p-ISSN: 2086-4280
e-ISSN: 2527-8827

Merdeka Curriculum: How the Profile of Planning for Mathematics Learning by Teachers?

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Article received: 16-11-2023, revised: 10-12-2023, published: 30-01-2024

Abstrak

Pebedaan fasilitas yang diterima satuan pendidikan terkait implementasi Kurikulum Merdeka berpengaruh terhadap perbedaan tingkat pemahaman guru antar sekolah. Tujuan penelitian ini adalah mendeskripsikan perencanaan pembelajaran matematika dalam Kurikulum Merdeka di tingkat SMP di Kota Magelang. Urgensi penelitian ini adalah perlunya gambaran implementasi pembelajaran matematika dalam Kurikulum Merdeka di tingkat satuan pendidikan dari segi perencanaan untuk bahan evaluasi dan inspirasi pembelajaran matematika dalam implementasi Kurikulum Merdeka. Penelitian ini merupakan penelitian kualitatif dengan metode deskriptif. Penelitian dilaksanakan di tujuh SMP negeri di Kota Magelang. Teknik utama pengambilan data melalui wawancara dengan satu guru matematika pengampu kelas 7 di tiap sekolah. Teknik analisis data yang digunakan meliputi pencatatan data hasil wawancara dan dokumentasi, pengkodean data, olah data, analisis data, dan interpretasi data. Hasil penelitian mendeskripsikan perencanaan pembelajaran matematika dalam Kurikulum Merdeka tingkat SMP di Kota Magelang meliputi CP, TP, ATP, modul ajar, dan, asesmen. Rata-rata, guru melakukan modifikasi dalam penyusunan perangkat ajar disesuaikan dengan kebutuhan peserta didik sekolah masing-masing.
Kata Kunci: Kurikulum Merdeka; Matematika; Perencanaan

Abstract

The differences in facilities received by educational units related to the implementation of the Independent Curriculum influence differences in the level of teacher understanding between schools. The purpose of this study is to describe mathematics learning planning in the Merdeka Curriculum at the junior high school level in Magelang City. The urgency of this research is the need for a description or description of the implementation of mathematics learning in the Merdeka Curriculum at the education unit level in terms of planning so that it can be used as an evaluation and inspiration for mathematics learning in implementing the Merdeka Curriculum. This research is a qualitative research with descriptive method. This research was conducted in seven public junior high schools in Magelang City with the main technique of data collection through interviews with one 7th grade math teacher in each school. The data analysis technique used in this research includes recording data from interviews and documentation, then coding data, processing data, analyzing data, interpreting data. The results of this study describe mathematics learning planning in the Merdeka Curriculum at the junior high school level in Magelang City including CP, TP, ATP, teaching modules, and, assessment. On average, teachers modify existing documents and adapt them to the needs of students in their respective schools.
Keywords: Mathematics; Merdeka Curriculum; Planning

I. INTRODUCTION

One of the implementations of the Merdeka Curriculum is implemented at the secondary education level. The Merdeka Curriculum provides 3 independent implementation options for schools due to the pandemic and will be reviewed in 2024 (Rahmadayanti & Hartoyo, 2022; Pusporini et al., 2023). The independent implementation options are independent learning, independent change, and independent sharing (Barton & Dexter, 2020). This curriculum has characteristics, namely the development of soft skills and character through the Pancasila Student Profile Strengthening Project (P5), focus on essential material, and flexible learning (Putri et al., 2023). Merdeka curriculum refers to the formation of the Pancasila student profile with the aim of strengthening student character and skills as an important component in implementing learning and supporting efforts to improve the quality of education (Nurasiah et al., 2022; Rizaldi & Fatimah, 2022; Ghassani et al., 2023).

The first option for implementing the Merdeka Curriculum is independent learning, providing educational units with the opportunity to use the 2013 Curriculum structure in developing their education unit curriculum and applying several principles of the Merdeka Curriculum in carrying out learning and assessment (Kemdikbudristek, 2023). Second, independent change, education units use the Merdeka Curriculum structure in developing their education unit curriculum and apply the principles of the Merdeka Curriculum in carrying out learning and assessment (Kemdikbudristek, 2023) or use teaching tools that have been provided in education units (Creswell & Clark, 2011; Aljawarneh, 2020). Third, independent sharing provides flexibility for education units to use the Merdeka Curriculum structure in developing their education unit curriculum and applying the principles of the Merdeka Curriculum in carrying out learning and assessment, with a commitment to share their good practices with other education units (Kemdikbudristek, 2023).

Based on the Keputusan Menteri Pendidikan, Kebudayaan, Riset, Dan Teknologi Republik Indonesia Number 262/M/2022, the secondary education curriculum structure consists of 1 phase, namely phase D covering grades VII, VIII and IX and is divided into 2 main activities, namely: Intracurricular learning and P5 are allocated about 25% of the total lesson hours per year. The time allocation for each subject for 1 lesson hour is 40 minutes. One of the subjects allocated to junior secondary schools in this curriculum is mathematics.

In the Merdeka Curriculum guidelines, there is an explanation of learning outcomes (Siregar, Sumanik, & Christianto, 2022), namely the learning competencies that students must achieve in each phase. In accordance with the characteristics of the Merdeka Curriculum, the guidelines describe P5, namely project-based co-curricular activities as an effort to achieve competence and character according to the profile of Pancasila students (Meganingtyas & Aryani, 2023). In implementing the Merdeka Curriculum learning, it requires teaching tools. Teaching tools provided by the government include P5 modules, teaching modules, and textbooks. Based on these guidelines (Ramadhan, 2023), it is

p-ISSN: 2086-4280
e-ISSN: 2527-8827

necessary to prepare learning planning, implementation, and assessment. In the implementation of learning, teachers need to prepare learning optimally according to the curriculum structure or learning objectives in place and teachers have the knowledge to make mathematics meaningful to students (Landas & Alova, 2022; Munna & Kalam, 2021; Afriansyah et al., 2023).

Not all levels have implemented the Merdeka Curriculum (Ndari & Mahmudah, 2023; Rohmah et al., 2023). In the implementation of each subject, there are applications that reflect the characteristics of the Merdeka Curriculum, one of which is mathematics. The junior high school secondary education unit level in Magelang City also implements the Merdeka Curriculum but not all levels or classes. Not all schools are driving schools so that the facilities received related to the implementation of the Merdeka Curriculum are different, this affects the level of understanding of teachers between schools can vary in lesson planning.

Based on these descriptions, it is necessary to describe or describe the implementation of mathematics learning in Magelang City in the Merdeka Curriculum at the junior high school level in terms of planning, implementation, and assessment so that it can be used as an evaluation and inspiration for mathematics learning in implementing the Merdeka Curriculum. This description of the implementation of mathematics learning in the Merdeka Curriculum can be used as an evaluation and inspiration for mathematics learning in the implementation of the Merdeka Curriculum.

The purpose of this study is to describe mathematics learning planning in the Merdeka Curriculum at the junior high school level in Magelang City. The description for planning includes analyzing mathematics learning outcomes, diagnostic assessments, as well as mathematics teaching modules and P5 modules, formative and summative assessments.

This research is important because it describes how teachers adapt the curriculum, how teachers apply the principles of the independent curriculum, how lesson planning facilitates student needs and influences educational outcomes, and identifies the needs and challenges faced by teachers. The novelty in this research is that the descriptions described include analyzing mathematics learning outcomes, diagnostic assessments, as well as mathematics teaching modules and P5 modules, formative and summative assessments.

II. METHOD

This research is qualitative research with descriptive method. This research describes the implementation of mathematics learning in the independent curriculum in junior high schools in terms of lesson planning. The sampling technique of this research uses purposive sampling. Purposive sampling is widely used in qualitative research to identify and obtain deeper and richer information related to the matter under study (Palinkas et al., 2015; Patton, 2022). This sampling technique involves and selects individuals or

groups of individuals who have special knowledge or experience in the matter under study (Creswell, 2011). This technique needs to take into account the importance of availability and willingness to participate, and the ability to communicate experiences and opinions in a clear, expressive, and reflective manner (Noble & Heale, 2019). Thus, the sample of public junior high school in Magelang city was obtained as many as 7 junior high school mathematics teachers in Magelang city, each school has one teacher. The research was conducted in public junior high schools in Magelang city, namely SMP N 1 Magelang, SMP N 2 Magelang, SMP N 7 Magelang, SMP N 8 Magelang, SMP N 11 Magelang, SMP N 12 Magelang, SMP N 13 Magelang. While the presence of the researcher acted as an instrument as well as a data collector.

The data collection techniques used were 1) interviews, interviews were conducted with semi-structured interviews through questions and answers between researchers and informants. 2) documentation, this documentation technique researchers take research sources or objects from documents or notes and video or sound recordings during interviews. In this case, it is equipped with interview guidelines, and aftar documents that need to be obtained.

The data analysis technique used in this research includes recording data from interviews and documentation, then coding data, processing data, analyzing data, interpreting data. The data obtained was triangulated. Triangulation is done to help increase the credibility and validity of research or validate the results of a study (Bernard, 2002; Bans-Akutey & Tiimub, 2021; Carter et al, 2014).

III. Result and Discussion

A. Learning Outcomes (Capain Pembelajaran - CP)

The Merdeka Curriculum has determined the Learning Outcomes (Capaian Pembelaajran - CP) of Mathematics subjects for each phase. An example of Learning Outcomes can be seen in Figure 1.

Elemen	Fase D
Bilangan	Di akhir fase D, peserta didik dapat membaca, menulis, dan membandingkan bilangan bulat, bilangan rasional dan irasional, bilangan desimal, bilangan berpangkat bulat dan akar, bilangan dalam notasi ilmiah. Mereka dapat menerapkan operasi aritmetika pada bilangan real, dan memberikan estimasi/perkiraan dalam menyelesaikan masalah (termasuk berkaitan dengan literasi finansial). Peserta didik dapat menggunakan faktorisasi prima dan pengertian rasio (skala, proporsi, dan laju perubahan) dalam penyelesaian masalah.

Figure 1. Example of Learning Ourcomes for Phase D Mathematics

In the CP analysis process, teachers held a meeting or discussion with mathematics teachers at school first or MGMP (Musyawarah Guru Mata Pelajaran) Mathematics at the school level, then gathered with MGMP Mathematics (Musyawarah Guru Mata Pelajaran Mathematics) Magelang City. In this MGMP meeting, mathematics teachers throughout Magelang city analyzed the contents of the CP, agree on the materials, and share tasks for making learning intruments. The existence of this MGMP helps teachers understand and prepare learning instruments, which is one of the teacher's pedagogical skills. This is in line with the results of research Supriyanto (2019) that the mathematics MGMP which aims to equalize perceptions between teachers so

p-ISSN: 2086-4280
e-ISSN: 2527-8827

that it plays an important role in teacher pedagogical development.

In addition to MGMP, there is also the Learning Committee Training (Pelatihan Komite Pembelajaran - PKP) for school principals, teachers and school supervisors from education units that run the PSP (Program Sekolah Penggerak) program. However, not all teachers received the training because the training was intended for registered participants and from the Sekolah Penggerak. One of the teachers who attended the training was a mathematics teacher from SMP N 7 Kota Magelang. Through this training, it provides facilities for teachers to understand the Merdeka Curriculum so that it can be implemented at school. This was also revealed by Febriani et al. (2022), who stated that the PKP training aims to make participants understand the Program Sekolah Penggerak, one of which is the implementation of the independent curriculum, and its implications in learning according to their respective roles. The hope is that this training activity needs to be disseminated to all teachers in schools who have participated in this training so that they can implement the independent curriculum in each participant's school.

Based on the results of interviews with teachers related to CP, teachers analyze CP from documents compiled by the Ministry of Education's Education Standards, Curriculum and Assessment Agency in 2022 as a basis for preparing lesson plans. Teachers identify the abilities that must be achieved by students, for example, in the number element, students can read, write, compare, apply arithmetic operations, provide estimates, and use. Furthermore, identifying the material in an element, for example in the number element, the material can be described as integers, rational numbers, decimal numbers, whole numbers, root forms, scientific notation, prime factorization, and comparison.

The results of this CP analysis, for example, learners can read, write, and compare whole numbers, rational and irrational numbers, decimal numbers. The depth and breadth of material to be taught is adjusted to the needs of learners in each school.

B. Learning Objectives (Tujuan Pembelajaran - TP)

The learning outcomes (CP) that have been analyzed are then elaborated into more operational and concrete learning objectives. The way you describe the learning outcomes into learning objectives is by taking the verbs written in the CP, for example the verbs read, write, and compare. Furthermore, identifying the material, for example, in the CP written material rational and irrational numbers, decimal numbers, whole numbers and roots, numbers in scientific notation. These materials are described one by one so that the learning objectives are compiled, for example, students can read and write whole numbers.

The preparation of this TP must be guided by the CP or in other words, it must be in line with the CP that has been prepared by the government, then this TP is adjusted to the needs and characteristics of students in the school where the teacher teaches. This statement in line with Lestari

et al (2023) that making of learning objectives (TP) must be in line with the government-approved learning outcomes (CP) that can be used by teachers according to the conditions and characteristics of the school.

In addition, there are abilities or skills that need to be shown or demonstrated by learners such as mathematical reasoning and proof, mathematical problem solving, communication, mathematical representation, and mathematical connections. The teacher determines that these skills need to be shown by learners directly during learning, for example when solving problem exercises. The achievement of learning objectives is identified from the assessment.

C. Flow of Learning Objectives (Alur Tujuan Pembelajaran - ATP)

In addition to analyzing learning outcomes into learning objectives, a flow of learning objectives is also compiled at each grade level. In the preparation of ATP, some teachers use existing examples, modify from examples, and some design their own. The teacher's steps in preparing ATP initially analyzed CP, then CP became TP. Based on the identification of CP by detailing domains or elements, abilities that need to be achieved, materials, learning objectives and codes, MGMP teachers in one school discuss the distribution of materials for each grade level and the allocation of learning time. The time allocation for each learning objective is adjusted to the effective days in each school and the scope of the material. The following is an example of ATP prepared by teachers on 4 learning objectives from the number domain.

ANALISIS CAPAIAN PEMBELAJARAN MATEMATIKA FASE D MENJADI TUJUAN PEMBELAJARAN DAN ALUR TUJUAN PEMBELAJARAN DI SETIAP JENJANG KELAS

KELAS VII

Domain / Elemen	Materi	Kode TP	Tujuan Pembelajaran	Kelas / Semester	Alokasi Waktu
BILANGAN					
Peserta didik dapat membaca, menulis, dan membandingkan bilangan bulat, bilangan rasional dan irasional, bilangan desimal.	Bilangan Bulat	B.1	Peserta didik dapat membaca dan menulis bilangan bulat.	VII / 1	2 JP
		B.2	Peserta didik dapat membandingkan bilangan bulat.	VII / 1	2 JP
	Bilangan Rasional	B.3	Peserta didik dapat membaca dan menulis bilangan rasional dan irasional, bilangan desimal.	VII / 1	2 JP
		B.4	Peserta didik dapat membandingkan bilangan rasional dan irasional, bilangan desimal.	VII / 1	2 JP

Figure 2. Example of ATP

D. Teaching Module

In the preparation of teaching modules, some teachers compile independently, modify, and some use teaching modules from existing examples. This is still included in the purpose of developing teaching modules which in their use teachers have the freedom to choose or modify teaching modules that have been provided by the government to adapt to the characteristics of students or develop their own teaching modules according to the characteristics of students (Kemdikbud, 2023).

In the preparation process, teachers utilize Merdeka Mengajar Platform as a reference for finding examples of teaching modules. Apart from this platform, teachers use other sources such as YouTube, teacher science, and the internet. Teaching modules are made according to the needs of students in each school. For example, teachers at SMP N 11 Kota Magelang, compile modified teaching modules according to the characteristics of students who mostly come from rural areas, so there are adjustments to learning activities and the profile of Pancasila students.

Teachers know the minimum components in the teaching module, namely learning objectives, learning steps, and learning assessments. Although there are minimal components, teachers still add other components to complete the teaching module including general information,

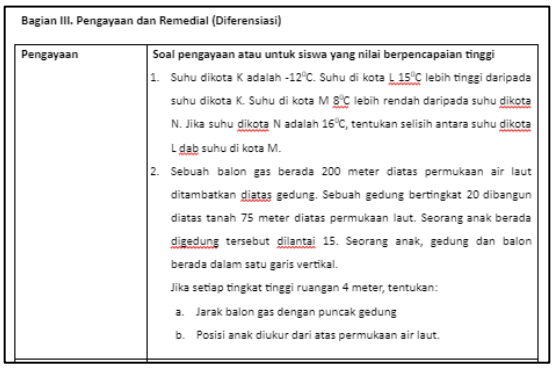
p-ISSN: 2086-4280
e-ISSN: 2527-8827

learning outcomes and objectives, lesson hour allocation, triggering questions, meaningful understanding, Pancasila learner profile, references, media, worksheets, assessments, and reflections. Basically, teachers in education units are given the freedom to develop components in teaching modules according to the environmental context and learning needs of students.

In the preparation of triggering questions, teachers consider the material to be taught. If the material is easily related to daily activities, then take the context of daily activities, but if the material is not too easy to be related to daily life, then the teacher provides formal math problems. Triggering questions aim to guide students to gain understanding in accordance with the learning objectives (Pontjowulan, 2022).

The learning models planned by teachers include Problem Based Learning, Discovery Learning, and lecture. In project-based learning, not all teachers plan project-based learning. The teachers who conveyed, in making plans in the teaching module wrote the Problem Based Learning (PBL) learning model, but the implementation could be different from the activities written in the teaching module because the conditions of students in each class were different. Therefore, before problem orientation, the teacher provides an explanation of the material first, and after that the problem is given. This activity is not fully in accordance with PBL syntax. This is done because it prioritizes so that the learning objectives can be achieved.

To facilitate students, the Merdeka Curriculum includes differentiated learning. Not all teachers have planned differentiated learning. Teachers who have planned differentiated learning use product and content differentiation types. Content differentiation made by teachers, for example, differentiation in question exercises. The following is an example of differentiation prepared by the teacher.



Bagian III. Pengayaan dan Remedial (Diferensiasi)

Pengayaan	**Soal pengayaan atau untuk siswa yang nilai berpencapaian tinggi** 1. Suhu dikota K adalah -12^{0}C. Suhu di kota L 15^{0}C lebih tinggi daripada suhu dikota K. Suhu di kota M 8^{0}C lebih rendah daripada suhu dikota N. Jika suhu dikota N adalah 16^{0}C, tentukan selisih antara suhu dikota L dab suhu di kota M. 2. Sebuah balon gas berada 200 meter diatas permukaan air laut ditambatkan diatas gedung. Sebuah gedung bertingkat 20 dibangun diatas tanah 75 meter diatas permukaan laut. Seorang anak berada digedung tersebut dilantai 15. Seorang anak, gedung dan balon berada dalam satu garis vertikal. Jika setiap tingkat tinggi ruangan 4 meter, tentukan: a. Jarak balon gas dengan puncak gedung b. Posisi anak diukur dari atas permukaan air laut.

Figure 2. Content Differentiation in Assessments

Teachers who have not planned this differentiated learning because they need examples of differentiated learning such as the variety of learning activities, how to organize differentiated learning in the classroom, knowing, and preparation and implementation. In addition, there are teachers who have not identified the characteristics of students that can be a consideration for implementing differentiated learning. Meanwhile, differentiated learning has certain objectives. The objectives of differentiated learning include helping students learn, increasing student motivation and learning outcomes, establishing harmonious relationships between teachers and students, helping students become independent learners, and increasing teacher satisfaction (Marlina, 2019).

Reflections written on the teaching module are reflections for teachers and

students. This reflection is through questions that are delivered orally. The student reflection is done through written questions. Planned reflections, for example, teachers reflect by answering questions related to the implementation of learning activities while students reflect by answering questions related to the material that has been learned.

The learning resources used by teachers include mathematics books for grade VII Junior High School published by the Ministry of Education and Culture's Curriculum Center published in 2021 and 2022. Learning resources in the form of books from the government that are used in learning showed in Figure 4.

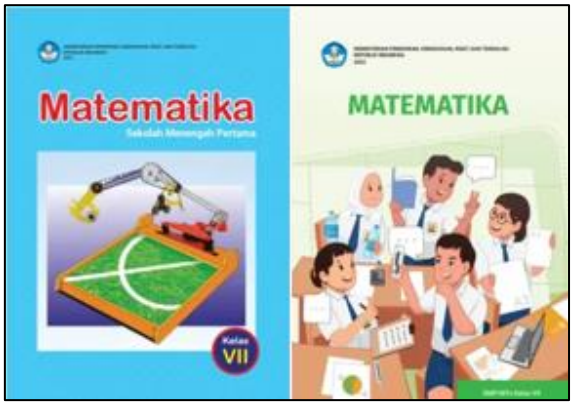


Figure 3. Grade 7 Mathematics Books

The majority of teachers have not developed their own teaching materials. Teaching materials made by teachers include using PowerPoint. The use of media planned by teachers is usually used on geometry material. For multimedia, teachers have not utilized much because it takes time to prepare.

There are 6 dimensions of the Pancasila Student Profile included in the teaching module. Not all of the six dimensions appear in every meeting. The type of dimension shown depends on the learning activities in class.

In general, the learning activities planned in the learning activities are opening the class, praying, checking student attendance, conveying information about the learning that will be carried out, providing motivation or questions about the application of the material in everyday life. The planned core activities are activities according to the syntax of the selected learning model. Then, closing activities, planned activities include making conclusions, providing material reinforcement, providing post-tests, giving assignments, providing information on the next meeting's material, and closing the lesson.

According to Suryadi (2021) and Maielfi (2021), the steps for preparing teaching modules are analyzing the needs of students, teachers, and schools, identifying, and determining the character of students, selecting the sequence of learning objectives, making teaching modules based on the specified components, practicing learning, and evaluating and following up. This step can be used as an alternative.

E. Learning Assessment

The planned assessments are formative assessments and summative assessments. Formative assessments are planned to be carried out at each meeting, each sub-chapter, or in the form of assignments. The purpose of this formative assessment is to improve the learning process based on the results of the assessment analysis. The form of assessment questions is in the form of multiple choice and description. The teacher who mentioned conducting

formative assessment through oral tests at the end of the lesson. Test implementation can be in writing or using applications such as Google Form, Quizizz, and others. In addition, before starting new material, teachers conduct an initial assessment of ability through a pre-test in writing or asking questions orally.

Summative assessment is planned by the teacher to be carried out at the end of each chapter, at the end of each learning objective, mid-semester assessment, and the end of the school year adjusted to the teacher's consideration or school policy. The form of questions in this assessment is multiple choice and description which is carried out in a written test. The purpose of summative assessment is to determine the overall learning achievement. The teacher's obstacle in preparing assessments is that the teacher does not feel very proficient in preparing literacy and numeracy assessments.

IV. CONCLUSION

There is a special community for teachers to discuss or update information about mathematics learning including learning tools, namely in MGMP mathematics in schools and cities. In the process of preparing TP, ATP, and teaching modules, teachers modify existing documents and adapt them to the needs of students in their respective schools.

There are several things that need to be applied in future planning, namely differentiated learning, early learning assessment, project-based learning, collaborative learning or integration between subjects, the use of mathematics learning media, and assessment for literacy and numeracy.

The recommendations for future research are the development of a guidebook for implementing differentiated learning, collaborative learning between subjects or integration between subjects, development of teaching materials tailored to the characteristics or abilities of students, instruments to identify the character of students in order to plan differentiated learning, development of learning media, and literacy and numeracy assessment.

ACKNOWLEDGEMENT

This research is fully funded by Kemdikbudristek through the Penelitian Dosen Pemula scheme.

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