

Mapping Science Learning in The 2013 Curriculum and Merdeka Belajar Curriculum

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ABSTRAK

Pendidikan dasar di Indonesia telah mengalami berbagai perkembangan kurikulum. Dari Kurikulum 2013 menuju Kurikulum Merdeka Belajar. Namun, dari sisi peralihannya masih belum memberikan arah yang jelas pada beberapa praktisi. Penelitian ini bertujuan untuk menganalisis pemetaan perencanaan, pelaksanaan, dan evaluasi pembelajaran IPA dalam Kurikulum 2013 dan Kurikulum Merdeka Belajar. Teknik pengumpulan data dilakukan melalui wawancara, observasi, dan dokumentasi. Uji validitas data dilakukan dengan trigulasi sumber. Subjek penelitian ini yaitu kepala sekolah dan guru kelas IV SD. Teknik analisis data yang dilakukan model interaktif yaitu reduksi data, penyajian data, dan penarikan kesimpulan. Hasil penelitian menunjukkan bahwa perencanaan pembelajaran IPA Kurikulum 2013 guru menyiapkan administrasi yaitu silabus, prota, promes, penyusunan perangkat pembelajaran Rencana Pelaksanaan Pembelajaran (RPP), media, bahan ajar, dan evaluasi, sedangkan dalam Kurikulum Merdeka Belajar guru menyiapkan perangkat pembelajaran berupa Capaian Pembelajaran (CP), Tujuan Pembelajaran (TP), Alur Tujuan Pembelajaran (ATP), modul ajar, dan evaluasi. Pelaksanaan pembelajaran IPA dalam Kurikulum 2013 menggunakan pembelajaran tematik terpadu didukung adanya penerapan pendekatan saintifik, sedangkan dalam Kurikulum Merdeka Belajar dilakukan dengan berbasis produk, proses, dan sikap. Dalam evaluasi pembelajaran IPA dalam Kurikulum 2013 guru menggunakan ranah kognitif, psikomotorik, dan afektif, sedangkan dalam Kurikulum Merdeka Belajar guru menggunakan asesmen diagnostik, asesmen formatif, asesmen sumatif, dan proyek.

ABSTRACT

Basic education in Indonesia has experienced various curriculum developments, from the 2013 Curriculum to the Independent Learning Curriculum. However, from a transitional point of view, it still needs to provide a clear direction for some practitioners. This study aims to analyze the mapping of planning, to implement, and evaluating science learning in the 2013 Independent Learning Curriculum. Data collection techniques were carried out through interviews, observation, and documentation. The data validity test was carried out by source triangulation. The subjects of this study were the principal and teachers of class IV SD. Data analysis techniques performed interactive models: data reduction, presentation, and conclusion. The results of the study show that the teacher prepares the administration of the Science learning plan in the 2013 Curriculum, namely the syllabus, porta, promissory notes, preparation of lesson plans for Learning Implementation Plans (RPP), media, teaching materials, and evaluation, while in the Independent Learning Curriculum, the teacher prepares learning tools in the form of Learning Outcomes (CP), Learning Objectives (TP), Learning Objective Flow (ATP), teaching modules, and evaluation. The implementation of science learning in the 2013 Curriculum uses integrated thematic learning supported by applying a scientific approach, while in the Merdeka Learning Curriculum, it is carried out based on products, processes, and attitudes. In evaluating science learning in the 2013 curriculum, teachers use the cognitive, psychomotor, and affective domains, while in the Merdeka Learning Curriculum, teachers use diagnostic assessments, formative assessments, summative assessments, and projects.

1. INTRODUCTION

Education is one of the most important aspects for every nation, especially Indonesia. Education is a way to change the fate of underdeveloped countries into developed countries. With the help of education, one can develop his potential and personality (Pane & Dasopang, 2017; Sujana, 2019). Nowadays, everyone needs education to increase their knowledge and potential because education can broaden people's horizons and change the future. The government's concern for education is very large, considering that education is important in building a country's progress and quality of life. Therefore, the government seeks to improve the quality of education to reach a level on par with other countries and compete globally. Education can only be carried out with a curriculum. The curriculum is an integral part of the educational process, where in its implementation, the curriculum is used as a guide in administering education (Rosidah et al., 2021; Safar et al., 2022). With a curriculum, the learning process can run properly. It is because in Indonesia, the curriculum is used as a tool for educational purposes, and the curriculum can be used as a reference for the process of implementing education in Indonesia (Julaeha et al., 2021; Priestley & Philippou, 2019; Rina & Teti, 2019).

In Indonesia, from 2013 to 2020, the government implemented the 2013 Curriculum, which has the aim of preparing Indonesian citizens to live as loyal, productive, creative, innovative citizens who can contribute to the life of a citizen, nation, and state (Akhadiyah et al., 2019; Sugiana, 2018). However, along with the Covid-19 outbreak, the government is trying to adjust to these demands to simplify the curriculum in special circumstances (emergency curriculum) to reduce delays in the teaching and learning process during a pandemic. The Merdeka Belajar Curriculum embodies ideas for changing Indonesian education to form the nation's future successors (Albar, 2022; Rahmadayanti & Hartoyo, 2022). The Merdeka Belajar Program on the Merdeka Curriculum explores teachers' and students' potential and innovation in improving classroom learning quality (Rahmansyah, 2021; Wiguna & Tristianingrat, 2022). The Merdeka Belajar Curriculum is here to perfect the implementation of the 2013 Curriculum. This improvement is carried out from a simpler and more comprehensive aspect of the learning structure that focuses more on essential material and developing student competencies. Contextual and project-based learning strategies make learning activities more interactive and interesting (Rahayu et al., 2022; Sumarsih et al., 2022). In addition, project learning provides opportunities for students to actively explore factual issues such as issues of health, environment, society, and others to develop competence and character in the Pancasila Student Profile (Jannati et al., 2023; Saputra & Hadi, 2022).

The reality on the ground shows that there are still some obstacles to implementing the independent curriculum. It aligns with the results of observations made at SD Negeri 2 Sambongsari. The results of observations and interviews show that there are problems in implementing the Free Learning Curriculum. For example, schools, especially teachers, need to gain experience with learning independence because the Free Learning Curriculum policy, which began in the last two years, has forced them to adapt and learn. On the other hand, teachers sometimes still need help accessing technology, need more adequate skills, such as difficulty mastering or applying basic skills for learning needs in the digital era, and have difficulties implementing the Free Learning Curriculum. The results of observations and interviews also show that in implementing the Independent Curriculum, teachers still experience difficulties or have no direction in providing opportunities for students to develop their thoughts in exploring science concepts independently without developing the process of interaction between students, student interaction with the natural surroundings, or interaction of students with teachers. Science learning should not be separated from the empowerment of scientific attitudes. It is because learning science aims to empower scientific attitudes in elementary school students. The current Freedom of Learning curriculum is expected to provide learning based on freedom of thought, opinion, and problem-solving, especially in science learning.

In the transition of the curriculum in elementary schools learning Natural Sciences (IPA) is one of the subjects whose implementation has shifted. The science learning process provides direct experience to develop students' competencies in exploring and providing an understanding of nature scientifically (Jamaluddin et al., 2020; Laksmi & Suniasih, 2021). It has implications for learning in schools. Science learning needs to refer to the nature of science, namely products, processes, and attitudes (Ali, 2018; Desstyia et al., 2018; Oh, 2017). The nature of natural science as a product is a collection of research results that have been carried out by scientists and have produced ideas that have been studied as a result of conducting experiments, testing various things, and analyzing them (Ali, 2018; Wati et al., 2022). As a product, IPA consists of facts, principles, laws, and theories, whereas as a process, IPA is about finding out and understanding the natural world around us (Meliniasari et al., 2023). Science is not just a collection of facts and ideas. Scientists need to find facts and theories that can be used to explain things in general (Ekasari et al., 2018; Herawati & Muhtadi, 2018). Scientists use skills called scientific process skills to help understand how science works. At the same time, the nature of science as a scientific attitude is attitudes that support science learning, such as curiosity, critical thinking, objective, honesty, open-minded,

conscientious, disciplined, and so on (Arsani et al., 2018; Primayana et al., 2019). In achieving the goals of learning science in schools, teachers must understand the nature of science, be able to become mentors, and create an atmosphere for learning science to the needs and characteristics of students.

Several previous studies revealed that teachers have been able to design and implement learning well in implementing the independent curriculum. However, teachers must still empower students' science process skills and use media in elementary schools (Fembriani, 2022). The results of other studies reveal that teachers' level of understanding in implementing the independent curriculum still needs to be higher (Silaswati, 2022). Further research revealed problems in implementing the Kurikulum Merdeka, where teachers were required to be more creative in designing learning objectives, the flow of learning objectives, and teaching modules. It is done so that teachers are no longer careless in making learning devices aiming to design teaching and learning activities every week (Jannah et al., 2022). Based on some of these research results, teachers' understanding of the implementation and concept of the Merdeka Belajar program still needs to be improved. In addition, the implementation of the Merdeka Curriculum in science learning has yet to be widely disclosed by previous researchers. In previous studies, no studies specifically discussed the mapping of science learning in the 2013 and Merdeka Belajar curricula. So this research is focused on that study to analyze the planning, implementation, and evaluation mapping of science learning in the 2013 and Merdeka Belajar curricula.

2. METHOD

This research was conducted using a qualitative approach. The researcher studied science learning in depth in the 2013 and Merdeka Belajar curricula with this qualitative approach. This research was conducted at SD Negeri 2 Sambongsari, Weleri District, Kendal Regency, a driving school that implements the Merdeka Belajar curriculum. This research took place in October 2022-February 2023. This research aimed to map learning science in the 2013 Merdeka Belajar Curriculum in planning, implementation, and evaluation. The primary data sources in this study were fourth-grade homeroom teachers and school principals at Sambongsari 2 Public Elementary School as implementers of the 2013 Curriculum and the Merdeka Belajar Curriculum. Primary data in the scope of learning with the indicators studied are planning implementation and evaluation of science learning in the 2013 Curriculum and the Merdeka Belajar Curriculum. Secondary data sources are scientific articles from journals, and administrative archives, namely learning tools (lesson plans), teaching modules, learning media, and evaluation sheets.

Data collection techniques are carried out through observation, interviews, and documentation. Interviews were conducted to explore science learning in the 2013 Merdeka Belajar Curriculum. The interviews were structured using an interview guide containing questions regarding planning, implementation, and evaluation in the 2013 and Merdeka Belajar curricula. Observations were made to observe activities about the science learning process carried out by fourth-grade teachers using the 2013 and Merdeka Belajar Curriculum. The documentation in this study is: student presence documents, student grades documents, learning device documents (lesson plans), Teaching Modules, Learning Media, and Evaluation Sheets), as well as photos of activities related to the science learning process in the 2013 Curriculum and the Merdeka Belajar Curriculum. The validity of the research data was carried out by source triangulation. Using this source triangulation, the researcher checked the data again obtained from the results of the principal's interview with the teacher. The research instrument grid is presented in Table 1.

Table 1. Research Instruments

No.	Indicator	Sub indicator	Inter view	Obser vation	Docume ntation
1.	Science Learning in the 2013 Curriculum	Science learning planning in the 2013 Curriculum	√	√	√
		Implementation of science learning in the 2013 curriculum	√	√	√
		Evaluation of science learning in the 2013 Curriculum	√	√	√
2.	Science Learning in the Merdeka Belajar Curriculum	Science learning planning in the Merdeka Belajar Curriculum	√	√	√
		Implementation of science learning in Merdeka Belajar	√	√	√
		Evaluation of science learning in the Merdeka Belajar Curriculum	√	√	√

Data analysis techniques were carried out using interactive models: data reduction, data presentation, and drawing conclusions or verification. The data reduction stage is carried out by collecting

and reducing data outside the research objectives. After that, the second stage is presenting the data, namely processing the data according to the research objectives and finally drawing conclusions.

3. RESULT AND DISCUSSION

Result

The interviews, observations, and documentation show three main findings in this study: The first finding relates to the results of science learning planning in the 2013 and Merdeka Belajar curricula. The results of interviews regarding the 2013 curriculum planning can be seen in [Table 2](#).

Table 2. Science Learning Planning in the 2013 Curriculum

Interview	Observation	Documentation
There is training on implementing the 2013 Curriculum at SD Negeri 2 Sambongsari, usually at the sub-district level.	Training activities were found in implementing the 2013 Curriculum at SDN 2 Sambongsari.	Found photo documentation of training activities in implementing the 2013 Curriculum at SDN 2 Sambongsari.
In science learning planning, the teacher prepares administration, namely syllabus, annual program, promissory notes, preparation of learning tools in lesson plans, learning media, teaching materials, and evaluation. Teachers use learning resources such as student books, teacher books, companion books such as Eagles, teaching aids, LCDs, projectors, and Wi-Fi.	Teacher planning preparations were found, such as administration, syllabus, annual program, semester program, preparation of learning tools in the form of lesson plans, media, teaching materials, evaluation, and learning resources (student books, teacher books, companion books such as erlangga, and props, LCD, projector, and Wi-Fi).	Documentation of teacher planning preparation was found, such as administrative archives, syllabus, annual program, promissory notes, preparation of learning tools in the form of lesson plans, media, teaching materials, evaluation, and learning resources (student books, teacher books, companion books such as erlangga, and teaching aids, LCD, projector, and Wi-Fi).

[Table 2](#) shows that training on implementing the 2013 Curriculum at Sambongsari 2 Public Elementary School was conducted at the sub-district level. It is reinforced by the results of observations about training activities in the implementation of the 2013 Curriculum at SDN 2 Sambongsari and photo documentation of training activities in the implementation of the 2013 Curriculum at SDN 2 Sambongsari showing that training on the implementation of the 2013 Curriculum at SD Negeri 2 Sambongsari is carried out at the sub-district level, this activity is addressed to the head school and teacher. Further, the results of the interview with the principal and then reinforced by interviews with the fourth-grade homeroom teacher, showed that there was a science learning plan for the teacher to prepare administration, namely the syllabus, annual program, semester program, preparation of learning tools in the form of lesson plans, media, teaching materials, and evaluation. Teachers use learning resources such as student books, teacher books, companion books such as Eagles, teaching aids, LCDs, projectors, and Wi-Fi. It is reinforced by the results of observations about teacher planning preparation activities such as administration, syllabus, annual program, a semester program, preparation of learning tools in the form of lesson plans, media, teaching materials, evaluation, learning resources (student books, teacher books, companion books such as erlangga, and props, LCD, projector, and Wi-Fi) and teacher planning preparation documentation such as administrative files, syllabus, annual program, a semester program, preparation of learning tools in the form of lesson plans, media, teaching materials, evaluations, and learning resources (student books, teaching books, companion books such as erlang, and props, LCD, projector, and Wi-Fi). It shows that the teacher carried out this planning before carrying out science learning activities, and the facilities for implementing science learning in the 2013 curriculum were sufficient. Furthermore, the results of interviews related to science learning planning in the Merdeka Belajar curriculum can be seen in [Table 3](#).

Table 3. IPA Learning Planning in the Merdeka Belajar Curriculum

Interview	Observation	Documentation
In preparation for implementing the Free Learning Curriculum at Sambongsari 2 Elementary School, teachers take part in online training in webinars that utilize the Merdeka Belajar Platform (PMM).	Teacher training activities were found in implementing the Free Learning Curriculum at SDN 2 Sambongsari.	Teacher training activities were documented in implementing the Freedom to Learn curriculum at SDN 2 Sambongsari.
In planning science lessons, the teacher prepares learning tools in the form of CP (Learning Outcomes), TP (Learning Objectives), ATP (Learning et al.), teaching modules, and evaluation. Teachers use learning resources in the form of Natural and Social Science books, LCDs, projectors, and Wi-Fi.	It was found that teacher planning prepared learning tools in the form of Learning Outcomes, Learning Objectives, Learning Objectives References, teaching modules, evaluation, and learning resources (books on Natural and Social Sciences, LCD, projectors, and Wi-Fi).	Documentation of teacher planning was found, preparing archives of learning tools in the form of Learning Outcomes, Learning Objectives, Learning Objectives References, teaching modules, evaluations, and learning resources (books on Natural and Social Sciences, LCD, projector, and Wi-Fi).

Based on [Table 3](#), it was found that the results of interviews with the principal and then reinforced by interviews with the fourth-grade homeroom teacher showed that the training on the implementation of the Merdeka Belajar Curriculum at Sambongsari 2 Public Elementary School was carried out through online webinars and utilizing the Merdeka Mengajar Platform (PMM). It is reinforced by the results of observations about training activities in implementing the Merdeka Belajar Curriculum at SDN 2 Sambongsari and photo documentation of training activities in implementing the MERDEKA Curriculum at SDN 2 Sambongsari. This training activity was done through online webinars and the Merdeka Mengajar (PMM) Platform. Furthermore, the results of the interviews show that in implementing the Merdeka Curriculum, there is a science learning plan in which the teacher prepares learning tools in the form of Learning Outcomes, Learning Objectives, Reference Learning Objectives, teaching modules, and evaluation. It is reinforced by the results of observations about teacher planning preparation activities preparing learning tools in the form of Learning Outcomes, Learning Objectives, Learning Objectives References, teaching modules, and evaluation and documentation of learning devices in the form of Learning Outcomes, Learning Objectives, Learning Objectives References, teaching modules, and evaluation. It shows that planning by a teacher before carrying out the science learning process in the Free Learning Curriculum and the facilities for implementing science learning in the Merdeka Belajar Curriculum are sufficient.

The second finding relates to the process of implementing science learning in the 2013 curriculum and the Merdeka Belajar curriculum. The results of observation interviews and documentation related to the implementation of science learning in the 2013 curriculum are presented in [Table 4](#).

Table 4. Implementation of Science Learning in the 2013 Curriculum

Interview	Observation	Documentation
The science learning process in the 2013 Curriculum is carried out in an integrated thematic way. The application of a scientific approach to the inquiry model supports this learning. When learning, the teacher carries out practical activities but only sometimes. During the practice, the teacher and students prepare tools and materials according to the material. The teacher distributes Student Worksheets during practical activities.	It was found that science learning activities in the 2013 Curriculum were integrated thematically and supported by applying a scientific approach with the inquiry model.	Found photo documentation of science learning implementation activities and archives of thematic lesson plans, teaching materials, and evaluations.

[Table 4](#) shows that the science learning process in the 2013 curriculum is carried out in an integrated thematic manner. The application of a scientific approach to the inquiry model supports this learning. When learning, the teacher carries out practical activities but only sometimes. During the practice, the teacher and students prepare materials and tools according to the material. The teacher distributes Student Worksheets during practical activities. It is reinforced by the results of observations about science learning activities in the thematically integrated 2013 curriculum supported by applying a scientific

approach with the inquiry model and photo documentation of science learning activities and archives of thematic lesson plans, teaching materials, and evaluations. It shows that the implementation of science learning in the 2013 curriculum is carried out in an integrated thematic manner applying a scientific approach to the inquiry model. The teacher carries out practical activities. When the practice occurs, the teacher and students prepare materials and tools according to the material, and the teacher prepares Student Worksheets. Furthermore, the results of interviews, observations, and documentation related to implementing science learning in the Merdeka Belajar curriculum are presented in [Table 5](#).

Table 5. Implementation of Science Learning in the Merdeka Belajar Curriculum

Interview	Observation	Documentation
The science learning process in the Free Learning Curriculum is called IPAS (Natural and Social Sciences). Science learning in the Independent Learning Curriculum stands alone according to the materials and topics to be discussed at the fourth-grade level (phase B). The teacher teaches science learning in the Independent Learning Curriculum based on processes, products, and attitudes. The application of differentiated learning supports this learning. In this lesson, the teacher prioritizes practical activities.	It was found that the learning activities of Natural and Social Sciences in the Merdeka Belajar Curriculum are supported by the application of differentiated learning. The teacher prioritizes practical activities.	Photo documentation was found of implementing Natural and Social Sciences learning activities and archives of Learning Outcomes, Learning Objectives References, teaching modules, student books, teaching materials, media, and evaluations.

[Table 5](#) shows that in the Merdeka Belajar Curriculum, the science learning process is called IPAS (Natural and Social Sciences). Learning Natural and Social Sciences in the Merdeka Belajar Curriculum stands alone according to the materials and topics to be discussed at the fourth-grade level (phase B). Teachers teach science learning in the Merdeka Belajar Curriculum based on processes, products, and attitudes. The application of differentiated learning supports this learning. In this lesson, the teacher prioritizes practice. It is reinforced by the results of observations about the learning activities of Natural and Social Sciences in the Merdeka Belajar Curriculum supported by the application of differentiated learning. In this lesson, the teacher prioritizes practical activities and photo documentation of learning activities in Natural and Social Sciences and archives of Learning Achievements, Learning Objectives References, teaching modules, student books, teaching materials, media, and evaluation. It shows that the learning activities of Natural and Social Sciences integrate natural sciences with social sciences. Teachers teach science learning in the Merdeka Belajar Curriculum based on processes, products, and attitudes. The application of differentiated learning supports this learning. In this lesson, the teacher prioritizes practice.

The third finding relates to evaluating science learning in the 2013 and Merdeka Belajar curricula. The description of implementing the 2013 curriculum evaluation is presented in [Table 6](#).

Table 6. Evaluation of Science Learning in the 2013 Curriculum

Interview	Observation	Documentation
The type of evaluation domain used by the teacher in evaluating students is the cognitive domain of the teacher, making questions according to the basic competencies to be achieved by students. The teacher's affective domain assesses attitudes using an assessment rubric and observation journal. The teacher's psychomotor domain assesses student work during discussions and produces products using a project-based psychomotor rubric.	Several evaluation domains were found, namely the cognitive domain in the form of questions in science learning, affective in the form of assessment rubrics and observational journals, and psychomotor in the form of project-based psychomotor rubrics.	Documentation of several evaluation domains was found, namely the cognitive domain in the form of questions in science learning, effective in the form of assessment rubrics and observational journals, and psychomotor in the form of project-based psychomotor rubrics.

Based on [Table 6](#), it was found that in the evaluation of learning science in the 2013 Curriculum in the cognitive domain, the teacher made questions according to the basic competency achievements achieved by students. The questions are made according to a grid based on basic competency indicators. The teacher's affective domain assesses attitudes using an assessment rubric and observation journal. The teacher's psychomotor domain assesses student work during discussions and produces products using a

project-based psychomotor rubric. The observation reinforces that several evaluation domains were found, namely the cognitive domain in the form of questions in science learning, affective in the form of assessment rubrics and observational journals, and psychomotor in the form of project-based psychomotor rubrics. Documentation of several evaluation domains, namely the cognitive domain in the form of questions in science learning, affective in the form of assessment rubrics and observational journals, and psychomotor in the form of project-based psychomotor rubrics. This shows the domains teachers use in evaluating science learning in the 2013 Curriculum: cognitive, affective, and psychomotor. Furthermore, the learning evaluation process in the Merdeka Belajar curriculum can be seen in [Table 7](#).

Table 7. Evaluation of Science Learning in the Merdeka Belajar Curriculum

Interview	Observation	Documentation
The types of evaluation teachers use in evaluating students are diagnostic assessments, formative assessments, summative assessments, and projects. In the cognitive domain, the teacher questions learning objectives in the chapters students have studied. The teacher's affective domain assesses by creating a rubric based on the achievements of the Pancasila student profile. In the psychomotor domain, values are obtained from projects in the Natural and Social Sciences module. In every lesson, there must be project work.	Several types of evaluation were found, namely diagnostic assessment, formative assessment, summative assessment, and project. The cognitive domain is the topical question in science learning. The affective domain is in the form of rubrics based on the achievements of Pancasila student profiles, and the psychomotor domain is through project activities.	Documentation of several types of evaluations was found, namely diagnostic assessments, formative assessments, summative assessments, and projects. The cognitive domain is the topical question in science learning. The affective domain is in the form of rubrics based on the achievements of Pancasila student profiles, and the psychomotor domain is through project activities.

Based on [Table 7](#), it was found that the results of the evaluation of science learning in the Merdeka Belajar Curriculum teachers used diagnostic assessments, formative assessments, summative assessments, and projects. In the cognitive domain, the teacher questions learning objectives in the chapters students have studied. The teacher's affective domain assesses by creating a rubric based on the achievements of the Pancasila student profile. In the psychomotor domain, values are obtained from projects in the Natural and Social Sciences module. In every lesson, there must be project work. It is reinforced by the observation results of the discovery of several types of evaluation in all three and documentation of the discovery of several types of evaluation in all three.

Discussion

Based on the results of the data analysis, it can be seen that there are three main findings in this study. The discussion of each research result is as follows: the first finding shows that planning for the 2013 curriculum is carried out through training for the 2013 Curriculum, which is carried out at the sub-district level, while the Merdeka Belajar curriculum planning is carried out through online webinar training and utilizing the Merdeka Mengajar Platform (PMM). In planning the 2013 curriculum, besides participating in training at the sub-district level, teachers also participated in the Teacher Working Group (KKG), a professional group activity for elementary school teachers in one cluster or sub-district. The Teacher Working Group is one of the associations to improve teacher skills and competencies inside and outside the classroom ([Ismayani, 2019](#); [Setiawan et al., 2020](#)). In science learning planning, the teacher prepares administration starting from the syllabus, annual program, promissory notes, preparation of learning tools in the form of lesson plans, media, teaching materials, evaluation, and learning resources in the form of teaching books, student books, companion books such as erlangga publishers, and teaching aids, LCD, projector, and Wi-Fi. This planning the teacher does before carrying out science learning activities. Learning planning is important to mitigate a problem that will arise and later achieve goal-directed learning ([Ali, 2018](#); [Wati et al., 2022](#)). The teacher starts the lesson plan by preparing a lesson plan for science lessons first ([Fauzi et al., 2022](#); [Saitya, 2022](#)). The 2013 Curriculum lesson plan has several components that must be met: identity, competency standards, basic competencies, learning objectives, learning steps, learning resources and tools, and assessment.

The results of the first finding also show that science learning planning in the Merdeka Curriculum is carried out through online webinar training and utilizing the Merdeka Mengajar (PMM) Platform. Implementing the Merdeka Curriculum is supported by the provision of training, procurement of teacher learning resources, and innovative learning tools, and is supported by school principals and local offices

(Prianti, 2022; Sari & Gumiandari, 2022). The procurement of teaching materials in question is a school operational curriculum, design learning objectives, textbooks, teaching modules, and a project to strengthen the Pancasila Student Profile available on a digital platform for teachers. The training is carried out by providing quality resource persons in implementing the Merdeka Curriculum, providing various learning resources to teachers in the form of e-books and podcasts, which can be accessed online. This training helps teachers find inspiration, references, knowledge, and insights in implementing the curriculum independently. In science learning planning, the teacher prepares learning tools consisting of components in the form of Learning Outcomes, Learning Objectives, Learning Objectives References, teaching modules, evaluations, and learning resources in the form of Natural and Social Sciences books, LCDs, projectors, and Wi-Fi. As a teacher, the first thing that needs to be done before carrying out the science learning process is to prepare learning tools in the form of Learning Outcomes (Ainia, 2020; Daga, 2021). This Learning Outcome was developed by strengthening and strengthening existing Basic Competencies and Core Competencies by focusing on developing student competencies (Rahayu et al., 2022; Sumarsih et al., 2022). In addition, the teacher must also prepare Learning Objectives and Learning Objectives References, a series of learning objectives arranged systematically and logically during the learning period from the initial phase to the final phase (Maulinda, 2022; Nesri & Kristanto, 2020).

The second finding shows that in the 2013 curriculum learning, the teachers carry out science learning in an integrated thematic manner by the lesson plan that has been prepared, while in the Merdeka curriculum, the teacher carries out learning of Natural and Social Sciences by the teaching modules that have been made. The implementation stage of science learning in the 2013 curriculum begins with mapping the Basic Competencies of learning content or themes and establishing Basic Competency groups of various learning content suitable for integration into thematic learning. After that, the teacher develops competency achievement indicators for each selected Basic Competency. With this network of themes, there are related themes, Basic Competencies, and learning indicators. Teachers use integrated thematic learning supported by the application of a scientific approach. The scientific approach is a scientific activity that includes observing, asking, collecting various information, associating, and communicating (Andiana et al., 2018; Maulidina et al., 2018). Furthermore, in terms of implementing the independent curriculum, the teacher carries out learning in Natural and Social Sciences through the teaching modules that have been made. Natural and Social Science learning activities integrate natural science with social science. Learning Natural and Social Sciences in the Independent Learning Curriculum aims to inspire children to deal with the natural and social environment in one unit (Budiwati et al., 2023; Yasmansyah & Sesmiarni, 2022). In addition, learning Natural and Social Sciences is also carried out to develop self-interest and curiosity, playing an active role, developing inquiry skills, understanding oneself and the environment, and developing knowledge and understanding of concepts (Agustina et al., 2022; Solehudin et al., 2022).

Implementing science learning in the Merdeka Belajar Curriculum focuses on essential material and developing student competencies in each phase so students can learn more deeply, meaningfully, and interestingly without rushing. The phase or level of development itself is a learning achievement that a student must achieve according to the characteristics, potential, and needs of students (Jannati et al., 2023; Saputra & Hadi, 2022). The application of differentiated learning supports science learning in the Merdeka Belajar curriculum. Differentiated learning can facilitate the differences that students have openly with the needs of students to be achieved. This learning aims to adapt learning that will be student-centered (Sherly et al., 2020). The implementation of science learning is carried out by the teacher not only fixated in class, but the teacher also utilizes the schoolyard as a means of learning resources. Students are free to use various learning resources to understand science material.

The third finding shows that the evaluation process in the 2013 curriculum is carried out using the cognitive, psychomotor, and affective domains. In the Merdeka curriculum, the evaluation process uses diagnostic assessments, formative assessments, summative assessments, and projects. In the thematic learning of the 2013 curriculum, the teacher uses authentic assessments, namely knowledge, skills, and attitudes, which are divided into two spiritual attitude assessments (referring to the formation of piety and faith) and social attitudes (honesty, responsibility, tolerance, discipline, courtesy, cooperation, and confident) (Magdalena et al., 2021; Tiara & Sari, 2019). Furthermore, in the Merdeka curriculum, the teacher provides a non-cognitive diagnostic assessment by giving probing questions to students to identify student competence achievements, adapting classroom learning to average student performance, and providing improvement or additional learning for students whose performance is below average (Rahmansyah, 2021; Wiguna & Tristaningrat, 2022). In learning, the teacher conducts a diagnostic assessment at the beginning of the semester because the diagnostic assessment is carried out specifically to identify students' abilities, strengths, and weaknesses so that learning can be adapted to the abilities and circumstances of students and create differentiated learning. In differentiation learning, the teacher adjusts learning according to students' needs, types, and learning styles.

Evaluation of science learning in the cognitive domain, the teacher conducts assessments with formative assessments and summative assessments. Formative assessment is carried out to determine a student's readiness to learn the subject matter and achieve the desired learning goals. This assessment is carried out at the end of the lesson, which is useful for measuring the level of success of the teacher in teaching the material. In research, the teacher gave evaluation questions according to Learning Outcomes at the end of the lesson after explaining the material presented. Summative assessment is carried out to ensure that the overall learning objectives have been achieved. The purpose of the summative assessment is to measure students' skills and understanding and to provide feedback to students. Summative assessment in the form of a written test called STS (midterm summative) and SAS (end-of-semester summative) (Safitri et al., 2022; Sulastri et al., 2022).

The results obtained in this study are slightly different from those of previous research, where previous research revealed that teachers have been able to design and implement learning well in implementing the Merdeka curriculum. However, teachers must still empower elementary school students' science process skills and media use (Fembriani, 2022). The results of other studies reveal that teachers' level of understanding in implementing the Merdeka curriculum still needs to be higher (Silaswati, 2022). Further research revealed problems in implementing the Merdeka Curriculum, where teachers were required to be more creative in designing learning objectives, learning objectives flow, and teaching modules. It is done so that teachers are no longer careless in making learning devices aiming to design Teaching and Learning Activities every week (Jannah et al., 2022). So based on these results, the level of teacher understanding of the implementation and concept of the Merdeka Belajar program still needs to be higher. At the same time, the results of this study are more focused on mapping science learning in the 2013 and independent learning curricula

4. CONCLUSION

Based on the study's results, it was shown that from a planning standpoint, teachers participated in the 2013 Curriculum training at the sub-district level. In planning for science lessons, the teacher prepares administration, namely syllabus, annual program, promissory notes, preparation of learning tools in lesson plans, media, teaching materials, and evaluation. The Merdeka Curriculum is conducted through online webinar training and utilizing the Merdeka Mengajar (PMM) Platform. The teacher prepares learning tools in Learning Outcomes, Learning Objectives, Learning Objectives, References, teaching modules, and evaluation. In terms of implementation, science learning in the 2013 curriculum uses integrated thematic learning supported by a scientific approach, while in the Merdeka Belajar curriculum, it is carried out based on products, processes, and attitudes. The application of differentiated learning supports science learning in the Merdeka Belajar curriculum. In terms of evaluation, teachers use the cognitive, psychomotor, and affective domains of science learning in the 2013 Curriculum, while in the Merdeka Belajar Curriculum, teachers use diagnostic assessments, formative assessments, summative assessments, and projects. This research can provide direction for practitioners, especially in teaching science at the elementary school level, starting from the transition of the 2013 Curriculum to the Merdeka Belajar Curriculum.

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