensions underlying the implementation of P5PPRA can be studied comprehensively and in depth [8]. The method used is a case study, because this research is focused on a specific context, namely MAN Sukoharjo, which is the pilot project for the implementation of P5PPRA. The case study allows for detailed disclosure of the factors that support and hinder the success of the program in that environment. [9].

The research location was chosen purposely, namely at MAN Sukoharjo, because this madrasah is the only state madrasah aliyah in Sukoharjo Regency and is a pilot school for P5PPRA. The research subjects consisted of teachers who acted as project facilitators and grade XI students who were actively involved in project implementation. The participant selection criteria included: (1) active involvement in at least two cycles of the P5PPRA project; (2) availability to be interviewed and willing to provide data; and (3) representing a diversity of roles and groups, both male and female, to provide diverse perspectives.

Data collection techniques included direct observation, in-depth interviews, and project documentation. Observations were used to capture interactions, learning activities, and the dynamics of teacher facilitation and student participation directly in and outside the classroom. In-depth semi-structured interviews were conducted with teacher facilitators and students to explore their experiences, perceptions, and reflections on project implementation. In addition, project documentation was collected as written and visual evidence to support the data obtained from observations and interviews [10].

Data analysis was conducted using the thematic analysis method. This process consists of three main stages: (1) data reduction, namely filtering and grouping information into main themes based on the research focus; (2) data presentation, in the form of systematic narratives and tables of findings to facilitate reading of data patterns; and (3) drawing conclusions and verification, by integrating the findings into the theoretical framework and answering the research questions reflectively. The coding process was carried out manually following the interactive analysis model of Miles and Huberman, to remain flexible yet systematic. The entire research process was carried out with consideration of ethical aspects to ensure the validity of the data obtained and support the integrity of the research so that it can make a meaningful contribution to the development of educational science, especially in the context of the implementation of the P5PPRA program in the MAN Sukoharjo environment.

3. Results & Discussion

Introduction and Context of Design Thinking in Education

Design thinking is a learning approach that combines skills, processes, and thought patterns [8]. Design thinking is an alternative approach to learning as a way to encourage students to think critically and collaborate effectively, as well as develop innovative solutions to complex problems. The design thinking approach can help teachers and students solve problems through creative and collaborative processes.

Design Thinking is a user-centered, empathy-based, and iterative problem-solving approach. It originated in the design discipline but has now been widely adopted across various fields, including business, technology, and education. Design Thinking emphasizes a deep understanding of user needs, the exploration of creative ideas, and iterative experimentation to find the best solutions [9]. In an educational context, this approach provides a powerful framework for creating more relevant, participatory, and contextual learning experiences for students.

The design thinking approach uses several stages, including:

1. **Empathize** namely efforts to understand user needs and perspectives.
2. **Define**, formulate problems based on empathy results.
3. **Ideate**, namely generating as many ideas as possible as solutions.
4. **Prototype**, namely creating a simplified version of the solution to test.
5. Final **test**, namely trying out prototypes and getting feedback [10].

Although ideally the stages are carried out sequentially, this does not rule out the possibility of dynamics in the learning process or problem solving which make these stages non-linear.

The implementation of Design Thinking in education emphasizes students' awareness of the problems around them. Teachers can encourage this awareness by contextualizing learning theories with the conditions of various aspects of life in the students' environment. In line with 21st-century learning objectives, this design thinking approach

can develop students' creativity, collaboration, communication, and critical thinking [6]. This process positions students as active problem solvers who play a direct role in designing solutions to real-world challenges. In addition, this approach encourages teachers to innovate in learning methods. Teachers are required to present real problems and provide meaningful experiences in the learning process. They are not only conveyers of material, but also facilitators of creative and collaborative thinking processes.

According to Scheer, Noweski, and Meinel [11], the integration of Design Thinking in education produces "a more student-centered learning environment that fosters deeper engagement and authentic problem solving." Design thinking collaborates with a systematic process that centers on humans as users and beneficiaries through a planned process so as to produce changes in behavior and conditions according to expectations. Design Thinking is also aligned with project-based learning approaches and contextual learning, which are increasingly being applied in modern curricula. This makes it relevant as a pedagogical approach that encourages innovation in the education system.

Implementation of the Design Thinking Approach in the Pancasila Student Profile Strengthening Project Rahmatan Lil Alamin Profile (P5PPRA) with the Theme of Sustainable Lifestyle at MAN Sukoharjo

In an effort to create a generation that excels intellectually and possesses character and environmental awareness, MAN Sukoharjo is implementing the Pancasila Student Profile Strengthening Project, Rahmatan Lil Alamin (P5PPRA) with the theme of Sustainable Lifestyle. This project serves as a strategic means to foster universal values aligned with Islamic teachings, particularly the spirit of rahmatan lil alamin.

In general, P5PPRA aims to form students who are faithful, pious to God Almighty, have noble morals, are globally diverse, work together, are independent, have critical thinking, and are creative, with a contextual and collaborative approach. Moreover, this project is also directed at fostering ecological and spiritual awareness in everyday life, as a concrete manifestation of efforts to realize an ideal society by raising the sub-theme entitled "Caring for the Ecosystem to Realize Baldatun Toyyibatun Warobbun Ghofur" which is described in the Qur'an QS. Saba' (verse 15) as a good land, full of blessings, and shaded by Allah's forgiveness.

In this context, P5PPRA serves not only as a learning instrument but also as a transformative space to instill Islamic values that are comprehensive, balanced, and friendly to all creatures. The theme selection refers to the 7 P5 themes established by the Ministry of Education and Culture, which are highly relevant in response to the global environmental crisis that requires solutions from a caring and visionary young generation. Furthermore, this project utilizes the Design Thinking approach, a creative and solution-oriented method centered on humans (*human-centered*), in the learning process and solving real-world problems in the students' environment. With this approach, students not only learn to understand problems but are also trained to design concrete solutions rooted in Islamic and national values.

This is in line with the purpose of selecting the P5 theme as stated in the P5PPRA guidelines and the Pancasila Student Profile Strengthening Guidelines, that this project is an effort to instill character values through experience-based learning and real action, in order to strengthen students who are pious, inclusive, and ready to face future challenges [12]. According to Siti Rochmah in her book *Islamic Education and the Environment*, an educational approach that integrates religious values and concern for the environment will produce a generation that is not only religious, but also has ecological insight [13].

In order to achieve the objectives of the Sustainable Lifestyle theme and sub-themes that have been developed by the P5PPRA team at MAN Sukoharjo, the Implementation of P5PPRA at MAN Sukoharjo uses a Design Thinking approach whose syntax is adjusted to the predetermined implementation flow and schedule. The following will present a picture of the activity implementation flow and a description of the activities to be carried out.

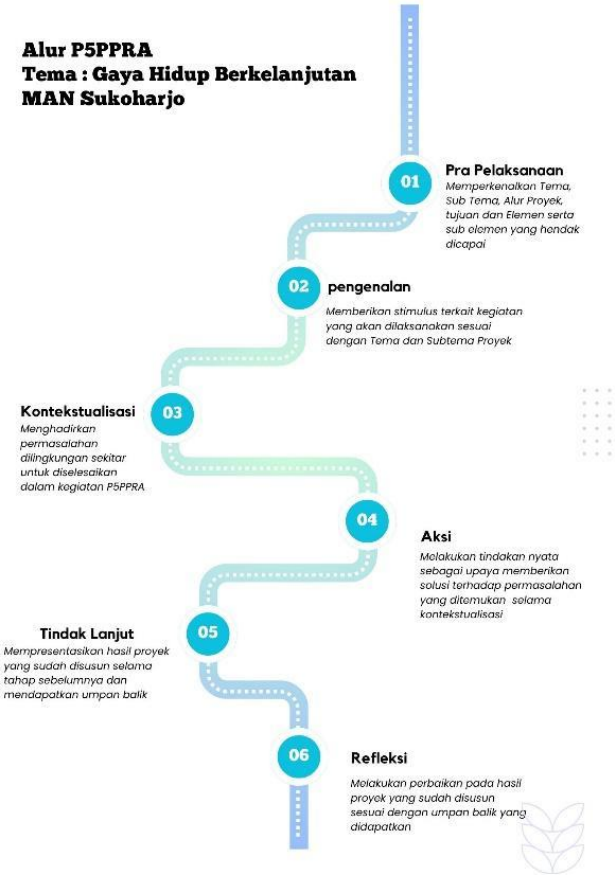

Figure 1. P5PPRA Flow for Sustainable Lifestyle Theme at MAN Sukoharjo

The flow of these activities can be integrated with the design thinking stages that support the achievement of P5 and the learning objectives themselves. The integration of the P5PPRA activity flow in MAN Sukoharjo with the Design Thinking Approach can be described in the following table;

Table 1. Integration of the Sustainable Lifestyle Project (P5PPRA) with the Design Thinking Model.

Stages	Description	The main purpose	Activity Flow	Activities in P5PPRA
Empathize	Deeply understand user needs, emotions and experiences.	Building empathy for real problems experienced by users.	Introduction	Students received guest lectures from several environmental conservationists who developed ecoprint, ecobrick and ecoenzyme products.
Define	Formulate the problem clearly based on the results of empathy.	Formulate problems in a focused and sharp manner to find solutions.	Contextualization	Students observe the surrounding environment and find environmental problems.
Ideate	Generating various creative ideas as potential solutions.	Explore ideas without limits and without fear of being wrong.	Action	Developing environmentally friendly products as a solution to solving problems encountered, such as making eco print products, natural dyes, turning plastic waste into eco brick products and turning food waste into eco enzyme products.

Stages	Description	The main purpose	Activity Flow	Activities in P5PPRA
Prototype	Create an initial version (model/simulation) of the designed solution.	Turning ideas into reality and testable.	Follow-up	Students create products and videos of the manufacturing process.
Test	Try out the prototype on users and gather feedback.	Test the effectiveness of the solution and improve it.	Reflection	Holding exhibitions and product displays

The application of the design thinking approach in the Pancasila and Rahmatan lil Alamin Student Profile Strengthening Project (P5PRA) at MAN Sukoharjo runs through five main stages, as explained by Brown [9], namely empathize, define, ideate, prototype, and test, which are integrated simultaneously in the P5PRA stages.

In the Pre-Implementation and Introduction stages, students empathize by observing and understanding environmental issues around them, such as high levels of plastic waste, minimal utilization of organic waste, and a lack of awareness of environmentally friendly products. Previously, students also received a guest lecture from an environmental activist. This activity is in line with the principles of human-centered design which emphasizes the importance of understanding real human needs [14]. This empathizing process was carried out with environmental activists and eco print and eco-enzyme producers in a guest lecture activity attended by all students. In this activity, students discussed the ecological conditions in the madrasah environment, including how to make environmentally friendly products that can have economic value. Building empathy was also done by sharing information and knowledge which then gave rise to a sense of caring in students.

Next, in the Contextualization stage, students enter the define stage, where they formulate the main problem to be solved, such as "How to reduce plastic waste in schools?" or "How to utilize organic waste into useful products?" This problem definition becomes an important foundation for targeted innovation [15]. Students in groups will formulate questions related to the problems they find in the school environment. Previously, students were asked to collaboratively identify problems in the surrounding environment, such as the large amount of plastic waste that is not recycled, the accumulation of food waste in the canteen to air and water pollution that is felt as residents who live near the largest textile and garment factory in Southeast Asia. Then, after formulating the main problem collaboratively, they will formulate plans as actions to solve their problems.

The Action stage reflects the ideate process, where students generate various creative solution ideas. The brainstorming process is carried out to develop three main products, namely Eco print (using natural dyes from leaves for fabric), Eco Enzyme (processing organic waste into environmentally friendly cleaning fluids), and Eco brick (packaging plastic waste into alternative building materials). This activity develops students' divergent thinking skills, as emphasized in the theory of educational creativity [16]. Students in groups accompanied by facilitators begin to determine ideas and concepts for determining products, collecting materials until the manufacturing process. During the process, each group also compiles documentation in the form of videos and process notes as a means of demonstrating their work at the final stage.

In the Follow-Up stage, participants create product prototypes and conduct simple trials, such as testing the color strength of Eco print fabric, the effectiveness of Eco Enzyme as a cleaner, and the sturdiness of Eco bricks as a construction material. Finally, through

the Reflection stage, participants conduct tests by gathering feedback from teachers and peers, then improve their products based on that input. Integration of approaches *Design Thinking* With the theme of a sustainable lifestyle project, the implementation of P5PPRA is a strategic instrument in creating students who are holistically creative, have character, and bring benefits to the environment and the surrounding community.

The products developed are the result of integrating local wisdom values and simple technologies that have an impact on the environment. Ecoprint serves as an artistic and educational medium to promote the potential of local flora as a source of natural dyes. Eco enzymes are developed from fermented fruit and vegetable waste and can be used as natural cleaners. Meanwhile, eco bricks offer a concrete solution for plastic waste processing.

Each product is not only a student creation, but also part of an educational strategy to build environmental awareness and social responsibility. For example, through eco bricks, students learn about plastic density, compaction techniques, and material durability; this fosters both practical skills and ecological awareness. These products are then socialized to the community through mini-exhibitions and environmental campaigns, reinforcing the "real action" aspect of P5PRA.

Evaluation of the Impact on Strengthening Critical Thinking Skills.

An evaluation of the impact of the design thinking-based P5PRA program at MAN Sukoharjo shows that the program contributes to strengthening students' critical thinking skills. Through active involvement in the process of problem identification, solution exploration, and decision-making in the creation of sustainable products, students are encouraged to apply higher-order thinking skills (*higher-order thinking skills*). This activity is consistent with the 21st century learning framework which places critical thinking as one of the core competencies [17]. Critical thinking skills do not emerge instantly, but rather develop through authentic experiences that challenge students to analyze information, question assumptions, and evaluate alternative solutions.

In the context of this activity, students not only identify environmental issues, but also have to examine the root causes, such as plastic consumption patterns, minimal ecological literacy, and irresponsible waste disposal behavior. The critical thinking indicators in this study refer to the framework developed by Facione (2011) [18] in *The Delphi Report*, which has been widely used in various educational research. This framework includes six core cognitive skills: (1)*interpretation* (ability to understand and express the meaning of information), (2)*analysis* (identifying relationships between ideas), (3)*evaluation* (assess the credibility and strength of arguments), (4)*inference* (draw conclusions based on evidence), (5)*explanation*(communicating the results of thinking logically), and (6)*self-regulation* (reflecting and correcting one's own thinking processes). These six skills are used as a reference in assessing how students develop and demonstrate their critical thinking skills throughout the design thinking-based project implementation process. These indicators are mapped in a qualitative findings table as an analytical instrument to assess students' in-depth engagement in identifying problems, evaluating information, developing solutions, and reflecting on their learning process.

Table 2. Thematic Findings of Students' Critical Thinking Skills through the Design Thinking Approach in the P5PPRA Project.

Critical Thinking Indicators	Design Thinking Activities	Narrative Quotes (Interviews / Observations)	Innovation Products
Interpretation (understand the problem)	*Empathize through* guest lectures and environmental observations	"I just realized that the food waste in the canteen can be used to make eco-enzymes. I used to think it was just thrown away."*(Student interview, 04/17)*	Eco Enzyme
Analysis(identify assumptions & relationships)	*Define and* group discussions	"We saw a lot of plastic waste around the school and started thinking, why don't we use it as a building material?"*(Teacher-facilitator discussion, 04/18)*	Ecobrick
Evaluation(assess the credibility and impact of the solution)	*Test and* reflection	"My group's ecoprint products faded, so we switched to steaming and hard leaf techniques to make the colors last."*(Student reflection, 04/22)*	Ecoprint
Inference(draw logical conclusions)	*Prototype & trial*	"We compared two types of waste for fermentation, and it turned out that oranges reacted faster than watermelons."*(Student log book, 21/04)*	Eco Enzyme
Explanation(constructing arguments)	*Ideate & group presentation*	"We chose to make ecobricks because they're easy, can be assembled together, and the results can be sent to plastic-conscious communities."*(Student interview, 04/18)*	Ecobrick
Self-regulation(meta cognitive reflection)	*Final project reflection*	"I realized that critical thinking isn't just about being smart, but also about being willing to listen to others and correct mistakes."*(Student reflection, 04/25)*	All products

The table above shows the results of triangulation between observations, interviews, and student product artifacts that are adjusted to the critical thinking indicators from Facione. This supports the argument that the design thinking approach effectively stimulates the development of critical thinking in the context of project-based learning in madrasas.

One concrete example of strengthening critical thinking can be seen in the organic waste processing project. *Eco enzyme* Students not only practice the fermentation process but also consider various variables, such as waste type, fermentation time, and storage temperature. They then compare the results to identify the most effective formula. This stage demonstrates how students apply scientific *thinking* in real-world situations, which is highly relevant for development critical *inquiry*.

In addition, involvement in group discussions when determining product ideas, natural materials used and components needed to preserve natural colors in the manufacturing process *ec oprint* It becomes a strategic space for strengthening logical and collaborative argumentation. Students must be able to defend their opinions, listen to the ideas of others, and adjust decisions based on data and input. This type of interaction supports the development of dialogical *critical thinking*, which is believed to be an important element in collaborative learning [19].

Qualitative evaluation of results through interviews and observations showed that most students improved in their ability to formulate problems, ask reflective questions, process ideas, develop creativity, and draw logical conclusions from experimental results and observations. For example, in the project eco brick, students learn to consider the structural strength and ecological impact of the products they create, and debate the feasibility of their wider application. This activity provides space for them to test arguments through the process of evidence-based *reasoning* [20]. Where students can solve existing problems by finding solutions from old cases that have similar problems. In this case, it is related to the ecological impact of using eco brick innovation on a wider scale. This finding is in line with the results of research by Ananda and Rahmawati, which shows that the use of design thinking-based learning models in environmental projects can significantly improve students' analytical and decision-making abilities [21]. Students are indirectly faced with contextual problems that stimulate their sensitivity to environmental conditions to generate ideas in creating solutions. Through the design thinking approach, facilitators can encourage students to choose several product innovations that can be developed massively as solutions to various environmental problems found by students.

Furthermore, the reflection activity at the end of the program provides an important space to foster metacognition. Students are encouraged to reflect on their own thinking processes: what worked, what needs improvement, and how they learned from both failures and successes. The ability to evaluate one's own thinking processes is central to critical *self-awareness*, which is crucial for strengthening the adaptive and reflective profile of Pancasila students. Structured reflection can also enhance students' critical awareness in making decisions based on values and data. This positive impact on strengthening critical thinking is also inseparable from the design thinking approach, which emphasizes iterative and empathy-based processes. By being encouraged to understand problems from the perspective of the surrounding community and contributing to real-world solutions, students feel that their learning activities are meaningful. When learning is directly connected to life, intrinsic motivation increases, and critical thinking develops naturally.

More deeply, the integration of design thinking into the P5PRA flow provides concrete steps for students to develop a systematic approach to problem-solving. The empathize phase in design thinking merges with the "critical reasoning" dimension in P5PRA, which encourages students to understand environmental issues not only as global issues but as real-life experiences that directly impact their communities. As students observe plastic waste and food waste in the school environment and around their homes, they begin to develop sensitivity and concern for these issues.

The define and ideate phases can enrich students' divergent and convergent thinking processes. In this context, students learn to define problems and design solutions that are not only original, but also contextual and impactful. For example, when students define the problem of "organic waste not being optimally utilized," they design eco-enzyme prototypes with various aromas for household needs. This process combines the skills of grouping information, constructing arguments, and making decisions based on data and reflection on experiences. This strengthens critical thinking skills that require multi-dimensional analysis and reflective thinking [22]. The prototype and test phases in design thinking are highly synergistic with the dimensions of independence, mutual cooperation, and creativity in P5PRA. Students test their solutions through direct experiments and receive feedback from teachers and peers. This activity encourages them to revise ideas based on real-world evidence and user feedback, demonstrating that critical thinking is not only a cognitive ability but also a disposition to be open to failure and continuously refine solutions. Learning becomes process-oriented, not just product-oriented, so

students become increasingly accustomed to evaluating the effectiveness of their actions critically and continuously.

Ultimately, this integration not only strengthens individual competencies but also instills a spirit of collaboration and social awareness. When students implement projects like eco bricks and eco-enzymes and exhibit eco prints in their local communities, they learn that problem-solving is not merely an individual activity, but rather a collective process that requires empathy, communication, and environmental awareness. Through this process, they develop not only critical thinking but also real-world problem-solving, which is key to developing progressive learners. Therefore, it can be concluded that the integration of the P5PRA pathway with the design thinking approach not only enriches the dimensions of project-based learning but also significantly improves students' critical thinking skills. This evaluation provides a strong foundation for replicating similar programs in other educational institutions seeking to build innovative and transformative learning ecosystems.

4. Conclusions

This study shows that the integration of the Design Thinking approach in the Pancasila and Rahmatan lil Alamin Student Profile Strengthening Project (P5PPRA) with the theme of sustainable lifestyle at MAN Sukoharjo has a significant impact on learning transformation. Through the stages of empathize, define, ideate, prototype, and test, students not only learn actively but also develop critical thinking skills, social empathy, and skills in designing solutions to contextual environmental problems.

The implementation of this model has been proven to strengthen students' critical reasoning skills, particularly in identifying problems, formulating ideas, and evaluating solutions through reflective practice. These results support 21st-century learning objectives and strengthen the character of the Pancasila Student Profile. Furthermore, the teacher's role as a facilitator encourages the creation of a participatory, contextual, and student-centered learning environment.

Practically, the results of this study recommend the need for teacher training in empathy-based approaches and project-based learning. Madrasahs and other schools can replicate this model not only in P5 activities but also in cross-subject learning, especially those relevant to social and environmental issues. The development of local products such as eco prints, eco enzymes, and eco bricks has also proven effective in connecting learning to real life and empowering students socially and ecologically.

Further research is recommended using a quantitative or mixed-methods approach to more specifically measure long-term improvements in critical thinking skills. Comparative studies across educational institutions, both general and religious, are also needed to understand the challenges and opportunities for replicating this model more broadly and systematically.

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