



## Development of Teaching Module for the Merdeka Curriculum with Nuances Critical Reasoning for Elementary School Students

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**Abstract:** This research aims to develop a teaching module for the Merdeka Curriculum with nuances of critical reasoning for elementary school students. It does this by outlining the validity level assessed from the teaching module's suitability aspect, language aspects, and empirical validity of the practicality level of the module. This study used the research and development method with the 4D model, which involved definition, design, development, and dissemination. The instruments used in this research included validation sheets, interviews, teacher and student questionnaires, field trials, and trial observation checklists. Data analysis techniques involved qualitative content analysis and descriptive statistics. The findings demonstrated that three of the four stages, define, design, and development, were completed to construct the teaching module. The curriculum analysis, teaching module needs analysis, learning outcomes analysis, and material analysis are completed during the define step. Designing instructional modules that satisfy requirements for viability, correctness, clarity, and attractive presentation is the design stage process. Teaching module products were put through testing, validation procedures, and practicality checks to complete the development stage. The average percentage of the language component and the appropriateness aspect in the validity of the teaching module were 4.87 and 4.81, respectively, with very valid criteria. Based on teacher answer questionnaires (4.6 with very practical criteria) and student response questionnaires (4.2 with very practical criteria), the practicality of the teaching module was determined. Based on these results, the teaching module is valid and practical, so it qualifies as a feasible and quality development product.

### Article History

Received: 06-04-2024

Revised: 20-05-2024

Accepted: 26-06-2024

Published: 15-07-2024

### Key Words:

Development; Teaching Module; Merdeka Curriculum; Critical Reasoning.

**How to Cite:** Angelina, A., Bistari, B., & Halidjah, S. (2024). Development of Teaching Module for the Merdeka Curriculum with Nuances Critical Reasoning for Elementary School Students. *Jurnal Paedagogy*, 11(3), 580-592. doi:<https://doi.org/10.33394/jp.v11i3.11815>



<https://doi.org/10.33394/jp.v11i3.11815>

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## Introduction

One of the most important considerations to encourage intelligence and self-development is education. Establishing and sustaining high educational standards proves challenging, particularly while trying to advance education in Indonesia (Anggraena et al., 2022). Adjustment between learning and learner characteristics and achievement levels is crucial (Jenkins, 2020). As a guide for the learning process, the curriculum is genuinely indispensable to the existence of instructors and students (Suratno et al., 2022). The curriculum is designed in line with the stages of curriculum planning, implementation, and evaluation, ultimately resulting in a curriculum design (Lunenburg, 2011). Indonesia is starting to implement a new curriculum that has entered the trial stage. The curriculum is a Merdeka curriculum.

The Merdeka Curriculum is a method that prioritizes the variety of learning within the curriculum. The curriculum material is organized to give students enough time to enhance their competencies and gain a deeper understanding of subjects (Kemendikbudristek, 2021).



The Merdeka Curriculum is also defined as a replacement for the prototype curriculum, which, in its implementation, is supported by the Merdeka Belajar platform, which serves as a source of reference, inspiration, and understanding for teachers in implementing the Merdeka Curriculum (Kurniasih, 2022). The purpose of introducing and implementing the Merdeka Curriculum in all educational institutions was to modernize the learning process, which had been hindered by the pandemic's effects (Primayana, 2022). In a Merdeka Curriculum, teachers have the freedom to translate the curriculum independently before it is later translated to students, and schools have the freedom to manage the curriculum based on the conditions in the school (Izza et al., 2020). In line with this, the current Merdeka Curriculum no longer uses lesson plans but has been replaced by teaching modules.

In the Merdeka Curriculum, teachers use teaching modules during learning. Teaching tools that include lesson plans to help guide the learning process toward achieving learning outcomes are called teaching modules (Hadiansah, 2022). According to the Merdeka Curriculum, teaching modules are a crucial tool for ensuring that new models or instruction techniques are implemented successfully, particularly to relate to the changes brought about by the industrial and digital revolutions (Maipita et al., 2021). The learning process that occurs in the classroom involves teachers and students fulfilling objectives, methods, materials, and evaluations (Indarta et al., 2022).

The system in national education takes on various complex challenges to prepare human resources to compete in the global era, especially in 21st-century learning and implementing a Merdeka Curriculum, one of which is learning mathematics. Mathematics is a structured, firm, logical, abstract, and universal form of thought that aims to overcome uncertainty and reveal hidden truths (Muliawanti & Kusuma, 2021). Mathematics has a significant role in various fields of science. Mathematics involves solving everyday problems and using imagination, instinct, and reasoning to derive new concepts and solve complex problems (Engzell et al., 2021). Mathematics contains dimensions of human existence and has its beauty as part of human culture (Khan, 2015). Beauty is described by harmony, order, balance, uniformity and wholeness (Amir, 2015).

One of the materials that also applies concepts to solving problems is the material of blocks and cubes. However, the problem is how critical students' reasoning is in solving mathematics. Critical reasoning is one of the dimensions of the Pancasila learner profile in the Merdeka Curriculum. Learners with critical reasoning skills can use these skills to process information, evaluate, and make the right decisions in dealing with various problems they face. In this case, learners can also filter, process, and find relationships between various pieces of information. Then, they can analyze and draw conclusions based on this information (Kibtiyah, 2022). Acquiring and processing knowledge and concepts, assessing reasoning, and reflecting on and assessing one's thought processes are the components of the critical reasoning dimension. (BSKAP, 2022).

Based on observations in Class IV of SD Negeri 40 Pontianak. It was found that the participation of students in the learning process was still not optimized; they were still less active in the learning process, and it was not easy to focus when following the learning until it was finished. Even so, some learners can obtain and process information and their ideas. In addition, some learners complement each other by correcting each other and exchanging opinions about their tasks. However, only a few learners could evaluate the material they had learned, and only a few could reflect on and evaluate their own thinking.

Based on the interview with the fourth-grade teacher of SD Negeri 40 Pontianak Utara, filling out the questionnaire, and analyzing the class teacher's teaching module, it was



found that the teaching module used by Mr Yahyo for the completeness of the teaching module had not been presented completely. In the teaching module used, there is also a complete profile of Pancasila students, but it has not been specifically explained and has not been overemphasized. As for the three elements of critical reasoning, only one element is used in the learning process: obtaining and processing information and ideas. In comparison, the other two elements have not been shown clearly and specifically. The research that is actually in line with this research, such as research from Rahmat Setiawan, states that teaching modules are concrete expressions of concepts implemented in teaching aids that are very effective for educators in carrying out the learning process that focuses on the Pancasila Student Profile to achieve learning outcomes (Setiawan et al., 2022). In addition, the teaching module must also be based on a foundation by analyzing the conditions and needs of students, teachers, and schools, which is in line with Maulida's research (Maulida, 2022).

Using teaching modules is essential for teachers and students to increase students' comprehension of the subject matter. The purpose of this teaching module is to support students' critical reasoning based on elements of critical reasoning by the profile of Pancasila students, enrich learning, guide the teacher in carrying out learning both in closed and open classes, and present the material fully in accordance with the specified components. It is the factor that distinguishes this study. The research aimed to determine the degree of viability of the Merdeka Curriculum teaching module with critical reasoning nuances developed by describing the validity level assessed from the aspects of the teaching module's suitability and language aspects, as well as the teachers' and students' practicality.

## **Research Method**

This research used a research and development (R&D) method with a mixed-method approach. The qualitative approach described factual data related to school learning conditions. In contrast, the quantitative approach was used to evaluate the validity and applicability of the constructed teaching module. The R&D method involved creating the Merdeka Curriculum teaching module by developing and validating educational devices and instruments. This process includes a series of studies applying methods in a cycle through various stages, ultimately leading to prototype development before implementation (Sugiyono, 2019).

The Merdeka Curriculum teaching module development model uses an adaptation of research and development developed by Thiagarajan (1974), namely 4D. The 4D is define, design, development, and dissemination, and in the teaching module, research is only carried out until the third stage with the following implementation stages.

- a) Define is the initial stage, which involves examining the demands of the product being built. The define step includes investigating the curriculum, assessing the demands of the Merdeka Curriculum teaching module through observations, interviews, and questionnaires, analyzing learning outcomes, and analyzing materials.
- b) Design is the stage of making a design or framework for the product to be developed, such as designing a product prototype with the following steps:
  - 1) Search for various references or make materials for making teaching module, such as shapes, images, or animations supporting the material.
  - 2) determining the layout of the teaching module by adjusting the layout and components or format of the teaching module so that it is easily understood by students.
  - 3) determining the right color, type, and font size for the teaching module.



- 4) Improving the content or components in the teaching module, which are generally taken from various other reference sources and then designed into the teaching module.
  - 5) Determining the teaching module specifications
  - 6) Making an initial design of an Merdeka Curriculum teaching module with nuances of critical reasoning using Microsoft Powerpoint.
  - 7) Creating and developing a teaching module related to the concept of the material being studied by emphasizing critical reasoning so as to produce the first draft.
- c) Development is a series of activities in developing a product, followed by making it a real product, testing the validity of the product repeatedly, and making revisions according to recommendations until it can produce a product that is in line with predetermined specifications. The product is then tested to assess its level of practicality. The purpose of this stage is to determine the feasibility and produce a Merdeka Curriculum teaching module with nuances of critical reasoning that has been revised according to suggestions from experts and data obtained in the assessment activities carried out by experts and field trials. At this stage, the steps mentioned below are taken:
- 1) Validation of the first draft of the product by the three validators (1 lecturer, 1 principal, and 1 teacher).
  - 2) Revising the product based on the feedback from the validators in stage 1 to produce the second draft.
  - 3) Conducting the first trial of the teaching module product involving 1 teacher and 5 students.
  - 4) Validating the second draft by the three validators (1 lecturer, 1 principal, and 1 teacher).
  - 5) Make revisions to the product based on feedback from validators in stage 2, if still needed.
  - 6) Conducting a second trial of the product after obtaining validation from validators with class IV students and seeing the practicality of using the product through filling out teacher and student questionnaires.
  - 7) Analyze the results of product validity data and product practicality to determine the quality of the development results and the feasibility of teaching module.

The instruments used in this research included validation sheets, interviews, teacher and student questionnaires, field trials, and trial observation checklists. Data analysis techniques involved qualitative content analysis to identify common themes and guide revisions, descriptive statistics to summarize questionnaire responses, and inter-rater reliability to ensure consistency in validation scores. The practicality and usability of the module were assessed through usability testing, comparing pre- and post-trial results, while a comparative analysis evaluated the effectiveness of revisions. This iterative refinement process, involving multiple stages of validation and trials, ensured the development of a feasible and high-quality Merdeka Curriculum teaching module with critical reasoning nuances.



## **Results and Discussion**

### **Define**

One of the learning tools in the Merdeka Curriculum is the teaching module. In this module, there are several components that are slightly different from the Learning Implementation Plan (RPP). However, all activities in the lesson plan are covered in the teaching module. Schools can adopt the teaching modules that have been provided by the Ministry of Education and Culture through the independent teaching platform. Of course, there are differences encountered, such as environmental conditions that are different from the example of the teaching module, as well as the form of assessment and the diverse learning conditions and abilities of students (Fitri et al., 2023). This teaching module is designed to be adaptable to the needs of students. It allows students to learn at their own pace and style. By allowing students flexible time, they can adapt to their learning environment. It also helps students manage their effort in the learning process (Imron et al., 2022).

In accordance with the results of the preliminary study in September, 2022, some data were obtained related to teaching module, characteristics of students, and conditions during learning in class IV of SD Negeri 40 Pontianak Utara. Researchers obtained data while collecting it, such as documentation in the form of teaching module used by class IV teachers, interviews with class IV teachers, distributing questionnaires on the needs of teaching module to class IV teachers and questionnaires related to critical reasoning to all class students, and conducting interviews with three class IV students.

Based on the results of the analysis of the initial conditions of the teaching module made by the fourth grade teacher, supported by the results of interviews with the fourth grade teacher, namely Mr. Yahyo Kasyadi, S. Pd., on Friday, September 16, 2022, it was found that the Merdeka Curriculum has been implemented since 2021, and SD Negeri 40 Pontianak Utara is one of the first batch of driving schools to implement the Merdeka Curriculum. In the learning process that occurs, of course, there are several problems. In overcoming the problem of students' understanding, especially in mathematics, teachers use several learning tools to support the learning process. However, the problem is that students' understanding is still lacking and a little difficult with some materials, one of which is blocks and cubes. The teaching module previously used by the teacher has also not supported the understanding of students, especially in critical reasoning.

The teaching module used have not been presented in full accordance with the components determined by the Ministry of Education and Culture (2021). This can be seen from the teaching module used that have not presented remedial and enrichment for students, learning activities that have not been explained in full, glossaries that have not been explained in accordance with the learning material, and reading materials that are still sourced from students' package books without any additional material. The learning model used is also limited to face-to-face learning using classical methods such as lectures, so that students' understanding of the material presented has not been fully received. In addition, one of the Pancasila learner profiles used is the critical reasoning dimension. However, it has not fully highlighted the elements of critical reasoning that exist in the profile of Pancasila students in accordance with Kep. BSKAP No. 009/H/KR/2022. This can be seen from the teaching module, which focuses more on one of the three elements, namely obtaining and processing information and ideas, while the other two elements, namely analyzing and evaluating reasoning and reflecting and evaluating their own thinking, are not very specific, highlighted, or balanced in the teaching module.



Based on interviews conducted by the three students, it was found that students actually liked learning math but sometimes still had difficulty solving math problems. The inhibiting factors for students are sometimes feeling lazy and not understanding how to learn math. Regarding the elements of critical reasoning in line with the Pancasila learner profile, the majority of the three learners answered that they felt they could fulfill the elements of obtaining and processing information and ideas in learning, but two of the three learners felt they could not. Therefore, learning tools are needed that can support the learning process by emphasizing the nuances of critical reasoning in it. The development of Merdeka Curriculum teaching module is needed according to the situation and conditions of learning and the characteristics of students. Through the teaching module, the learning that is carried out becomes more directed. In addition, the purpose of developing teaching module is to provide teaching tools that can help facilitate teachers in implementing learning, especially by highlighting elements of critical reasoning. This will train students' critical reasoning and apply one of the profiles of Pancasila students.

1) Curriculum analysis

Education in the Merdeka Curriculum starts from primary education to higher education (Vhalery et al., 2022). The Operational Curriculum of SD Negeri 40 Pontianak Utara is formulated as a guide for the implementation of learning activities. The preparation of the Operational Curriculum of SD Negeri 40 Pontianak Utara is designed to accommodate the needs of students to develop 21st century skills, including PPK, literacy, 4C (creative, critical thinking, communicative, and collaborative), HOTS (higher order thinking skill), and implement the Pancasila Student Profile.

2) Needs Analysis for Teaching Module for the Merdeka Curriculum

Teachers must design teaching modules comprehensively and organize them so that the learning process is communicative, inspiring, and fun and can motivate learners to participate. Teachers must also prepare adequate space for students to take the initiative, be creative, and be independent in line with their talent, interests, and physical and psychological development (Indarti, 2023). Based on the analysis of the teaching module needs for teachers, it can be explained that the Merdeka Curriculum teaching module has been implemented and used but has not met the criteria for teaching module according to the components determined by the Ministry of Education and Culture (2021). This is supported by the answer to the sixth question, where the class teacher answered "no." In addition, the teaching module used also needs to highlight the nuances of the elements of critical reasoning. This means that, in this case, development is needed in the teaching module. Based on the analysis of students' needs for critical reasoning, it can be explained that almost all students like math lessons. Based on these results, one element of critical reasoning tends to have been applied in the learning process, while the other two elements have not been overemphasized in classroom learning. Most students are also interested in learning mathematics with critical reasoning nuances. It is supported by students' greater percentage of "yes" answers. The results of this analysis attracted researchers to research the development of the Merdeka Curriculum teaching module with nuances of critical reasoning.

3) Analysis of Learning Outcomes

Based on the learning outcomes, it can be seen that the learning outcomes in the beam and cube material are located in the geometry column, namely comparing the characteristics of various shapes of the prism. As for the learning outcomes that have been determined, the flow of learning objectives will be arranged.



#### 4) Material Analysis

In analyzing the material, researchers determine the grade IV mathematics material to be developed. The material is blocks and cubes. The material in the teaching module is presented as reading material based on references to the math package book vol. 2, "Learning with Your Friends." The math package book's material for blocks and cubes is in unit 18, precisely in subunits 1 and 2. Researchers use several books as material sources, including electronic books and sources from the internet. The material presented in the teaching module uses a problem-based learning model aligned with the learning syntax. The selection of material in this analysis is also expected to streamline the use of mathematics learning time (Mumtazah et al., 2023).

#### **Design**

Merdeka Curriculum teaching module with nuances of critical reasoning require a collection of information, tools, and materials, including materials, supporting icons, question-making images, and suitable color selection in the design process. The resulting teaching module are designed with attention to feasibility, accuracy, clarity, and attractive presentation and display design. So the things that must be considered in designing teaching module are as follows:

- 1) The element or aspect of the suitability of the teaching module includes the suitability of the teaching module with the specified teaching module components. The teaching module components that have been determined by the Ministry of Education and Culture include general information, core components, and attachments. Then consider the suitability of the teaching module with critical reasoning elements.
- 2) The elements or aspects of display language include the language used in the teaching module, the sentences used in the teaching module, and the use of mathematical symbols or sentences in the teaching module.

#### **Development**

This development stage is carried out by validating the first draft of the product that has been designed at the design stage (Biala et al., 2023). There are two aspects that need to be validated from the Merdeka Curriculum teaching module, namely the suitability of the teaching module and the language aspect. This validation procedure was assisted by three validators. After being declared suitable for use by the three validators, the Merdeka Curriculum teaching module was tested on a small and large scale to determine its empirical validity and practicality. The level of validity and practicality of the product is then used to determine the quality of the product that has been developed by the researcher. The validity test process is carried out by calculating the validity value of each aspect as a whole, as well as considering the revisions given by the validator, which are carried out twice. The validators in the development of this product consisted of a lecturer of Mathematics Education, Faculty of Teacher Training dan Education Universitas Tanjungpura, namely Mr. Dona Fitriawan, M.Pd., and the principal of SD Negeri 09 Pontianak Utara, Mr. Mahrani, M.Pd, who was also the facilitator of the driving teacher, and a teacher of SD Negeri 09 Pontianak Tenggara, Mr. Agus Widiyanto, S.Pd.

The first stage of the product trial was carried out on May 26, 2023, and was attended by five randomly selected students. In this trial, students were still divided into groups. Students were seen to be actively engaged in learning activities and applying elements of critical reasoning in the first trial using the Merdeka Curriculum teaching module with nuances of critical reasoning. These included the students' ability to reflect and evaluate their thinking, analyze and evaluate their reasoning, and attempt to obtain and process ideas and



information (Fauzan et al., 2023). To find out the empirical validity of this teaching module, at this first trial stage, Based on the results of the first trial, which affected empirical validity, it was found that the empirical validity of the Merdeka Curriculum teaching module was empirically valid based on the components of the teaching module and elements of critical reasoning. The second stage of the product trial was carried out on May 30 and 31, 2023, and was attended by 22 students (1 class).

In the second trial, using the Merdeka Curriculum teaching module with nuances of critical reasoning, the learning process took place well. Learners who are divided into groups have worked well in each group. Learners are active in learning activities and begin applying elements of critical reasoning, such as obtaining and processing information and ideas they receive (Abdullah et al., 2024; Fajari, 2021). They can also analyze and evaluate their reasoning and reflect on and evaluate their thinking. Based on data analysis at the development stage as described, the teaching module developed by researchers is considered very valid and suitable for use. It can be proven and strengthened by the average value of the validation results and the feasibility level of the validated data analysis with a score range from 1 (lowest) to 5 (highest), involving five classes, and having a minimum score range of 0.8 (Widyoko, 2018), as described in Table 1 below.

**Table 1. Levels of Validity Criteria**

Validity Value	Criteria
$4,2 < x \leq 5,0$	Very Valid
$3,4 < x \leq 4,2$	Valid
$2,6 < x \leq 3,4$	Fairly Valid
$1,8 < x \leq 2,6$	Less Valid
$1,0 < x \leq 1,8$	Invalid

(Widyoko, 2018)

The validation of the suitability aspect of the teaching module in this study involved three validators, and all validators provided assessment and input on the teaching module. The three validators have qualifications in mathematics education and the Merdeka Curriculum. There were 25 questions in the questionnaire, which consisted of suitability to the teaching module components and suitability to critical reasoning elements. The data shows that the score ranges from 3 to 5, with 5 as the highest score and 3 as the lowest score. The maximum value in the teaching module suitability questionnaire is 96.8. Table 2 explains the results as follows.

**Table 2. Recapitulation of Assessment of Teaching Module Suitability Aspects**

	Validity 1		Validity 2	
	Value	Percentage	Value	Percentage
<b>Validator 1</b>	4	80 %	4,84	96,8 %
<b>Validator 2</b>	3,92	78,4 %	4,84	96,8 %
<b>Validator 3</b>	3,84	76,8 %	4,76	95,2 %
<b>Average</b>	3,92	78,4 %	4,81	96,2 %

Based on the recapitulation of the assessment of the suitability aspects converted into Table 2 regarding feasibility, it is explained that the teaching module developed by the researcher received a high suitability assessment from three validators. The first validator assessed 4.84, or 96.8%, included in the very valid category. The second validator assessed 4.84, or 96.8%, also included in the very valid category. The third validator assessed 4.76, or 95.2%, also included in the very valid category. In line with the validation results of the three validators, it is known that the average assessment of teaching module development products is 4.81, or



96.2%, which meets the criteria as very valid. The teaching module developed has criticism as well as suggestions and revisions to the product corrected by the validator regarding the suitability aspects of the teaching module so that the teaching module is suitable for testing. In validating the language aspect, three validators were involved, all of whom provided assessments and feedback on the teaching module. The three validators have qualifications in mathematics education and the Merdeka Curriculum. There are 14 statements in the questionnaire to assess the language aspect, with a score ranging from 3 to 5, with 5 as the highest and 3 as the lowest. The total score in the technical/appearance aspect validation questionnaire is 98.57. In Table 3, the results are explained as follows.

**Table 3. Recapitulation of Language Aspect Assessment**

	Validity 1		Validity 2	
	Value	Percentage	Value	Percentage
<b>Validator 1</b>	3,85	77,1%	4,85	97,1 %
<b>Validator 2</b>	3,92	78,57 %	4,92	98,57 %
<b>Validator 3</b>	3,78	75,71 %	4,85	97,1 %
<b>Average</b>	3,85	77,12 %	4,87	97,6 %

Based on the recapitulation of the assessment of the language aspect contained in Table 3, it is known that the language aspect in the teaching module developed by the researcher received a high level of validity assessment from three validators. The first validator scored 4.85, or 97.1%, in the very valid category. The second validator assessed 4.92, or 98.57%, in the very valid category. The third validator assessed 4.85, or 97.1%, in the very valid category. In line with the validation results of the three validators, it is known that the average assessment of teaching module development products is 4.87, or 97.6%, which meets the criteria as very valid. The teaching module developed has criticism, suggestions, and revisions to the product corrected by the validator regarding the language aspect so that the teaching module is suitable for testing. The feasible teaching modules to test are as follows.



**Figure 1. Teaching Module of Merdeka Curriculum with Critical Reasoning Nuances**

To find out the empirical validity of this teaching module, at this second trial stage, after the learning process, researchers also conducted interviews with teachers related to the teaching module that was tested. The interview consisted of 10 questions about the teaching module and critical reasoning. The interview results found that the three elements of critical reasoning had been applied, and students were also active in learning activities and were not busy during the learning process. The teaching module also fulfilled the predetermined



components and found consistency between learning objectives, learning achievements (CP), and the material taught. The level of practicality criteria is as follows.

**Table 4. Level of Practicality Criteria**

Practical Value	Criteria
4,2 < $x$ ≤ 5,0	Very Practical
3,4 < $x$ ≤ 4,2	Practical
2,6 < $x$ ≤ 3,4	Quite Practical
1,8 < $x$ ≤ 2,6	Less Practical
1,0 < $x$ ≤ 1,8	Impractical

(Widyoko, 2018)

The practicality test was carried out by applying a practicality assessment instrument in the form of a response questionnaire distributed to teachers and students. The practicality component consists of ease of use, time efficiency, and benefits of teaching materials (Sukardi, 2011) for teachers and critical reasoning elements for students. The three components from Sukardi were developed into 20 questions by the researcher for the practicality assessment instrument by the teacher. The teacher's practicality test was filled in by 2 classroom teachers, namely class IV teachers and class IVB teachers, so that the data obtained from the analysis of the practicality of the Teaching Module of the Merdeka Curriculum with Critical Reasoning Nuances are as follows.

- 1) The component of student interest and the appearance of the teaching module received a practicality score of 4.8, which means it is very practical.
- 2) The ease of use component of the teaching module gets a practicality score of 4.5, which means it is very practical.
- 3) The component of the benefits of using the teaching module gets a practicality score of 4.5, which means it is very practical.
- 4) The time efficiency component of using the teaching module gets a score of 4.5, which means it is very practical.
- 5) The overall practicality value of the Merdeka Curriculum teaching module with nuances of critical reasoning, according to the teacher, is 4.6, which means it is very practical.

From some of the results that have been described, it can be concluded that the teaching module received a good response from the teacher in terms of practicality of use. Furthermore, to see whether the elements of critical reasoning have been highlighted well or not, a practicality questionnaire related to critical reasoning elements was also distributed to students, with the following result.

- 1) The criteria for understanding in the learning process received a score of 4.3, which means it is very practical.
- 2) The difficulty criteria in the learning process received a score of 4.1, which means practical
- 3) The element content criteria for obtaining and processing information and ideas received a score of 4.3, which means very practical.
- 4) The element content criteria for analyzing and evaluating reasoning received a score of 4.2, which means very practical.
- 5) The element content criteria for reflecting and evaluating their own thinking received a score of 4.2, which means very practical.
- 6) The score based on the response questionnaire related to critical reasoning as a whole, according to students, is 4.2, which means very practical.



Modules can be interpreted as learning aids to convey subject matter from teachers to students (Sadirman, 2018). The practicality questionnaire's research findings administered to teachers and learners indicated that the training module in question was classified as very practical. (Hamzah & Muhlisrarini, 2014). According to the questionnaire results, most students selected responses indicating they already comprehended the learning material and aspects of critical reasoning. It demonstrates that, based on the results of the first and second trials, which affect the validity and practicality of the teaching module created by adjusting to the needs of students and based on several relevant studies, the results show that the validity and practicality of the Merdeka Curriculum teaching module are valid and practical, and thus suitable for use.

### **Conclusion**

Based on the research and discussion results, it can be concluded that the level of validity of the teaching module product from the aspect of the suitability of the teaching module and the language aspect obtained a very valid category, the level of validity based on empirical validity obtained the result that the teaching module developed was declared empirically valid. The level of practicality of the module filled in by teachers and students obtained a very practical category. So, the Merdeka Curriculum teaching module with nuances of critical reasoning developed is feasible and of high quality.

### **Recommendation**

For teachers it is recommended that during the development phase of teaching modules, more time is allocated for trial considering the validation process, which requires extensive checks from various experts and takes into account the validators' busy schedules. Researchers conducting similar studies should be more careful in designing research instruments, especially questionnaires, and it is advisable to involve the principal as one of the validators. Additionally, it is important to clearly and specifically define the indicators of critical thinking so that they can be measured effectively.

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