

KELAYAKAN MODUL FISIKA BERBASIS TEMATIK

Feasibility of Physics Module Based On Thematics

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Kata Kunci

Modul
Tematik
Media

Abstrak

Penelitian ini merupakan penelitian dan pengembangan (R&D) yang bertujuan untuk mengetahui kelayakan modul fisika sekolah menengah pertama untuk siswa (SMP) yang disusun secara tematik mengacu pada Borg and Gall. Langkah-langkah penelitian adalah sebagai berikut: penelitian dan pengumpulan informasi, perencanaan penelitian, pengembangan produk awal, uji validasi, revisi produk. Teknik pengumpulan data yang digunakan adalah angket validasi. Analisis yang digunakan dalam penelitian ini adalah analisis kualitatif terhadap hasil uji validasi produk pengajaran. Teknik pengumpulan data yang digunakan adalah teknik komunikasi tidak langsung. Alat pengumpulan data yang digunakan berupa angket validasi ahli digunakan untuk mengumpulkan data validasi ahli terkait. Kelayakan modul fisika SMP berbasis tematik dikategorikan layak dengan rata-rata menurut hasil validasi media diperoleh skor rata-rata 76,29% dan skor rata-rata penilaian ahli materi diperoleh skor 73,33% dalam kriteria layak. Berdasarkan hasil validasi, modul pembelajaran fisika berbasis tematik untuk Sekolah Menengah Pertama (SMP) dinyatakan layak digunakan dalam proses pembelajaran.

Keywords

Module
Thematic
Media

Abstract

This research is a research and development (R&D) that aims to determine the feasibility of junior high school physics modules for junior high school (SMP) students arranged on a thematic basis refers to Borg and Gall. The research steps are as follows: research and information gathering, research planning, initial product development, validation test, product revision. The data collection technique used is a validation questionnaire. The analysis used in this study is a qualitative analysis of the results of the product validation test of teaching. Data collection techniques used are indirect communication techniques. The data collection tool used in the form of an expert validation questionnaire was used to collect the validation data of the related experts. The feasibility of thematic-based junior high school physics module is categorized as feasible with an average according to the results of the media validation obtained an average score of 76.29% and an average score of material expert judgment obtained a score of 73.33% in the feasible criteria. Based on the validation results, the thematic-based physics learning module for junior high school (SMP) is declared feasible to use in the learning process.

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INTRODUCTION

Education is one of the efforts to educate the nation's life so as to create strong, authoritative and quality human beings who are able to proactively answer world challenges [1]. One of the principles of the curriculum used in Indonesia that is currently applied in junior high schools is integrated learning. In integrated science learning in junior high school, it is hoped that in addition to developing knowledge, it can also develop students' scientific skills and attitudes. Success in learning is influenced by the suitability of the learning material and the students' level of thinking ability, therefore the teaching material used should be in accordance with the characteristics of students [2]

One of the media that can be used in the learning process is a module. In the learning module, not only aspects of knowledge can be included but also aspects of skills and aspects of attitude (Character). Module can also be made more interesting by giving unique and colorful decorations [3]. The use of modules can effectively improve student learning outcomes [4].

Sains characteristics are one of the subjects whose concepts can be represented in various forms, namely verbal [5], physical, image and mathematical [6-7]. In physics, students are invited to find a concept that is found in their daily lives [4]. Therefore, students will find several concepts that are open only in physics but can also be in the concepts of chemistry and biology.

Based on the results of observations made in class VII Madrasah Tsanawiyah (MTs) Mahla'ul Anwar Pontianak, it is known that the teaching materials used have not connected some of the concepts learned. In fact, it was found that there were similarities between the concepts of learning physics, chemistry and biology that could be combined into one main theme.

Strategies that can be used by educators to combine the characteristics of physical material and the principles of Natural Sciences / Physics in accordance with the mandate of the curriculum in Indonesia are thematic approaches. Thematic approach is an approach that uses certain learning themes by integrating the environment as a source of learning and linking between subjects and related concepts. This learning concept starts from contextual learning by prioritizing something that is learned in the surrounding environment. Utilizing the environment as a source of learning in the learning process is one of the efforts to optimize learning and improve learning outcomes. [8]. Therefore, through a thematic approach, learning physics that has been felt difficult by students will be more effective because students learn based on experiences in daily life.

METHODS

This research was a research and development (R&D). This R&D research design referred to Borg and Gall. The quality of a development is largely determined by the evaluation techniques used. Therefore, the selection of techniques must be appropriate and appropriate to the existing problems [9]. The design can be seen in Figure.1:

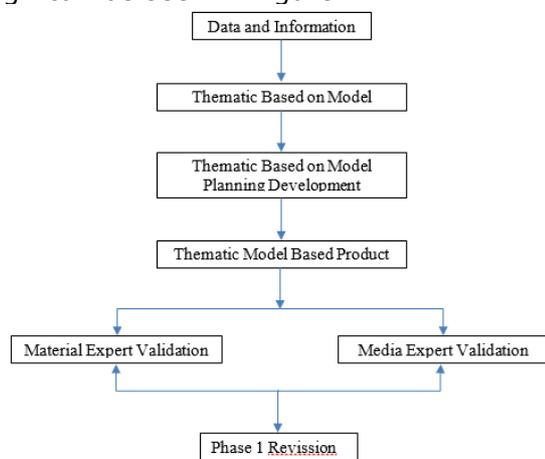


Figure 1. Research and development design

The research followed several steps, including the research and information gathering, research planning, initial product development, validation test, and product revision. Data

collection techniques are indirect communication techniques. After module was developed, it underwent validation for product evaluation. The validation questionnaire were distributed to material experts and media experts. The aspects assessed by media experts are the appropriateness of content, the appropriateness of presentation, the appropriateness of language and the appropriateness of the models or methods used. Meanwhile the aspects assessed by content experts are graphic aspects. The data obtained from validation were analyzed descriptively using the percentage eligibility technique. The calculation results then concluded the eligibility criteria based on Table 1. A module is considered suitable for use in learning if it has a value above 61% based on the results of the calculation of the expert validation questionnaire.

Table 1. Eligibility criteria [10]

Value	Remaks
Very Decent	81% - 100%
Feasible	61%-80%
Enough	41% - 60%
Not Feasible	21% - 40%
Very Inappropriate	0% - 20%

RESULTS AND DISCUSION

This research method is a research and development. The development steps taken refer to the Borg and Gall which consists of 6 steps, namely data collection and information, planning for making thematic-based junior high physics modules, developing thematic-based physics modules, the results of development in the form of thematic-based junior high school physics modules, validation by expert team media and material experts and module revisions.

The development is carried out in the form of making Junior Physics teaching modules in class VII arranged based on a thematic approach. The teaching module that has been developed then validated and tested for practicality. Measuring instruments used to determine the level of validity of the thematic-based junior high school physics module are used validation sheets or validation questionnaires. Validators used in this study amounted to 6 people, with details of 3 people as validators of media experts and 3 people as experts in the field of Physics material. a tool used to determine the practicality level of the module used in the form of a module practicality questionnaire in the form of a Likert scale.

In the validation process to media experts, aspects that are used as a pot in the validation process are communicative aspects, coherence inconsistencies, conformity with improved spelling in Indonesia, presentation techniques and presentation in learning. Table 2 presents the percentage and criteria of the media assessment of all aspects. The aspects of presentation techniques and balance between

illustrations, writing with material have the highest percentage value, with 86.67% in very feasible criteria. Whereas in terms of the use of terms and symbols and interactive, dialogical and stimulating thinking has the lowest percentage value of 66.67% with the criteria still feasible.

Table 2. Validation results of media experts

Aspect	Percentage	Criteria
Communicative	73.33	Feasible
Straightforward	80	Feasible
Flow coherence and groove	73.33	Feasible
Conformity with Correct Indonesia Rules	73.33	Feasible
Use of Terms and Symbols	66.67	Feasible
Presentation Technique	86.67	Very Decent
Balance between Illustration, Writing with Material	86.67	Very Decent
Interactive, Dialogical and Simulating Thinking	66.67	Feasible
Supporting the Full	80	Feasible
Average	76.29	Feasible

In the validation process for content experts, the adjusted aspect is the material coverage and material accuracy. For aspects of the scope of the contents consists of 2 statements and aspects of the accuracy of the material consists of 3 statements. In Table 3 it can be seen that the results of the calculation of the material expert validation test results obtained the same value that is equal to 73.33% with the criteria fit for used.

Table 3. Questionnaire Results Data For Each Character

Aspect	Percentage	Criteria
Scope of materials	73.33	Feasible
Accuracy of materials	73.33	Feasible
Average	73.33	Feasible

The teaching material developed in this study is a thematic-based junior high physics module. Thematic in this case is a combination of several subjects in class VII with the same theme, namely measurement. The subjects combined are physics, chemistry and biology. The measurement themes compiled in the form of physics, biology and chemistry materials related to the principal and derivative quantities, standard and non-standard measurement tools, and their use in daily life. In the process of developing thematic-based modules the experts provide input and advice in the preparation of thematic-based modules. In Figure 2, it can be seen that the media expert validator provides input that the module can be used but must be revised in several parts, ie the module is still

more memorizing and has not stimulated students to think.

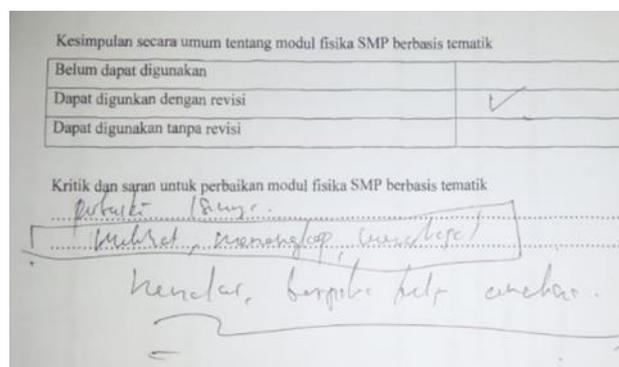


Figure 2. The comments of the media expert validator.

In Figure 2. It can be seen that the suggestion from one of the validators is to improve the thematic stages, namely how to see, capture, memorize, listen and think analytically.

In the material aspect, the validator commented that the material in the module was still too concise, no thematic learning had arisen, and there was no collaboration or character content. In Figure 3, it can be seen that the expert media validator provides input that the module can be used but can be revised in several sections.

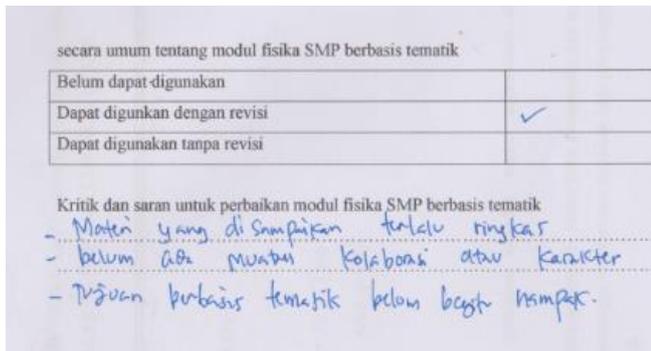


Figure 3. The comments of the material expert validator

In Figure 3. It can be seen that the comments from one of the validators are that 1) material is too short, 2) there is no collaboration and character content, and 3) the thematic is not visible.

Based on the results of the research and the exposure of the data above to the validation process of the thematic-based physics module of Madrasah Tsanawiyah (MTs), it was found that every aspect of the feasibility of the content was feasible to use. Referring to Table 2, that the average aspect of the module feasibility assessment is feasible. this is in accordance with the components set by the National Education Standards Agency (BNSP) in Indonesia, namely quality learning modules that must pay attention to aspects of language, images, presentation and graphics [11].

The thematic-based physics module revision process is adjusted to the suggestions and input from the validator. such as material that is too concise, the researcher adds materials that have been adjusted to competency standards and basic competencies. on the improvement of suggestions in the form of not including characters in the module and unclear thematic elements, the authors arrange learning that is more characterized and the integration between subjects is further sharpened. the revision process is carried out until the validator gives a proper value to the physics module that is compiled.

The theme-based physics module is structured in such a way that the material and visual aspects presented attract students' interest in learning. In addition, the preparation of the main themes of several subjects makes students more knowledgeable in understanding and learning a concept taught by the teacher. Integration between multiple lessons makes students more open-minded. Good development results can have a good influence on the achievement of student success in learning [11].

Based on the results of the validation of media experts, a percentage of 76.29% was obtained

with the criteria to be used. While the results of the material team validation obtained a percentage of 73.33% with the criteria fit for use. Overall based on the results of the validation of the media experts and material experts it can be concluded the thematic-based science learning module for junior high school (SMP) is declared feasible to use in the learning process

CONCLUSION

Based on the results of the above explanation it is concluded that the feasibility of the thematic-based Junior High School Physics module is categorized as feasible with an average according to the results of the media validation obtained an average score of 76.29% and an average score of material expert judgment obtained a score of 73.33% in the eligibility criteria.

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