



Implementation of the Pancasila Student Profile in the Merdeka Mandiri Curriculum Changes in Biology Learning

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Abstract: The aim is to analyze the strengthening of the Pancasila student profile in the learning process, viewed from the teaching module with 5 aspects, namely: a) The arrangement of learning objectives according to the achievement of Phase E learning and including prerequisite knowledge; b) Understanding of Biology according to Phase E; c) Project-based or case study learning; d) Literacy and numeracy; e) The Pancasila student profile in the independent curriculum seen from assessment. The implementation of strengthening the Pancasila student profile in biology learning shows that there are still deficiencies in 3 schools, especially in the arrangement of learning objectives, which are not appropriate because the competencies in the learning achievement are not stated and the strengthening of the Pancasila student profile is not included. Issues in project-based learning plans and issues in the module are not contextual and the measurement of biology understanding is in line with the Learning Outcomes, but the presentation of questions is not in accordance with the revised Bloom's taxonomy. The implementation of strengthening the Pancasila student profile in the learning process is crucial in efforts to improve the quality of education in Indonesia in accordance with the needs of the times.

Keywords: Biology Learning; Independent Curriculum Transformation; Student Profile Pancasila.

Introduction

In the era of globalization, there are several competencies called 21st-century skills and the concept of education, also known as 21st-century learning. Lore Brosens at all, 2022 Structured around the constructive alignment framework, this research found that more 21st century learning objectives focusing on skills next to domain-specific knowledge need to be incorporated, and teaching and learning activities need to be more student-centred and better aligned to industry. Related to assessment, a considerable gap was found in literature on guidelines and means for formative assessment. Design education is not yet ready for the challenges ahead, therefore, the authors hope that design departments rethink their curricula and fill the specified gaps. These 21st-century skills, including character,

citizenship, critical thinking, creativity, collaboration, and communication, have been adopted in Indonesia through the curriculum implemented in schools (Andrian & Rusman, 2019).

The curriculum in Indonesia has undergone continuous changes and developments since independence. Some of these curricula include the 1947 curriculum, the 1952 curriculum, the 1964 curriculum, the 1968 curriculum, the 1975 curriculum, the 1984 curriculum, the 1944 curriculum, and the post-reformation curriculum, starting from the Competency-Based Curriculum in 2004, the Unit-Based Curriculum in 2006, the 2013 Curriculum, and the Independent Curriculum. With the advancement of science and changing human needs, including in the field of education, the curriculum, as the most important aspect of education, needs to be developed to keep up with

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these changes (Sadewa, 2022). Education for global change requires the implementation of education for sustainable development (ESD) in higher education. This means that teachers need to be sensitive to local and global issues and increase their knowledge of sustainable development (Corres et al., 2020). UNESCO (2019) highlights the important role of teachers and educators in promoting and increasing their knowledge of sustainability

The development of the education system is required to undergo planned and directed changes that are sustainable, with the expectation of achieving equal education opportunities, improved quality, and relevance of education. This would enable education to prepare students to face the challenges of changes that occur at both national and global levels. This is where the concept of Merdeka Curriculum (Faiz and Faridah, 2022) becomes relevant. The Merdeka Curriculum is a curriculum that focuses on various intracurricular learning activities to optimize students' conceptual understanding and strengthen their competencies. This independent curriculum also enhances the achievement of the Pancasila student profile developed according to the themes determined by the government (Kemendikbudristek, 2022).

The Merdeka Curriculum encourages students to learn and develop themselves, instills care for the environment in which they learn, boosts their self-confidence and skills, and enables them to easily adapt to the community (Ainia, 2020). Therefore, the existence of the Merdeka Curriculum is highly relevant to the needs of students and the demands of 21st-century education. The essence of independent learning lies in providing education that emancipates and grants autonomy to both teachers and schools in interpreting the basic competencies within the curriculum for teacher assessment (Sherly et al., 2020). The presence of the Merdeka Curriculum is one of the efforts to improve the quality of education in Indonesia in accordance with the needs of the times.

The goal of the Merdeka Curriculum is to shape students not only to be intelligent but also to possess characters in line with Pancasila values, which is manifested as the Pancasila Student Profile. The Pancasila Student Profile represents Indonesian students as lifelong learners who have global competencies and behave in accordance with Pancasila values. The six main characteristics of the Pancasila Student Profile are: (1) having faith, devotion to the One Almighty God, and noble character, (2) global diversity, (3) mutual cooperation, (4) independence, (5) critical thinking, and (6) creativity. Through the Pancasila Student Profile, Indonesian students have democratic competencies to become outstanding and productive individuals in the 21st century, in an era of advancing

technology and globalization. Additionally, Indonesian students are expected to participate in sustainable global development and be resilient in facing future challenges. According to Samsul, A (2021), the Pancasila student profile is one of the continuous implementations aimed at equipping students with global abilities and character in line with Pancasila values. The six characteristics of the Pancasila Student Profile, namely faith and devotion to the One Almighty God, noble character, global diversity, mutual cooperation, independence, critical thinking, and creativity, are inseparable from the Pathway Map of Indonesian Learning 2020-2035, driven by technological and global social changes Suryadien, (2022).

Since 2022, the implementation of the Pancasila Student Profile in the Merdeka Curriculum has been initiated. To assess the implementation of the Pancasila Student Profile in the Merdeka Curriculum, it needs to be analyzed through the learning process and student responses. However, there has been no previous research analyzing the development of the Pancasila Student Profile in biology learning. Therefore, the researchers are interested in conducting a study entitled Implementation of Strengthening the Pancasila Student Profile in the Merdeka Curriculum in Biology Learning at High Schools in Kuningan Regency.

Method

The research method used is qualitative research with a Design-Based Research approach. The sample consists of eight high schools in Kuningan Regency that are implementing the Merdeka Mandiri Berubah Curriculum in their 10th-grade classes. The instrument used is the analysis of teaching module documents to determine the implementation of strengthening the Pancasila student profile in biology learning. The procedure includes the identification and analysis of the teaching module, which involves: 1. Arranging learning objectives according to the achievement of Phase E learning and including prerequisite knowledge. 2. Understanding Biology according to Phase E. 3. Project-based or case study learning. 4. Literacy and numeracy. 5. Assessing the Pancasila student profile in the independent curriculum. The data are analyzed using triangulation of data. In this study, the population consists of public high schools in Kuningan Regency. The total number of public high schools in Kuningan Regency is 29, and out of those, 8 schools have implemented the Merdeka Mandiri Berubah curriculum. A sample is a subset of the population with specific characteristics (Creswell, 2015). In this research, the sample consists of 8 public high schools that have implemented the Merdeka Mandiri Berubah

curriculum. Since only 8 schools have implemented this curriculum, the sample size is also 8 public high schools.

Result and Discussion

Arranging learning objectives according to the achievement of Phase E learning and including prerequisite knowledge.

The arrangement of learning objectives in 8 schools already encompasses knowledge, attitudes, and skills. The learning objectives in 3 schools focus on the knowledge competency in the teaching module, stating that students should be able to describe Indonesia's biodiversity in their respective living environments through observation activities. In these 3 schools, teachers have not fully understood the competencies and content stated in the Learning Outcomes, resulting in learning objectives that do not align with the Learning Outcomes. The learning objectives analyzed in the teaching module of each school are present in 5 schools, with learning objectives that align with the Learning Outcomes. The learning objectives in the module involve finding solutions to biodiversity issues through a campaign on social media, focusing on Audience, Behavior, Conditions, and Degree. Mager in Dick and Carey (1990) stated that learning objectives should contain three components: behavior, condition, and degree. The Instructional Development Institute (IDI) added one more component that needs to be specified in formulating learning objectives, which is the audience. The arrangement of biology learning objectives should focus on developing skills that can be applied outside the classroom and are relevant to students' future needs (Wijaya & van den Heuvel, 2015).

In 5 schools, the learning process has developed learning objectives by implementing the Pancasila profile, where students create project-based solutions that incorporate dimensions of collaboration, creativity, and critical thinking. However, in 3 schools, the learning objectives do not align with the Learning Outcomes, as they only assess cognitive aspects. For example, the learning objective of describing Indonesia's biodiversity in their respective living environments only assesses the cognitive aspect and does not include assessment of attitudes and skills. According to Susilowati (2022), the Merdeka Curriculum's learning objectives are designed carefully to achieve the specified Learning Outcomes. However, in some cases, the set learning objectives may not fully align with the desired Learning Outcomes. According to Sadiman (2019), learning objectives may not align with the Learning Outcomes due to being too general. Sometimes, the learning objectives formulated in the Merdeka Curriculum can be too general and not specific enough. For example, if the learning objective only mentions "understanding the concepts of Biology,"

it does not provide clear guidance on what students are actually expected to achieve. Learning Outcomes related to such objectives should be more specific and measurable.

Based on the analysis of the teaching modules, there are learning objectives that still only cover cognitive aspects, neglecting the skills and attitudes, resulting in the Learning Outcomes not being achieved in Phase E. According to the research by Reigeluth (2019), overly limited learning objectives do not encompass important aspects of Learning Outcomes. For example, if the learning objectives only focus on knowledge aspects and disregard skills and attitudes, it can hinder students' holistic development. It is important to ensure that the learning objectives in the Merdeka Curriculum align with the desired Learning Outcomes. Continuous evaluation and development of the curriculum are crucial to ensure alignment between objectives and Learning Outcomes. In the secondary multi-level analysis of data from four areas of China and the United States in the PISA 2018 study, the relationship among students' personal achievement motives (competitiveness, work mastery and fear of failure), competitive or cooperative goal structures in schools, reading achievement and reading self-concept was examined. Results revealed similar relationship across countries: both competitiveness and work mastery motives had positive influence on reading self-concept; competitive goal structure influenced reading achievement (Ji Zhou¹ and Xinghua Wang, 2023).

Lack of connection to real-life contexts and experiences can also lead to learning objectives not aligning with the Learning Outcomes in the Merdeka Curriculum. Abstract or irrelevant learning that does not address students' needs and interests can reduce their motivation and engagement in the learning process (Kemendikbud, 2020). Marzano & Kendall (2010) mention that learning objectives that are set too low compared to the intended Learning Outcomes can prevent students from reaching their full potential in learning. Low learning objectives can hinder students' intellectual and skill development (Marzano & Kendall 2010).

The learning objectives developed in the other 5 schools align with the Learning Outcomes in Phase E and are related to the Pancasila student profile. The learning objectives mentioned in the teaching module include analyzing two types of biotechnology (modern and conventional) that can be used to address biodiversity scarcity through an article review. The learning objectives in the teaching module connect issues to daily life and are contextual in nature. One of the biology learning objectives that can be related to the Pancasila student profile is developing an appreciation for life. Biology studies the diversity and beauty of

nature, as well as the interactions between living organisms. Students need to understand Pancasila values that emphasize the importance of preserving and appreciating life (Sadiman, 2019). Based on the module analysis, the 5 schools have developed learning objectives related to providing solutions to local, national, and international issues in line with 21st-century skills, where students are required to think critically and creatively. Students will seek solutions based on environmental problems and develop critical thinking and creative problem-solving skills.

Understanding Biology in accordance with Phase E.

Based on the analysis of the teaching modules, there are 3 schools with a contextual and differentiated understanding of the subject matter aligned with the Learning Outcomes. Contextual learning is evident in these schools, where they have received training from Merdeka Curriculum experts and have facilitated training by inviting external experts. According to Jonson (2019), it is important to connect biology learning materials with students' daily lives. Through relevant learning approaches that align with students' contexts, they become more engaged and able to better understand biological concepts. On the other hand, in some schools, teachers need to learn independently by watching videos. Based on the interview results, when learning independently, teachers are not focused on teaching. The teaching modules contain an understanding of biology regarding biodiversity, explaining the factors causing biodiversity damage from geographical, social, and cultural perspectives, making it a contextual issue. In these 3 schools, the Merdeka Curriculum books are already in use, while the other 5 schools still use biology reference books from the 2013 curriculum.

Based on the analysis of the teaching modules in the 5 schools, the materials predominantly focus on textual content. For the demands of the Pancasila student profile in the Merdeka Curriculum, it is necessary to connect the materials contextually to daily life issues that relate to developing students' critical thinking and other skills in line with the demands of the 21st-century skills outlined in the Merdeka Curriculum. The textual nature of the learning materials is due to teachers still using the same teaching patterns as before, and with the change to the Merdeka Curriculum, the learning process has not developed to address current issues. Contextual learning objectives aim to encourage students to apply the knowledge and skills they have learned to their lives (Ahmadi et al., 2012). This helps students better understand the material as it directly relates to their daily lives (Susilowati, 2022). According to Makarim (2022), the Merdeka Curriculum emphasizes the development of 21st-century skills such as critical

thinking, communication, collaboration, and problem-solving. However, in some schools, the understanding of biology material does not align with the 21st-century skills, as the learning tasks assigned to students only involve description, focusing solely on the cognitive aspect.

Biology materials that excessively focus on facts and theories without providing room for the development of skills are not in line with the Merdeka Curriculum. The biology materials in the 5 schools are not relevant to the local context and conditions of the students. In the teaching modules, there are materials discussing forest environmental damage in other regions, while based on the students' needs, there is significant environmental damage to rivers resulting in dead fish, which should be addressed based on the local conditions of the students' residential areas. Non-contextual learning can make the learning process irrelevant and less engaging for students. Non-contextual learning can make students lazy and unmotivated to learn because they feel that there is no practical benefit to their daily lives. Thus, if biology materials do not include relevant examples or case studies that connect with the local context of the students, it does not align with the approach of the Merdeka Curriculum, which emphasizes the application of knowledge in daily life (Makarim, 2022).

In the implementation of the Merdeka Curriculum, it is expected that teachers facilitate differentiated learning according to students' learning styles. The teaching modules used in the 8 schools also align with students' learning styles, allowing students to engage in active learning and observation together. Based on the interviews and teacher questionnaires, students are pleased with this learning approach that caters to their learning styles, making them actively participate. Based on the analysis of the teaching modules in the 8 schools, the media used in the learning process align with students' learning styles. The teaching modules include video links and images for students to learn, which aligns with the audio-visual learning style. Visual learning style involves learning through looking, observing, and similar activities. Specifically, the visual learning style means learning by seeing something, whether through pictures or diagrams, demonstrations, exhibits, or videos. According to Budianti (2022), biology materials that involve students in projects or research align with students' learning styles, as they enjoy exploring and discovering. For example, students can conduct observation projects and analyze their school or home environments or conduct simple experiments to understand biological concepts.

However, there are some modules that do not align with students' learning styles, as indicated by the interview results, making students less actively

involved. If biology materials are presented passively without actively involving students, it does not align with students' learning styles in the Merdeka Curriculum, which emphasizes active participation and independent exploration. If biology materials do not provide adequate visual support and rely solely on written text, it does not align with students' learning style, which is more responsive to visual information (Rachmawati, N., 2022). If biology materials are only delivered through a single teaching approach, such as lectures or readings, it does not align with students' diverse learning styles (Rachmawati, N., 2022).

The biology materials in the teaching modules can be presented by integrating Pancasila values such as mutual cooperation, justice, togetherness, and diversity. Biological concepts can be linked to social issues, sustainability, or daily life situations relevant to Pancasila values. Biology learning that reflects Pancasila values can help students develop responsible personalities, environmental care, and contribute positively to society (Samsul, 2021).

Project-Based or Case Study Learning

Based on the analysis of the teaching modules, project-based or case study learning has been facilitated in 2 schools, promoting contextual learning and encouraging students to think critically and creatively based on the presented problems. The teaching modules provide an introduction to contextual problems, such as videos about deforestation, where students are trained on endangered biodiversity and solutions to the loss of biodiversity, fostering critical thinking skills. In the other 6 schools, project-based learning and process skills are not facilitated in the teaching modules. The learning activities in the modules are limited to lower-level cognitive skills, such as memorization of biodiversity levels such as species, genes, and ecosystems. Based on the teacher interviews in the 8 schools, project-based and case study learning have been implemented, addressing real-life issues, and project-based learning encourages students to develop process skills and the Pancasila student profile, including elements of collaboration, critical thinking, information acquisition, and idea processing dimensions.

The implementation of new elements in the Merdeka Curriculum has been seen as beneficial, as it hones students' skills during project implementation in line with competencies that refer to Pancasila values (Makarim, 2022). The application of project-based learning is considered a way forward during the learning recovery process, which leaves learning loss, as it aligns with character development based on Pancasila values (Rachmawati, 2022). In the teaching modules, for project-based learning to be realized, the problems or case studies presented only partially relate to the real

world, and case studies do not yet focus on the context of the work environment but still lean towards conceptual learning where teachers may not fully consider contextual problems. This aligns with Susan M. Bridges' opinion (2008) that project-based learning that does not align with real-world problems may not consider relevant social, economic, or environmental contexts for students. For example, if the projects given do not address actual issues faced in society or fail to depict real-life situations, students may lose motivation and connection to the learning process (Kolb, A. Y., 2005).

Teaching modules in project-based learning do not provide sufficient opportunities for students to engage in direct observation, prediction, and investigation activities, which hinders the development of these skills. Modules that are too focused on theory or conceptual explanations without adequate room for exploration and direct practice can impede the development of process skills (Yew & Goh, 2016).
Regenerate response

Literacy and Numeracy

Based on the analysis of the teaching modules, literacy and numeracy have been facilitated in 5 schools, providing students with opportunities to identify important information in scientific texts, understand terms or concepts used, make connections between different concepts, and draw conclusions based on contextual information. Numeracy skills have been facilitated by observing a graph on deforestation trends over the years and interpreting data in a data table. Based on teacher interviews and questionnaires in the 8 schools, literacy and numeracy skills have been practiced in the learning process by directing students' attention to articles. However, the challenge lies in student motivation, which is still lacking in literacy. According to teacher interviews, students are provided with discourse and are asked to evaluate, demonstrating the integration of literacy and numeracy by interpreting data in the form of tables.

Inadequate biology teaching modules in developing scientific literacy skills may not provide sufficient focus on understanding scientific texts, interpreting data, and using appropriate scientific language. The lack of emphasis on scientific literacy can hinder students' abilities to read, comprehend, and analyze complex scientific information. Therefore, it is important for biology teaching modules to provide adequate exercises in scientific literacy, including the development of specialized vocabulary, understanding the structure of scientific texts, and critical reading skills, as suggested by research conducted by Shanahan et al. (2013).

Biology teaching modules that do not train literacy and numeracy skills tend to focus too much on teaching biology content, such as concepts, theories, and specific information. Teachers are more interested in conveying information that students must understand rather than training their literacy skills (reading, writing, listening, and speaking) and numeracy skills (using numbers, counting, and analyzing data) in the context of biology. This can overlook the importance of developing literacy and numeracy skills in understanding and applying biological concepts. Biology teaching modules that do not train literacy and numeracy skills may not provide activities or tasks that require students to utilize those skills. Teachers tend to assign tasks based on summarizing, memorizing facts, or drawing diagrams rather than tasks that involve reading scientific texts, analyzing numerical data, or presenting understanding through oral presentations. Biology teaching modules that do not train literacy and numeracy skills may not bring real-world contexts into learning. Teachers focus more on teaching biology concepts theoretically without connecting them to relevant real-world situations or problems. The lack of real-world relevance can reduce student motivation in developing literacy and numeracy skills as they fail to see the usefulness and relevance of those skills in everyday life.

Numeracy-based biology teaching modules focus on developing students' mathematical abilities in the context of biology. These modules provide opportunities for students to use mathematical concepts such as measurement, comparison, graphs, and statistics to analyze and understand biological data. The numeracy skills acquired will assist students in problem-solving, interpreting research findings, and making decisions based on available data. In the context of the Pancasila student profile, numeracy teaching modules can help students develop logical, objective, and fair skills in understanding biological phenomena (Chua, 2019).

Assessment

Based on the analysis of assessments in the teaching modules, assessments on the Pancasila student profile dimensions, including collaboration with groups, critical thinking, and creativity, have been included in 8 schools. Additionally, assessments of knowledge, attitudes, and skills have been mentioned. However, assessments of literacy and numeracy have not been included in the 8 schools. Furthermore, assessments of concepts according to the revised Bloom's taxonomy are still not being used. Initial or diagnostic assessments have not been included in the teaching modules. Based on questionnaires and teacher interviews, both summative and formative assessments have been conducted, including assessments of the Pancasila student profile, using various assessment methods such

as discussions and projects. According to interviews, teachers have received training from the Biology Subject Teacher Working Group (MGMP Biologi) in developing assessments based on the revised Bloom's taxonomy. However, teachers face challenges in applying their understanding of the revised Bloom's taxonomy, particularly in adjusting assessments to different levels of students and adapting to the learning environment. In such conditions, teachers tend to focus on recall-level assessments (C1) instead of higher-level thinking assessments (C4-C5).

Schools that have implemented the Pancasila student profile state that it influences students' learning motivation. Students indirectly need to increase their motivation to achieve their learning goals (Rachmawati, et al., 2022). In the implementation of project-based learning, assessment is an important aspect that educators need to consider (Black & William, 2018).

Conclusion

Implementation of strengthening the Pancasila Student Profile, as seen from the process analyzed in teaching modules in some schools, still has shortcomings in the formulation of learning objectives. In some schools, the formulation of objectives is not appropriate because the competencies in the learning outcomes are not stated in the objectives, and the learning objectives for strengthening the Pancasila student profile are not clear. Project-based learning provided in the modules lacks contextual problems. The assessment of biology understanding is in line with the learning outcomes, but the presentation of questions is not aligned with the revised Bloom's taxonomy.

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Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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