IJOLAE Indonesian Journal on Learning and Advanced Education

http://journals.ums.ac.id/index.php/ijolae

Science with Character: Teachers' Reflections on the Pancasila Student Profile Initiative

Reni Marlina[1]✉, Chokchai Yuenyong,[2] Hamdani[3], Aminah Zubir[4]
[1,3]Faculty of Teacher Training and Education, Tanjungpura University, Indonesia
[2]Science Education Program, Khon Kaen University, Thailand
[4]Faculty of Tarbiyah and Teacher Training, UIN Sulthan Thaha Saifuddin Jambi, Indonesia

DOI: 10.23917/ijolae.v8i1.12762
Received: September 6th, 2025. Revised: November 27th, 2025. Accepted: December 15th, 2025
Available Online: December 31th, 2025. Published Regularly: January, 2026

Abstract

This study investigates science teachers' perspectives, beliefs, and readiness in implementing the Pancasila Student Profile Strengthening Project (P5) within the Merdeka Curriculum in Indonesian junior high schools. The study involved 102 science teachers from public junior high schools in West Kalimantan who participated in the School Mover Program (PSP). Using a mixed descriptive approach, data were collected through a validated Likert-scale questionnaire and open-ended responses, and analyzed using descriptive statistics and Exploratory Factor Analysis (EFA). The results reveal that science teachers generally perceive the P5 project as valuable for connecting scientific concepts with real-world environmental and social issues, fostering collaboration, reflection, and contextual learning. Teachers believe that the project enhances students' scientific literacy, environmental awareness, and ethical responsibility, and aligns well with experiential learning, contextual teaching, and education for sustainable development. However, despite these positive beliefs, several inhibiting factors limit effective implementation. Major constraints include limited instructional time, lack of project design skills, insufficient teaching materials, uncertainty in assessing moral-ethical dimensions, and low confidence in students' readiness to engage in project-based science learning. In addition, school science culture, which strongly emphasizes cognitive achievement and examination performance, further constrains teachers' willingness to prioritize project-based approaches. The findings indicate a clear gap between teachers' positive attitudes toward the P5 initiative and the practical challenges they face in classroom implementation. This study highlights the critical role of teacher professional development, curriculum support, and instructional innovation in ensuring the sustainability and effectiveness of this innovative learning model within science education. By addressing these structural and pedagogical barriers, the P5 project has strong potential to become a model of transformative and innovative learning, integrating scientific understanding, character education, and sustainable development within the Merdeka Curriculum.

Keywords: advanced learning approaches, character education, future-oriented learning, innovative learning, learning transformation, pedagogical innovation, project-based learning

✉***Corresponding Author:***
Reni Marlina, Faculty of Teacher Training and Education, Tanjungpura University, Pontianak, Indonesia
Email: reni.marlina@fkip.untan.ac.id

1. Introduction

Since 2020, Indonesia has repaired learning loss due to Covid 19 by implementing the Merdeka curriculum (Rachman et al., 2024; Sudaryanti et al., 2015; Utami et al., 2024). The most dominant concepts introduced in the independent curriculum are collaboration, reflection, and Pancasila profile strengthening projects (Sobirin et al., 2023; Utari & Afendi, 2022). This activity requires students and teachers to design projects based on local potential and work in their respective learning communities. It is not

uncommon for the designed projects termed as "School projects" to include aspects that lack scientific content but are rich in social context. School projects dominantly discuss science and present content as an objective process to bring students closer to the reality of life by emphasizing the potential and local culture of the school (Tiyani & Ramadan, 2024). This science project represents an experiential and inquiry-based learning approach that encourages students to construct understanding through environmental observation and real-world engagement (Hermawan et al., 2024; Sunarto, 2023). However, previously, science content-based projects in schools have long been known as classroom activities loaded with questions and answers, discussions, presentations, and practices based on scientific literature (Nurcahyo & Afryaningsih, 2024; Wahono et al., 2023). This imbalance reflects a gap between traditional teaching habits and the demands of innovative and student-centered learning approaches promoted in the Merdeka Curriculum. This imbalance affects the way they go about their school projects, the kinds of problems they find, the kinds of questions they encounter, what they focus their observations on, and even the kinds of responses they give (Marlina et al., 2023).

In the science context, the project aims to connect students with real-world phenomena through observation and environmental literacy (Hermawan et al., 2024; Sunarto, 2023; Svensson et al., 2022). However, its implementation demonstrates an imbalance between social and scientific content, as many projects lack scientific content despite being rich in local context. This imbalance stems from teachers' perceptions that are still influenced by outdated teaching practices, such as a reliance on printed sources and theoretical approaches. As a result, teachers struggle to identify authentic scientific problems, formulate investigative questions, and guide students' observations appropriately. This situation suggests that science teachers' adaptation to the demands of the Independent Curriculum (Curriculum Merdeka) is suboptimal, even though their scientific knowledge could provide a crucial foundation for designing relevant and meaningful projects (Holilah et al., 2024; Susanti et al., 2023).

Nonetheless, the idea of school projects through current topics can be very well understood and designed by science teachers. Some evidence shows that in handling school projects, science teachers are able to positively develop their attitudes and abilities to deal with science problems in the school environment (Hasibuan et al., 2023; Hunaepi & Suharta, 2024; Ndari et al., 2023). Current information states that science materials that can be applied as school projects in the Merdeka Curriculum are inseparable from students' mastery of initial concepts and also understanding of broader contexts such as the culture of the local community or issues related to environmental hygiene (Adhani et al., 2024; Karlina & Hindriana, 2023). However, the availability of science materials designed by science teachers does not guarantee that science teachers will volunteer before their perspectives can be identified in depth. Science teachers' beliefs and perceptions are important in sustaining their interest and motivation to teach science effectively.

Recently, there have been many studies that have reported on the fundamental problems faced by science teachers in implementing school projects due to their low science teacher identity (Putra et al., 2024; Susanti et al., 2023; Zamsiswaya et al., 2024). This problem arises from the inherent

tension between teaching controversial issues and teaching traditional, value-free science content. Teachers' perspectives certainly vary. The same thing for every teacher is their rights and obligations as educators in schools who must teach concepts in accordance with scientific concepts (Fitriyani et al., 2023; Solehuddin et al., 2024). The novelty of this study directs readers to explore science teachers' perspectives in their roles and assesses science teachers' perceptions of school projects, as well as describing in more detail the factors that impact on the performance of science teachers.

2. Method

The sample for this study was 102 science teachers selected using purposive sampling. The selection criteria were that the science teachers had taught for at least 10 years and taught at public junior high schools (SMPN) in West Kalimantan Province, Indonesia. 15% had less than 13 years of teaching experience, 28% had 13-15 years of teaching experience, and 57% had more than 15 years of teaching experience. 37% of science teachers came from private universities and 63% came from public universities. The school of origin of science teachers is a driving school that has been proven by a decree from the Indonesian Ministry of Education and Culture. Twenty-five percent of the science teachers came from Transformational School Program (PSP) phase 1 (2020-2023), 45% from PSP phase 2 (2021-2024), and 30% from PSP phase 3 (2022-2025). Figure 1 shows the determination of the research sample.

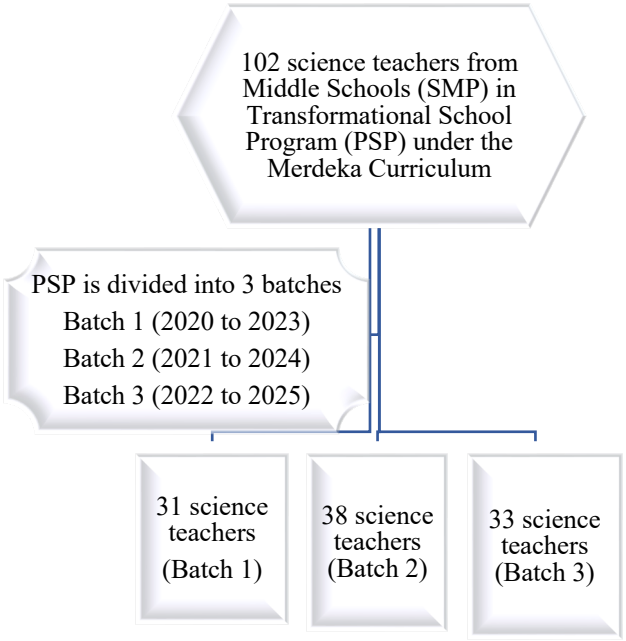

Figure 1. Determination of the Research Sample

Figure 1 shows the composition of research participants involving 102 junior high school science teachers who are members of the School Mover Program (PSP) in the Independent Curriculum. The distribution of the number of teachers in each batch was relatively proportional, with 31 teachers in Batch 1, 38 teachers in Batch 2, and 33 teachers in Batch 3. This distribution demonstrates balanced representation across program batches, allowing for analysis of teacher perceptions and experiences based on var-

iations in program implementation stages (Fitriyani et al., 2023; Karlina & Hindriana, 2023). This data structure supports the descriptive validity of the study by representing the dynamics of PSP implementation from the initial phase to the advanced phase (Marlina & Hamdani, 2023).

The treatment was to design and implement a school project based on local potential in the school environment. The school project was prioritised on the theme entitled 'Environmental Empowerment and Preservation'. In the process of implementing the school project, science teachers worked in learning community groups that had been formed by the researcher beforehand to present creative ideas on the theme of 'Environmental Empowerment and Preservation' in front of the class. the projects chosen by the group were village cleanliness, giant trash bins, reforestation, and beautiful environmental arrangements. Each science teacher in the school prepared a project plan for the Pancasila reinforcement profile that included learning objectives, teaching methods and assessment (Adhani et al., 2024; Solehuddin et al., 2024). The presentation of each group's school project design/proposal lasted 50 minutes. During the first 30 minutes, each science teacher presented science content knowledge related to the project and procedures related to the project activities to be conducted. For the next 20 minutes, each group of science teachers in each school presented the case or problem underlying the project. Figure 2 shows the research implementation process.

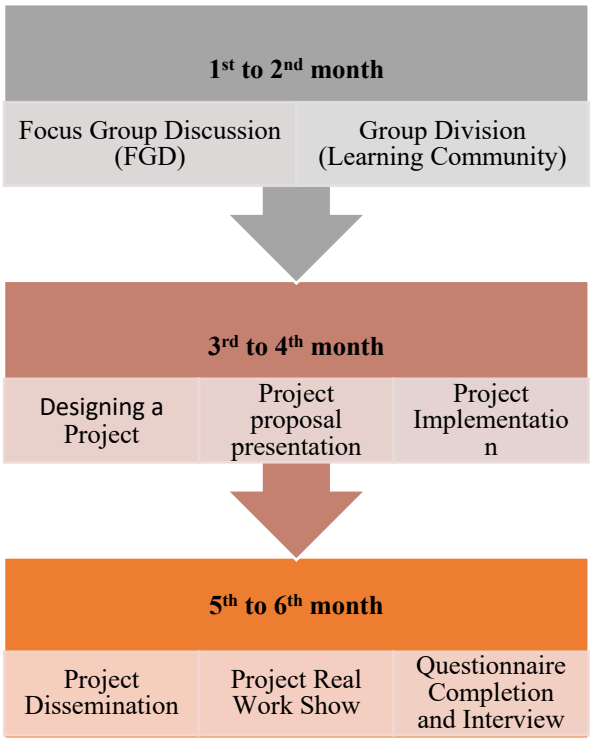

Figure 2. Research Implementation Process

Figure 2 shows the six-month project-based program implementation flow, divided into three main phases. The first to second months focused on the preparation phase through Focus Group Discussions (FGDs) to identify participants' needs, problems, and potential, and the formation of learning communities as a basis for collaboration (Maria et al., 2025; Marlina & Hamdani, 2023). The third to fourth months were the initial development and implementation phase, encompassing project design, the preparation and presentation of project proposals, and field implementation. This phase emphasized the planning process, decision-making, and contextual implementation of ideas (Zamsiswaya et al., 2024). The fifth to sixth months focused on the dissemination and evaluation phase, encompassing the dissemination of project results, project real work shows, and the collection of evaluative data through questionnaires and interviews. This flow demonstrates the chronological relationship between the planning, imple-

mentation, and evaluation phases in generating comprehensive empirical data.

The questionnaire instrument was developed based on the research objective of exploring science teachers' perspective. Likert scale instrument used was adopted from existing instruments (Slater et al., 2021). Before the instrument was used, researchers revalidated it to fit the characteristics of science teachers in West Kalimantan. Validation involved 5 validators from 3 different universities in West Kalimantan. After validation, the questionnaire was tested on a small scale to 11 science teachers (who were not the main participants). The test results reported that there were 3 items that had to be corrected (item 2, 9, and 15). The questionnaire was reinforced with open-ended questions that directed science teachers to describe and explore their perspectives more deeply on Merdeka curriculum policies related to the existence of the Pancasila profile project (Fitriyani et al., 2023; Putra et al., 2024; Solehuddin et al., 2024). There are 3 indicators in the instrument. Indicator 1 relates to the science teacher's perspective on the need for an Merdeka Curriculum and school projects (n=9), indicator 2 relates to the science teacher's perspective on factors that contribute to the implementation of school projects (n=7), and indicator 3 about the science teacher's beliefs about his competence in designing and implementing school projects (n=4).

Data in the form of a Likert scale were analyzed using descriptive statistics with the help of SPSS (Santos-Beneit et al., 2015) and also by using Exploratory Factor Analysis (EFA) (Marlina et al., 2024). Science teachers' perspectives that were filtered using a questionnaire instrument were given codes that corresponded to the indicators (Nugroho et al., 2019). Code A for indicator 1 (science teachers' perspectives on the need for an independent curriculum and school projects), B for indicator 2 (science teachers' perspectives on factors that contribute to the implementation of school projects), and indicator 3 (science teachers' beliefs about their competence in designing and implementing school projects) were coded with C and completed with numbers according to the order of the items of each indicator.

3. Result and Discussion

The purpose of this study was twofold: to characterise science teachers' perspectives and adaptations to the project of strengthening the Pancasila profile in science, and to identify important factors that mediate the project implementation process. To this end, science teachers who had not yet developed a project and designed a project proposal as a requirement for teacher mobilisers were involved in this study. This research provided teachers with direct experience in designing an innovative project-based learning model aligned with the Pancasila Student Profile initiative. Still on the same focus, this study also identified factors that might hinder or facilitate the implementation of the project in science classrooms. Science teachers' belief in the need to implement Pancasila profile strengthening projects in the classroom (Adhani et al., 2024; Holilah et al., 2024). Their belief that students were interested and mature enough to carry out the projects (Tuncer & Ozeren, 2012; Wicaksono & Korom, 2023).

The final factors that were quite surprising were the science teachers‘ concerns about whether there would be any impact of the project implementation on students’ environmental values and ethics (Adhani et al., 2024; Nurhidayah & Pratama, 2024) the lack of relevant teaching materials;

the lack of time to plan and prepare projects appropriate to local issues; and the difficulties associated with implementing an effective project method and the absence of specific valid instruments to evaluate students' performance in relation to the moral-ethical dimension (Almulla, 2023). As the results show, the barriers and facilitating factors are certainly interrelated and interdependent in the complex perspective of science teachers.

The findings also emphasise the need to develop teachers competencies in designing and implementing projects that can optimally train students' skills. Teachers should be given the opportunity to examine and reflect on their own values and positions about implementing projects to address problems in the surrounding environment. Science teachers' positions refer to their beliefs about the importance of implementing Pancasila profile strengthening projects as an integral approach and strategy with science literacy (Ching et al., 2020; Khery et al., 2024; Svensson et al., 2022). In addition, teachers should exercise sensitivity of reasoning to diagnose project ideas and ema that attract students' attention.

The findings of this study point to one factor, school science culture, which is known to contribute highly to science teachers' beliefs in teaching professionally. The culture of secondary school science education is still largely dominated by the persistence in preparing students to enter the best secondary schools (Lee et al., 2020). Thus, science teaching from the perspective of science teachers is largely geared towards mastering the entire scope of science content. Students are less directed to have psychomotor skills to develop solving skills, which usually heavily emphasise hands on in science content (Koseoglu, 2012). It is this cultural atmosphere that leads science teachers to respond to the need where parents assume that children who are cognitively smart will easily get access to the best schools (Aunio et al., 2019; Gilmore et al., 2024). This aspect is also stated to put enormous pressure on schools, administrators, and science teachers in particular to focus on what is needed to successfully master the material in school competitively. This pressure, with the associated school science culture, reinforces the perspective of science teachers to focus only on students' cognitive mastery and projects are not included in the required approach. In this atmosphere, to gain prominence in the school science curriculum, understanding, the types of skills and learning outcomes associated with teaching that emphasise cognitive mastery and are prioritised at the school level.

a. Science Teachers' Perspectives on the Pancasila Learner Profile Strengthening Project

Table 1 shows the results of Exploratory Factor Analysis (EFA) of the 3 indicators that have been developed.

Table 1. Instrument Factor Analysis

Indicator	No. Item	Factor 1	Factor 2	Factor 3
1. Science teachers' perspectives on the need for an independent curriculum and the Pancasila Learner Profile Strengthening project	5	0.782	0.175	-0.332
	6	0.743	0.128	0.021
	17	0.732	-0.024	-0.165
	10	0.613	-0.165	0.188
	13	0.609	-0.193	0.018
	9	0.587	-0.317	-0.055
	15	0.434	-0.184	0.413

Indicator	No. Item	Factor 1	Factor 2	Factor 3
	20	0.421	0.172	0.216
	1	-0.419	0.163	0.392
2. Science teachers' perspectives on factors contributing to the implementation of the Pancasila Learner Profile Strengthening project	7	0.214	-0.791	0.318
	18	0..015	0.772	0.304
	3	0.063	0.769	-0.018
	14	0.014	0.683	-0.019
	8	0.382	0.639	0.185
	2	0.317	-0.516	0.382
	11	-0.281	-0.543	0.218
3. Science teachers' beliefs about their competence in designing and implementing of the Pancasila Learner Profile Strengthening project	16	-0.153	0.419	0.682
	12	0.069	-0.175	0.528
	4	-0.242	-0.216	0.472
	9	0.057	0.247	0.362
Cronbach's alpha		0.74	0.79	0.68
Eigen value		4.832	3.872	2.813
Variance explained		20.658	16.236	10.729

The first finding in exploring the perspective of science teachers is the positive side of the existence of the Pancasila profile strengthening project. The development of science materials with the Pancasila profile strengthening project is able to introduce students to real environmental problems (Ndari et al., 2024; Purwanti & Indriani, 2024). Problems experienced in the surrounding environment can be directly solved collaboratively and reflectively. The Merdeka Curriculum is able to bridge students to hone their sensitivity in reflecting on events and the impacts caused by these events both in the short and long term (Kurniawati et al., 2024; Rediyono, 2024; Resti et al., 2024). In the same context, science teachers can directly provide and introduce various sciences and technologies that can be applied in social life and respond to the needs of the community around the school environment (Latifah et al., 2024; Utami et al., 2024). Science teachers argue that strengthening the Pancasila profile not only causes the dividing line between school and society in the school environment to become increasingly blurred, but also shows that collaboration between science concepts learned at school and the surrounding environment is almost inseparable.

The second more interesting finding is the negative perspective of science teachers that emerged in viewing the existence and implementation of the project to strengthen the Pancasila profile in the Merdeka Curriculum (Kusudaryani et al., 2024; W. Ndari et al., 2023). Science teachers noted that the school project had a more dominant adverse impact compared to the beneficial effects caused. The Pancasila profile strengthening project is described as a conflicting activity that has more negative than positive impacts in society (Hartati et al., 2024; Nugraheni et al., 2024; Waruwu et al., 2024). When discussing the Pancasila profile strengthening project with fellow students, the science teacher noted that it seemed as if they were more considering the positive and beneficial sides of the school during class hours. Other science teachers also felt that the egocentrism of schools and their lack of concern for their environment often exacerbated communication problems between schools and the surrounding community. There is a view that science teachers are not only responsible for thinking about the hectic teaching periods experienced at school but should also pay attention to how science concepts can benefit students wherever they live. Students' right to live in a clean world should always be

kept in mind and it is the job of science teachers to prepare them to survive (Holilah et al., 2024; Nurhidayah & Pratama, 2024).

The third impressive finding is the science teacher's belief that students at school must adhere to societal values such as customs and hereditary culture and traditions that exist in the community where the school is located. Science teachers underline the ethics in determining the topic of the Pancasila profile strengthening project related to community life in the school environment (Borrachero et al., 2019). When determining topics about environmental problems that occur outside the classroom, science teachers need to analyze more deeply the moral-ethical values that should be used to decide whether the topic should be done. Do not deviate from the traditions of the local community (Wijaya et al., 2024). The science teacher expressed similar concerns about what she perceived as the uncontrolled development of science (Borrachero et al., 2019; Ching et al., 2020). Although the science teacher recognizes that science has had a positive impact on human life, school projects that go against the traditions of the local community must be controlled. The science teacher has realized that moral-ethical assessment can play an important role in the implementation of the Pancasila profile strengthening project.

b. Science Teachers' Perspectives on the Existence of the Pancasila Learner Profile Strengthening Project

Science teachers stated that the Pancasila profile strengthening project in Merdeka curriculum can support students' knowledge of science concepts (Hartati et al., 2024; Waruwu et al., 2024). Some teachers identified that through the Pancasila profile strengthening project, it is easier for science teachers to explain material that is events and phenomena and that involves interactions between living things and the environment such as global warming and shape change events, motion in plants and others (Marlina, Suwono, Silitonga, et al., 2023). Table 2 displays science teachers' perspectives on the importance of school projects in the Merdeka Curriculum.

Table 2. Science Teacher Perspectives on the Existence of School Projects in the Merdeka Curriculum

Statement	StD	D	N	A	SA	M	SD
1 I want to develop my learning with the Pancasila profile enhancement project	1	5	15	66	15	3.65	0.75
5 I can design the idea of Pancasila profile strengthening project perfectly	0	7	5	45	45	4.26	0.74
6 I am willing to implement the Pancasila profile strengthening project	2	1	10	69	20	4.34	0.86
9 I predominantly do the Pancasila profile enhancement project in the classroom rather than outside the classroom	15	63	10	11	3	2.17	0.95
10 I believe that it is very important to implement the Pancasila profile strengthening project in the classroom.	1	10	1	60	30	4.01	0.83
13 There needs to be an approach so that the Pancasila profile strengthening project can be done correctly	1	7	10	50	34	4.12	0.92
15 Students' interest in science has increased because of the Pancasila Profile Reinforcement project.	0	5	10	40	47	4.18	0.87
17 Teacher need to design appropriate problems that exist in the surrounding environment for the Pancasila profile strengthening project	0	10	5	50	37	4.03	0.85
20 Students need to learn and improve their ability to do the Pancasila profile strengthening project	0	5	1	53	43	4.22	0.67

Notes: StrD = strongly disagree; D = disagree; N = neutral; A = agree SA = strongly agree; M = mean; SD = standard deviation

Science teachers' interest in the Pancasila profile strengthening project is reflected in their stated beliefs about the need to address science issues through hands-on practice in the community (Fracchiolla et al., 2020; Marlina & Hamdani, 2023). Analysis of responses about the existence of school projects in Merdeka Curriculum shows that science teachers believe Pancasila profile strengthening projects should be addressed outside the classroom (Puteri et al., 2024).

The connection between the science teachers' findings and educational theory can be explained through several key concepts (Borrachero et al., 2019; Slater et al., 2021). First, Experiential Learning Theory (Kolb) supports the finding that the Pancasila Student Profile project provides students with direct experience observing, reflecting on, and solving environmental problems around them (Resti et al., 2024; Waruwu et al., 2024). Second, this approach aligns with Contextual Teaching and Learning (CTL), which emphasizes the importance of connecting science concepts to real-life contexts so that the boundaries between school and society become increasingly blurred. Third, Social Constructivism (Vygotsky) explains why the collaboration and discussion in this project effectively build students' scientific understanding through social interaction and teacher scaffolding. Fourth, the teachers' findings also align with the Education for Sustainable Development (ESD) framework, as this project trains students' sensitivity to environmental issues and encourages science-based solution-making ((Borrachero et al., 2019; Ching et al., 2020)). Thus, the research findings have a strong theoretical basis in innovative, contextual, collaborative, and sustainability-oriented learning frameworks (Hunaepi & Suharta, 2024; Sari et al., 2023).

The science teachers' belief in the need to implement a project to strengthen the profile of Pancasila was also reflected in their responses to the open-ended questions (Borrachero et al., 2019; Ching et al., 2020). Indeed, on the one hand, all respondents agreed that science concepts are related and correlated in daily life. Thus, students need to be familiar with the environment so that science concepts can be optimally understood. In addition, 53 science teachers noted that the Pancasila profile strengthening project was able to maximize the potential of lively discussions or debates that gave students the opportunity to practice and improve their skills and confidence effectively. Science teachers need to look for environmental issues and then build relationships and interactions with students in solving environmental problems (Hartati et al., 2024; Latifah et al., 2024).

Another respondent argued that the Pancasila profile strengthening project provides a good opportunity for science teachers to break away from the undue emphasis and burden of teaching in science teaching such as memorizing facts and concepts without recognizing the meaning in real-life problem solving (Almulla, 2023; Haryani et al., 2021). Science teachers also emphasized that the Pancasila profile strengthening project provides opportunities for students to develop a better understanding of science concepts because the Pancasila profile strengthening project requires students to make observations in everyday life (Nugraheni et al., 2024; Resti et al., 2024). This finding is consistent and relevant with the perspective of science teachers obtained (M15=4.18 and M17=4.03).

c. Factors Contributing to the Existence of the Pancasila Learner Profile Strengthening Project

Theoretical analysis of the research findings shows that science teachers' obstacles in implementing the Pancasila Student Profile Strengthening project can be explained through several main frameworks (Purwanti & Indriani, 2024; B. Utami et al., 2024). Based on the Theory of Planned Behavior (TPB), an intention-action gap is seen, caused by low perceived behavioral control (Nurhasanah et al., 2022). Teachers feel limited by time, the more complex workload of the Independent Curriculum, and a lack of project design skills. The perception that students are less capable of participating in projects and that projects do not have a significant impact on science grades also weakens teachers' attitudes and encourages low implementation consistency (Zakaria et al., 2025).

Analysis of the resulting perspectives also revealed a series of factors that appeared to prevent science teachers from undertaking the Pancasila profile strengthening project (Hartati et al., 2024; Waruwu et al., 2024). These factors prevented science teachers from acting on their beliefs expressed in the need to carry out the Pancasila profile strengthening project (Kurniawati et al., 2024). Key aspects included a lack of time, especially given the need to complete the demands of the Merdeka curriculum which was stated to be more complex compared to the previous curriculum (M2 = 3.21). Science teachers also emphasized their lack of skills in conducting the Pancasila profile strengthening project and the frequent need to read repeatedly from other references that they searched for themselves to support their mastery of the concepts to be projected (M3=2.42).

Science teachers also agree that they do not have ideas in conducting Pancasila profile strengthening projects that are challenging and in accordance with student characteristics (M7=2.78). Science teachers' opinion about the lack of students' ability to carry out projects to strengthen the Pancasila profile (M8=2.63) is also one of the factors that prevent science teachers from doing projects (Latifah et al., 2024; Waruwu et al., 2024; Wijaya et al., 2024). The view that the Pancasila profile strengthening project does not have much impact on science grades (M11=2.18) and the Pancasila profile strengthening project in science concepts often confuses students (M14=2.46) is enough to have a negative effect on the consistency and sustainability of science projects in schools. The last factor is burdensome, and the school is almost impossible to do the project because of the assumption that the project of strengthening the Pancasila profile is not based on the initial concept of scientific science (M18=2.59). Qualitative descriptive data on the inhibiting factors for the implementation of the Pancasila profile strengthening project are shown in Table 3.

Table 3. Science Teachers' Perspectives on Factors that Hinder the Implementation of the Pancasila Profile Strengthening Project

Statement	StD	D	N	A	SA	M	SD
2 I feel the burden of doing a project to strengthen the profile of Pancasila because of the limited time for science learning	2	25	30	33	12	3.21	0.89
3 I believe that junior high school students still do not have the skills to do a project to strengthen the profile of Pancasi-	20	49	10	20	3	2.42	1.05

Statement	StD	D	N	A	SA	M	SD
la							
7 I believe that junior high school students still do not have ideas in doing the project to strengthen the profile of Pancasila	8	28	35	28	3	2.78	1.04
8 Junior high school students who can do the Pancasila learner profile strengthening project well are high achievers	9	30	38	21	4	2.63	0.94
11 I believe that students who have done well in the Pancasila learner profile strengthening project do not have much impact in science grades	10	72	14	5	1	2.18	0.63
14 Students believe that Pancasila learner profile strengthening project in science concepts often confuse students	15	35	40	5	7	2.46	0.92
18 Pancasila learner profile strengthening project are almost impossible to do if students do not have the correct initial science concepts.	10	47	10	30	5	2.59	1.07

Notes: StrD = strongly disagree; D = disagree; N = neutral; A = agree SA = strongly agree; M = mean; SD = standard deviation

Many science teachers expressed concern about secondary school students' lack of knowledge and ability to carry out projects due to students' lack of psychomotor skills after several years of the Covid 19 pandemic. There is little time available for teachers to take care of project-like activities, as they have to work on all curriculum content and use time efficiently in the classroom (Hunaepi & Suharta, 2024; Sari et al., 2023). It should be noted that most science teachers strongly believe that all textbook content should be delivered, even if the coverage of such material is not required by the independent curriculum (Khery et al., 2024; Sari et al., 2023). This situation can be attributed to science teachers' feelings and sense of responsibility to prepare their students for high grades, which strongly emphasizes mastery of scientific concepts and topics.

d. Science Teachers' Perspectives Framework

Perspectives on science teachers' concerns in designing and implementing the Pancasila profile strengthening project are evident in the responses of 102 science teachers. In Figure 1, Science teachers' perspectives framework is shown. Figure 3 shows the science teacher perspective framework.

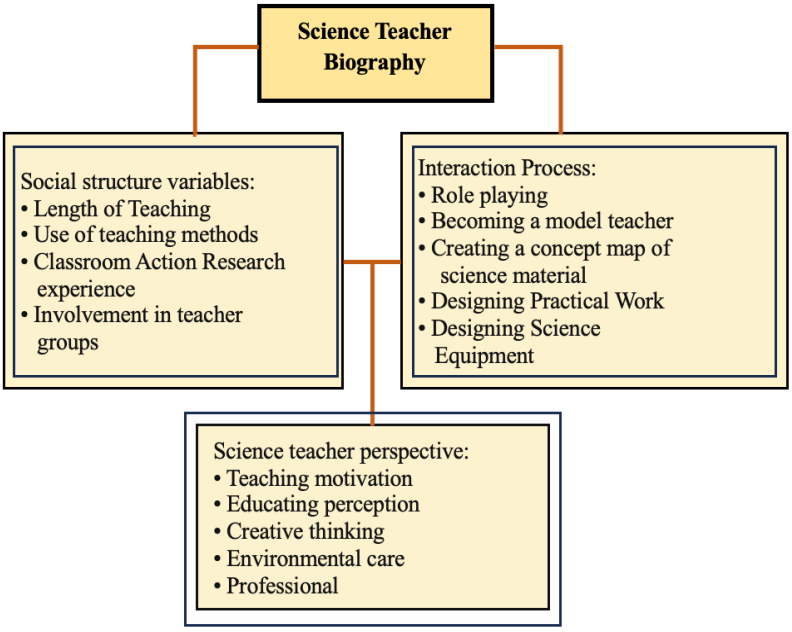

Figure 3. Science Teacher Perspective Framework

Figure 3 shows that Science teachers' professional biographies are a key construct influencing their capacity to adopt innovative pedagogical practices and advanced learning approaches. These biographies are represented through social structure variables, including length of teaching experience, teaching methods used, experience conducting classroom action research, and involvement in the teacher community (Fracchiolla et al., 2020; Marlina & Hamdani, 2023). This data was collected through questionnaires and interviews. Teachers' social structure is further manifested in the pedagogical interaction process, demonstrated through role-playing practices, their role as model teachers, the development of science concept maps, the design of practical activities, and the development of science teaching aids (Demirtaş & Mumcu, 2021; Marlina, Suwono, Yuenyong, et al., 2023). Data at this stage were obtained through classroom observations and analysis of learning documents. The interaction between professional backgrounds and pedagogical processes shapes science teachers' perspectives, which include teaching motivation, perceptions of their educational role, creative thinking skills, environmental awareness, and professionalism (Hamdani et al., 2025). These perspectives were identified through in-depth interviews and data triangulation. This diagram demonstrates the empirical link between teachers' experiences, teaching practices, and the formation of their professional identities

The first variable of science teachers' perspectives is determined from their views on the Pancasila profile strengthening project through a rather traditional epistemological and pedagogical side that is very suitable for discussing scientific concepts that tend to be ordinary (Abidin et al., 2020; Aleknavičiūtė et al., 2023). The identification results show that science teachers consider scientific knowledge about science concepts to be precise and value-free so that it is less appropriate if applied in the life of the community around the school. Most of the science teachers implied that the scientific knowledge that should be conveyed in the

classroom would become chaotic in reality and practice in the community (Fracchiolla et al., 2020). According to 8 science teachers, there is no absolute truth for problems in the surrounding environment that must be solved by doing projects because students do not have experience in social life. Students only express opinions and only limited opinions (Yustina et al., 2024). This opinion is not necessarily in accordance with what is needed and the solution in the form of opinion is not necessarily in accordance with the problem.

The second position from the results of the analysis places science teachers in a concern about the imposition of the Merdeka curriculum, which schools and teachers are not fully prepared for both physically and psychologically (Güven, 2010; Hartati et al., 2024). These science teachers seem oblivious to the fact that one of the crucial job of a science teacher is to provide fun learning experiences and immediate feedback to correct students' incorrect knowledge (Lee et al., 2020). Therefore, science teachers have the perspective that they will experience confusion as to whether they should be neutral or not when they introduce and design projects where the emphasis is not on concept mastery but the product. Sometimes, science teachers wanted to interrupt the discussion and explain that the Pancasila profile strengthening project should be able to better improve mastery of science concepts (Chi et al., 1994; Mandikonza, 2022). However, for fear of violating the rules, the science teacher could not interrupt and decided to follow Merdeka curriculum regulations and be neutral.

e. Science Teachers' Beliefs about Merdeka Curriculum

As seen in Table 4, science teachers have good beliefs about the success of teaching using various approaches in conducting the Pancasila profile strengthening project. In particular, science teachers considered themselves to be knowledgeable about the Pancasila profiling project in science (M12 = 3.42) and to have good knowledge in implementing the Pancasila profiling project (M19 = 3.18) needed to effectively implement the project in secondary schools.

Table 4. Science Teachers' Confidence in Implementing the Project in the Independent Curriculum

Statement	StD	D	N	A	SA	M	SD
4 I can use various approaches in conducting the Pancasila profile strengthening project	1	2	10	54	35	4.92	0.75
12 I understand very well about the project of strengthening the profile of Pancasila in the field of science	5	16	15	60	6	3.42	0.93
16 I am very enthusiastic in designing and implementing the Pancasila profile strengthening project	2	4	40	51	5	3.51	0.76
19 I have good knowledge in implementing the Pancasila profile enhancement project	5	28	20	44	5	3.18	1.24

Notes: StrD = strongly disagree; D = disagree; N = neutral; A = agree SA = strongly agree; M = mean; SD = standard deviation

Science teachers indicated that they had sufficient understanding of the Pancasila profile strengthening project (M19 = 3.18). Prospective teachers showed confidence in their ability to use a variety of approaches in conducting the Pancasila profile strengthening project (M4 = 4.92). Prospective teachers' beliefs about personal teaching success related to SSIs became clearer with responses to open-ended questions. Sixty science teachers explicitly stated that they understood the Pancasila

profiling project in science. Each science teacher had the knowledge to implement the project (Holilah et al., 2024; Kusudaryani et al., 2024). Because projects that raise environmental issues are part of our lives and everyone needs to learn about them, especially in the current era that has announced the SDGs. Students' interest in learning science will be higher if examples can be given from their own lives (Latifah et al., 2024; Svensson et al., 2022). Everyone can voluntarily contribute to science lessons because they see the benefits to their lives and they want to learn more about it.

What science teachers emphasise is only the willingness and enthusiasm in following the latest news and actual events (Blankesteijn et al., 2024; Marlina et al., 2024). Up-to-date information supports the implementation of innovative and future-oriented science learning that is relevant to students' real-life contexts. The results of the last analysis with an independent sample t test ($t = -0.507$, $p > 0.05$), found that in terms of gender differences there was no significant difference between the perspectives of men and women. It is clearly stated that there is no significant difference between the perspectives of men and women in terms of the existence of the Pancasila strengthening profile project in the Merdeka curriculum (Ijirana et al., 2019).

The costly findings on these two characteristics of science are a benchmark and can serve as a practical starting point for successful science learning in Indonesia, as science materials can easily lose popularity and use if not complemented by long-term support for changes in the science curriculum. Previous reform efforts have taught us that substantial changes in classroom science teaching cannot be achieved without changing curriculum priorities (Fitriyani et al., 2023). Adding more essential topics to an already overcrowded curriculum will only inflame students' thinking. The Pancasila profile strengthening project is one of the essential approaches and makes science concepts not just a discourse (Holilah et al., 2024; Latifah et al., 2024; Waruwu et al., 2024). However, the existence of this project, which characterises the Merdeka curriculum, requires an overall modification of the objectives, priorities, and emphasis of science teaching. It is also clear that integrated and sustained professional development efforts are needed to assist science teachers in improving their knowledge and understanding of science materials, developing pedagogical skills, and internalising the attitudes and habits of mind required for effective teaching.

This work contributes to the growing literature on project implementation in science concepts and the dynamic interaction between science teachers and the curriculum, especially with regard to their perceptions and adaptations to the project of strengthening the Pancasila profile in the independent curriculum (Fitriyani et al., 2023; Kusudaryani et al., 2024; Puteri et al., 2024). The results of this study yield useful insights that can serve as a reference and orientation for future endeavours. Although this work focuses on the perspective of science teachers, the results of this study are very important as a fundamental source for conducting similar research by comparing the perspectives of teachers and prospective teachers who are still inexperienced in teaching (Marzal et al., 2025). Further research is also emphasised using various research methods and conducted over a significant period of time.

The findings of this study confirm that the Strengthening Pancasila Student Profile project has the potential to become a science

learning innovation aligned with the framework of sustainable education, particularly through the engagement of teachers and students in authentic and contextual learning experiences (Fitriyani et al., 2023; Hunaepi & Suharta, 2024). From an Experiential Learning perspective, this project enables a direct, experiential learning process through observation, reflection, and solving real-world environmental problems, thereby strengthening conceptual understanding and the relevance of science learning (Blankesteijn et al., 2024; Hermawan et al., 2024). The novelty of this study lies in revealing how teacher perceptions and readiness are key factors determining the success of the Pancasila project's transformation from a curricular policy to a meaningful transformative learning practice (Khery et al., 2024; Puteri et al., 2024). Furthermore, these findings link the project's implementation to the principles of Education for Sustainable Development (ESD), where science learning is oriented not only toward mastery of concepts but also toward the formation of ethical awareness and responsibility for environmental sustainability (Latifah et al., 2024; Solehuddin et al., 2024), this study contributes to enriching the discourse on innovative and advanced learning practices in the context of the Independent Curriculum, particularly in bridging national education policy with advanced and future-oriented science learning practices (Solehuddin et al., 2024).

4. Conclusion

Science teachers perceive the project positively because it promotes innovative and contextual science learning that connects scientific concepts with real environmental and social issues, helping students develop contextual understanding and sensitivity toward their surroundings. Teachers acknowledge that the project encourages collaboration, reflection, and the application of science in authentic School community contexts. However, despite these positive perceptions, several factors strongly influence their ability to implement the project effectively. The most dominant factors include limited time for planning and preparation within the Merdeka Curriculum structure, lack of skills and confidence in designing science-based projects, scarcity of relevant teaching materials, and the absence of valid assessment tools for evaluating moral ethical dimensions. Additional constraints such as student readiness, teachers' difficulty generating meaningful project ideas, and the perception that P5 projects contribute minimally to science achievement further complicate implementation. Together, these insights highlight a clear gap between teachers' positive beliefs and the practical realities they face, reinforcing the need for systematic support, targeted training, and stronger curricular guidance.

The findings of this study highlight the importance of teacher professional development, curriculum design strengthening, and future research directions. Although science teachers have a positive view of the Pancasila Student Profile Strengthening project, constraints such as time constraints, lack of skills, and limited supporting equipment highlight the need for practice-based training and ongoing mentoring to ensure effective project implementation. In terms of curriculum, including relevant teaching materials and character-based assessment instruments underscores the need for applicable project guidelines, thematic modules based on local issues, and assessments that measure cognitive and moral dimensions

proportionally. Furthermore, the influence of school science culture and low teacher self-confidence indicate the need for further research, including identifying the project's determinants of success and developing valid evaluation instruments. Overall, these findings emphasize the importance of system support and strengthening prerequisite design to prevent the P5 project from being discontinued in science learning.

5. References

Adhani, Y., Panai, D. N. I., Bahsoan, A., Mas, S. R., Badu, S. Q., & Dilipanga, M. B. (2024). Pancasila Student Profile: Integrating Environmentalism and Sustainable Lifestyles in Schools. *Jambura Journal Civic Education*, *4*(2), Article 2. https://doi.org/10.37905/jacedu.v4i2.28585

Almulla, M. A. (2023). Constructivism learning theory: A paradigm for students' critical thinking, creativity, and problem solving to affect academic performance in higher education. *Cogent Education*, *10*(1), 2172929. https://doi.org/10.1080/2331186X.2023.2172929

Aunio, P., Korhonen, J., Ragpot, L., Törmänen, M., Mononen, R., & Henning, E. (2019). Multi-factorial approach to early numeracy—The effects of cognitive skills, language factors and kindergarten attendance on early numeracy performance of South African first graders. *International Journal of Educational Research*, *97*, 65–76. https://doi.org/10.1016/j.ijer.2019.06.011

Borrachero, A. B., Brígido, M., Dávila, M. A., Costillo, E., Cañada, F., & Mellado, V. (2019). Improving the self-regulation in prospective science teachers: The case of the calculus of the period of a simple pendulum. *Heliyon*, *5*(12), e02827. https://doi.org/10.1016/j.heliyon.2019.e02827

Ching, F. N. Y., So, W. W. M., Lo, S. K., & Wong, S. W. H. (2020). Preservice teachers' neuroscience literacy and perceptions of neuroscience in education: Implications for teacher education. *Trends in Neuroscience and Education*, *21*, 100144. https://doi.org/10.1016/j.tine.2020.100144

Fitriyani, F., Sunaryati, T., & Surya, V. M. K. (2023). Implementation Of Project-Based Learning Oriented to the Merdeka Learning Curriculum in the Form of a Pancasila Student Profile With Global Diversity. *Buana Pendidikan: Jurnal Fakultas Keguruan Dan Ilmu Pendidikan Unipa Surabaya*, *19*(1), Article 1. https://doi.org/10.36456/bp.vol19.no1.a6832

Fracchiolla, C., Prefontaine, B., & Hinko, K. (2020). Community of practice approach for understanding identity development within informal physics programs. *Physical Review Physics Education Research*, *16*(2), 020115. https://doi.org/10.1103/PhysRevPhysEducRes.16.020115

Gilmore, C., Simsek, E., Eaves, J., & Cragg, L. (2024). The role of cognitive and applied executive function skills in learning rational number knowledge. *Learning and Individual Differences*, *110*, 102408. https://doi.org/10.1016/j.lindif.2024.102408

Güven, S. (2010). Vocational education faculty students' impressions of practice teaching schools and teachers. *Procedia - Social and Behavioral Sciences*, *2*(2), 2501–2505. https://doi.org/10.1016/j.sbspro.2010.03.361

Hartati, Y. S., Komariyah, S., & Susyanah, S. (2024). The Role of Philosophy of Science in Creating a Profile of Pancasila Students in Indonesia. *Jurnal Indonesia Sosial Teknologi*, *5*(3), 961–968. https://doi.org/10.59141/jist.v5i3.949

Haryani, E., Coben, W. W., Pleasants, B. a.-S., & Fetters, M. K. (2021). Analysis of

Teachers' Resources for Integrating the Skills of Creativity and Innovation, Critical Thinking and Problem Solving, Collaboration, and Communication in Science Classrooms. *Jurnal Pendidikan IPA Indonesia*, *10*(1), Article 1. https://doi.org/10.15294/jpii.v10i1.27084

Hasibuan, H. Y., Syarifudin, E., Suherman, & Santosa, C. A. H. F. (2023). Ethnoscience as the Policy Implementation of Kurikulum Merdeka in Science Learning: A Systematic Literature Review. *Jurnal Penelitian Pendidikan IPA*, *9*(8), Article 8. https://doi.org/10.29303/jppipa.v9i8.4500

Hermawan, I. M. S., Diarta, I. M., & Dharmayanti, P. A. P. (2024). Profile, challenge, and opportunity of environmental literacy research in Indonesia: A systematic literature review. *JPBI (Jurnal Pendidikan Biologi Indonesia)*, *10*(2), Article 2. https://doi.org/10.22219/jpbi.v10i2.33953

Hidayah, S., Irhasyuarna, Y., Istyadji, M., & Fahmi, F. (2023). Implementation of Merdeka Belajar Differentiated Instruction in Science Learning to Improve Studentâ€™s Science Literacy. *Jurnal Penelitian Pendidikan IPA*, *9*(11), Article 11. https://doi.org/10.29303/jppipa.v9i11.3637

Holilah, M., Nur, M., Hardianti, R. A., & Aulia, Q. (2024). Implementation of Digital Teaching Material Containing Local Wisdom Values for Strengthening Pancasila Student Profile Project (P5) of Independent Curriculum in Social Studies Learning. *The Innovation of Social Studies Journal*, *5*(2), 121–131. https://doi.org/10.20527/issj.v5i2.11876

Hunaepi, H., & Suharta, I. G. P. (2024). Transforming Education in Indonesia: The Impact and Challenges of the Merdeka Belajar Curriculum. *Path of Science*, *10*(6), 5026–5039. https://doi.org/10.22178/pos.105-31

Husna, I., Harnas, D. M., Gusman, F., Gusman, E., & Adrus, S. E. R. (2021). Prototype Validity Of Content Learning System (CLS) on Atomic Structure Material Based on Project Based Learning (PjBL) Using Flipped Classroom With Moodle For High School Students In Indonesia. *International Journal Of High Information, Computerization, Engineering And Applied Science (JHICE)*, *1*(01), Article 01. https://doi.org/10.24036/jhice/vol1-iss01/36

Ijirana, I., & Wahyuni, S. (2019). The Chemistry Competency Achievement of SMA Negeri 7 Palu Students Using Predict, Observe, and Explain (POE) Learning Model. *Indonesian Journal on Learning and Advanced Education (IJOLAE)*, 9-14.

Karlina, L., & Hindriana, A. F. (2023). Implementation of the Pancasila Student Profile in the Merdeka Mandiri Curriculum Changes in Biology Learning. *Jurnal Penelitian Pendidikan IPA*, *9*(SpecialIssue), Article SpecialIssue. https://doi.org/10.29303/jppipa.v9iSpecialIssue.4708

Khery, Y., Ahzan, S., Efendi, I., Nufida, B. A., Dasna, I. W., Megapratiwi, F. I., Cahayani, L., & Febriani, N. (2024). Teacher readiness on promoting merdeka curriculum considering experience in implementing science process skill and scientific literacy learning. *AIP Conference Proceedings*, *3106*(1), 070019. https://doi.org/10.1063/5.0215147

Koseoglu, P. (2012). Hacettepe University Prospective Biology Teachers' Self-Confidence in Terms of Technological Pedagogical Content. *Procedia - Social and Behavioral Sciences*, *46*, 931–934. https://doi.org/10.1016/j.sbspro.2012.05.226

Kurniawati, D., Nursafitri, L., Kurniasih, A., & Fanny, A. M. (2024). Development of Project Learning Design to Strengthen the Profile of Pancasila and Rahmatan Lil 'Alamin Students for Madrasah Ali-

yah Students in East Lampung Regency. *Buana Pendidikan: Jurnal Fakultas Keguruan Dan Ilmu Pendidikan Unipa Surabaya*, *20*(1), Article 1. https://doi.org/10.36456/bp.vol20.no1.a8600

Kusudaryani, P. A., Hairida, H., & Masriani, M. (2024). Science Teachers' Perceptions The Merdeka Curriculum Implementation In Entikong Border State Junior High Schools. *Hydrogen: Jurnal Kependidikan Kimia*, *12*(4), 737–752. https://doi.org/10.33394/hjkk.v12i4.12585

Latifah, N., Hayat, M. S., & Khoiri, N. (2024). Learning Effectiveness of ESD-Oriented Natural and Social Science Projects in Realizing Pancasila Student Profiles for Vocational High School Students. *KnE Social Sciences*, *9*(6), 148–158. https://doi.org/10.18502/kss.v9i6.15263

Lee, H., Lee, H., & Zeidler, D. L. (2020). Examining tensions in the socioscientific issues classroom: Students' border crossings into a new culture of science. *Journal of Research in Science Teaching*, *57*(5), 672–694. https://doi.org/10.1002/tea.21600

Marlina, R., Suwono, H., Ibrohim, I., Yuenyong, C., Husamah, H., & Hamdani, H. (2024). Theoretical frameworks of self-efficacy in collaborative science learning practices: A systematic literature review. *JPBI (Jurnal Pendidikan Biologi Indonesia)*, *10*(2), Article 2. https://doi.org/10.22219/jpbi.v10i2.33628

Marlina, R., Suwono, H., Yuenyong, C., Ibrohim, I., & Hamdani, H. (2024). *Video-based microteaching to facilitate the basic teaching skills of preservice biology teacher*. *3106*, 030047. American Institute of Physics Conference Series. https://doi.org/10.1063/5.0215234

Marlina, R., Suwono, H., Yuenyong, C., Ibrohim, I., Mahanal, S., Saefi, M., & Hamdani, H. (2023). Technological Pedagogical Content Knowledge (TPACK) for Preservice Biology Teachers: Two Insights More Promising. *Participatory Educational Research*, *10*(6), 245–265. https://doi.org/10.17275/per.23.99.10.6

Marzal, J., Chit, S. C., Elisa, E., Utomo, P. E. P., Kurniawan, D. A., & Sandra, R. O. (2022). Lecturer Gender Perspective With Online Thesis Guidance Case Study Elista in Jambi University. *Indonesian Journal on Learning and Advanced Education (IJOLAE)*, 191-208.

Murthado, F., Arung, F., Boeriswati, E., & Rahman, S. (2021). Syntax Device and Unit Disorder in Children with Mental Retardation: A Neurolinguistic Perpspective on Language Learning Innovations and Progressive Education. *Indonesian Journal on Learning and Advanced Education (IJOLAE)*, 114-129.

Ndari, M. S., Sukarno, S., & Karsono, K. (2024). Analysis of Collaboration Profiles in The Strengthening Project of Pancasila Student Profile in Primary Schools. *Social, Humanities, and Educational Studies (SHES): Conference Series*, *7*(1), Article 1. https://doi.org/10.20961/shes.v7i1.84308

Ndari, W., Suyatno, Sukirman, & Mahmudah, F. N. (2023). Implementation of the Merdeka Curriculum and Its Challenges. *European Journal of Education and Pedagogy*, *4*(3), Article 3. https://doi.org/10.24018/ejedu.2023.4.3.648

Nugraheni, K. N. F., Rusilowati, A., & Marianti, A. (2024). Implementation of the Problem Based Learning Model with Blended Learning on Ecosystem Topics to Enhance Scientific Literacy and Pancasila Student Character. *Unnes Science Education Journal*, *13*(2), Article 2. https://doi.org/10.15294/usej.v13i2.11706

Nurcahyo, M. A., & Afryaningsih, Y. (2024). Innovation of Science Teaching Material Based on STEM-PjBL in the Implementation of the Merdeka Curricu-

lum. *Journal of Innovative Science Education*, *13*(2), Article 2. https://doi.org/10.15294/jise.v13i2.7775

Nurhasanah, N., Samsudin, A., Linuwih, S., & Sutrisno, A. D. (2022). Is SiPOERT an Innovative Learning? Implementation and Identification of Students' Conception on Simple Harmonic Motion. *Indonesian Journal on Learning and Advanced Education (IJOLAE)*, 78-91.

Nurhidayah, D., & Pratama, A. T. (2024). Students' e-worksheet based on project and Character of Pancasila through environmental issues: What are the characteristics? *Research and Development in Education (RaDEn)*, *4*(1), Article 1. https://doi.org/10.22219/raden.v4i1.32182

Purwanti, N., & Indriani, F. (2024). Implementation of the Pancasila Student Profile Strengthening Project in Developing Creativity of Elementary School Students. *Jurnal Elementaria Edukasia*, *7*(3), 3105–3118. https://doi.org/10.31949/jee.v7i3.10429

Putra, I. N. Y. A., Hariana, K., Firmansyah, A., & Muchdar. (2024). Analysis of the Ideals and Reality of the Leadership Style of the Ministry of School in the Application of the Pancasila Student Profile Strengthening Project. *Jurnal Elementaria Edukasia*, *7*(2), Article 2. https://doi.org/10.31949/jee.v7i2.9201

Rachman, A., Putro, H. Y. S., Rusandi, M. A., & Situmorang, D. D. B. (2024). The development and validation of the *"Kuesioner Tema Proyek Penguatan Profil Pelajar Pancasila"* (KT P5): A new tool for strengthening the Pancasila Student Profile in Indonesian pioneer schools. *Heliyon*, *10*(16), e35912. https://doi.org/10.1016/j.heliyon.2024.e35912

Rediyono, R. (2024). Implementation of The Project For Strengthening The Profile of Pancasila Students (P5) in Schools. *IJORER : International Journal of Recent Educational Research*, *5*(2), Article 2. https://doi.org/10.46245/ijorer.v5i2.579

Resti, N., Wijayanti, D., & Santoso, J. N. (2024). The Implementation of Project-Based Learning (PjBL) Model to Enhance Student Engagement in Pancasila Education for Fifth Grade Elementary Students. *Proceedings of International Conference on Teacher Profession Education*, *2*(1), 166–176. https://seminar.ustjogja.ac.id/index.php/ICoTPE/article/view/3153

Sari, S. P., Surya, E., Nasution3, I. S., Lubis, B. S., & Sari, M. (2023). Implementing Kurikulum Merdeka: Strengthening Scientific Literacy. *International Conference on Elementary Education*, *5*(1), Article 1. http://proceedings2.upi.edu/index.php/icee/article/view/3145

Setiawati, I. A. (2023). Cultural Content Analysis of English Textbook on Merdeka Curriculum. *Proceeding of Annual International Conference on Islamic Education and Language (AICIEL)*, 1096–1105. https://ftk.uinbanten.ac.id/journals/index.php/aiciel/article/view/9805

Slater, E. V., Norris, C. M., & Morris, J. E. (2021). The validity of the science teacher efficacy belief instrument (STEBI-B) for postgraduate, pre-service, primary teachers. *Heliyon*, *7*(9), e07882. https://doi.org/10.1016/j.heliyon.2021.e07882

Sobirin, W., Susilawati, L., Rohendi, A., Mulyanto, A., & Warta, W. (2023). Implementation Of The Project To Strengthen Pancasila Student Profiles In Forming Student Character. *IJOBBA : International Journal of Bunga Bangsa Cirebon*, *2*(1), 1–9. https://jurnal.uibbc.ac.id/index.php/ijobba/article/view/1670

Solehuddin, M., Budimansyah, D., & Dahliyana, A. (2024). Tracing Pancasila: Unveiling the impact of the Pancasila student profile strengthening project on student well-being in Indonesia. *Jurnal*

Cakrawala Pendidikan, *43*(3), Article 3. https://doi.org/10.21831/cp.v43i3.78328

Sudaryanti, D., Sukoharsono, E. G., Baridwan, Z., & Mulawarman, A. D. (2015). Critical Analysis on Accounting Information Based On *Pancasila* Value. *Procedia - Social and Behavioral Sciences*, *172*, 533–539. https://doi.org/10.1016/j.sbspro.2015.01.399

Sunarto, S. (2023). Environmental Literacy and Care Behavior Through Adiwiyata Program at Elementary School. *AL-ISHLAH: Jurnal Pendidikan*, *15*(3), Article 3. https://doi.org/10.35445/alishlah.v15i3.3887

Susanti, A., Darmansyah, A., Tyas, D. N., Hidayat, R., Syahputri, D. O., Wulandari, S., & Rahmasari, A. (2023). The Implementation of Project for Strengthening the Profile of Pancasila Students in the Independent Curriculum for Elementary School Students. *IJECA (International Journal of Education and Curriculum Application)*, *6*(2), 113–122. https://doi.org/10.31764/ijeca.v6i2.15474

Svensson, T., Wilk, J., & Gustafsson Åman, K. (2022). Information literacy skills and learning gaps– Students' experiences and teachers' perceptions in interdisciplinary environmental science. *The Journal of Academic Librarianship*, *48*(1), 102465. https://doi.org/10.1016/j.acalib.2021.102465

Tiyani, T. A., & Ramadan, Z. H. (2024). Implementation of the pancasila student profile strengthening project on sustainable lifestyle themes. *Jurnal EDUCATIO: Jurnal Pendidikan Indonesia*, *10*(1), Article 1. https://doi.org/10.29210/1202424398

Tuncer, M., & Ozeren, E. (2012). Prospective Teacher's Evaluations in Terms of Using Reflective Thinking Skills to Solve Problems. *Procedia - Social and Behavioral Sciences*, *51*, 666–671. https://doi.org/10.1016/j.sbspro.2012.08.221

Utami, B., Indriyanti, N. Y., Probosari, R. M., Supurwoko, S., Fakhrudin, I. A., Khasanah, A. N., & Hudha, M. N. (2024). Empowering Teachers in Implementing the Project to Strengthen Students' Pancasila Profile Using STEAM-based Learning for Optimizing Sustainable Development Goals (SDGs) in Junior High School. *Masyarakat Berdaya Dan Inovasi*, *5*(2), Article 2. https://doi.org/10.33292/mayadani.v5i2.190

Utami, D. M., Ikhsan, M., Dartanto, T., & Mallarangeng, R. (2024). The role of the 30% threshold for Islamic parties: A fast-growing middle class and religion-based political preferences in Indonesia. *Heliyon*, *10*(4), e25700. https://doi.org/10.1016/j.heliyon.2024.e25700

Utari, D., & Afendi, A. R. (2022). Implementation of Pancasila Student Profile in Elementary School Education with Project-Based Learning Approach. *EduLine: Journal of Education and Learning Innovation*, *2*(4), 456–464. https://doi.org/10.35877/454RI.eduline1280

Wahono, B., Sholihah, I. M., & Narulita, E. (2023). Visual Content Analysis of STEM-Related Content in Indonesian Vocational High Schools Biology Textbooks. *Journal of Science Learning*, *6*(3), 281–293. https://eric.ed.gov/?id=EJ1409138

Waruwu, E., Sinulingga, A. A., Sitepu, A. G., & Sugiyana, F. X. (2024). Project on Strengthening the Profile of Pancasila Students: Implementation, Role of Teachers, and Student Character. *Jurnal Kependidikan: Jurnal Hasil Penelitian Dan Kajian Kepustakaan Di Bidang Pendidikan, Pengajaran Dan Pembelajaran*, *10*(1), 169–182. https://doi.org/10.33394/jk.v10i1.9946

Wicaksono, A. G. C., & Korom, E. (2023). Attitudes towards science in higher education: Validation of questionnaire

among science teacher candidates and engineering students in Indonesia. *Heliyon*, *9*(9), e20023. https://doi.org/10.1016/j.heliyon.2023.e20023

Wijaya, D. N., Yafie, E., Hariyono, H., Pratama, A. Y., Azizah, A. R., & Azizah, S. M. N. (2024). The effect of teacher empowerment-based course program on teachers' knowledge of Pancasila character on the Indonesia-Malaysia literacy. *Journal of Community Service and Empowerment*, *5*(1), Article 1. https://doi.org/10.22219/jcse.v5i1.29683

Yustina, Y., Wahyuni, R., Suhara, S., Darmawati, D., Wulandari, P. A., & Saputra, R. R. (2024). Evaluating the Impact of the Pancasila Student Profile Project on Developing Student Competencies. *AL-ISHLAH: Jurnal Pendidikan*, *16*(3), Article 3. https://doi.org/10.35445/alishlah.v16i3.5031

Zakaria, G. A. N., Yusmaliana, D., Abdullah, Z. H., Abubakari, M. S., Narongrakshakhet, I., & Amonov, B. (2025). Gender-Neutral Pathways to Positive Behavior: Investigating the Role of Self-Actualisation and Academic Achievement in Secondary Education. *Indonesian Journal on Learning and Advanced Education (IJOLAE)*, 1-17.

Zamsiswaya, Z., Mounadil, A. I., & Abdel-Latief, S. (2024). Teacher identity, Islamic behavior, and project-based learning methods for madrasah teachers: A phenomenological approach. *Jurnal Cakrawala Pendidikan*, *43*(2), Article 2. https://doi.org/10.21831/cp.v43i2.51909