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CONTEXTUAL-BASED MODULE VALIDATION TEST INTEGRATING CREATIVE THINKING ABILITY IN STATIC FLUID MATERIALS, TEMPERATURE AND HEAT IN CLASS XI SMA/MA

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ABSTRACT

Responding to the 21st century, among others, it is necessary to develop creative thinking skills. However, students' creative thinking skills are still low, this is due to the lack of modules that can help students increase knowledge and develop creative thinking skills, including physics. In general, this researcher produces a contextual-based physics module that integrates creative thinking skills. In this research, the type used is R&D with ADDIE design. The instrument is in the form of a validity test questionnaire by lecturers and teachers. Based on the analyzed data, it shows that the physics module developed has a validity value of 84.80 which is in the very valid category. Based on the results obtained, it was found that the use of modules on static fluids and heat is feasible to use to improve student learning outcomes.

Keywords : Module, Contextual Learning, Creative Thinking Skills, Static Fluid Material, Heat Temperature Material

I. INTRODUCTION

Responding to the 21st century, among others, the Government integrates 21st Century skills with the National Curriculum. 21st Century Skills, one of the skills that will broaden one's point of view, turning ideas into works, is creative thinking.

Skill is an ability that a person has to do something so that it becomes more valuable and meaningful. Thinking is reason, memory, wishful thinking, thinking means having a mind and having reason. Creative thinking is a thought process that can come up with new ideas by combining previous ideas. Students must have the ability to think creatively to find an idea or ideas in learning naturally or rationally [1]. The ability to think creatively is a series of actions taken by a person to create new ideas from a collection of ideas, information, concepts, experiences, and knowledge possessed. Creative thinking abilities are needed by students as preparation of quality human resources, with the provision of creativity in solving various problems. problems encountered [2].

One of the thinking skills that is often neglected in formal education is the ability to think creatively and has not been handled seriously by teachers in schools, even though it is very meaningful for the development of children's potential as a whole.

Based on the PISA report in December 2019, Indonesia was ranked 70th out of 78 countries in the field of science. This shows that the creative thinking level of students in Indonesia is included in the low category. It can be seen from the observations that the average percentage of creative thinking ability tests is 25.5% which is included in the less creative category [3]. Research conducted by Armandita in class XI MIA 3 SMA Negeri 11 Jambi City, that the results of the analysis of students' creative thinking abilities are in the medium category [4]. This is also expressed by Munandar that creative thinking is not stimulated, so children are not accustomed to thinking in various directions [5]. The low ability to think creatively also occurs due to the habit of the learning

process which only requires students to convergent cognitive processes. So that students are not accustomed to following divergent thinking patterns, resulting in students having difficulty thinking creatively in solving the problems they face. Therefore, it takes the integration of creative thinking skills in each learning process.

Learning given to students must be able to form new knowledge from the knowledge that students have previously, so that the cognitive construction process in students can run well so that students can make connections between the knowledge they have by applying it in everyday life.]. This kind of learning is called contextual learning (CTL). Students do not just memorize, remember but are also active in building their knowledge so that it develops. Therefore, the learning steps begin with formulating problems, observing, analyzing, and communicating. Knowledge possessed by students always starts from asking [7]. The teacher's task in contextual learning is to provide learning facilities for students, by providing various facilities and adequate learning resources. The teacher not only conveys learning material in the form of rote learning, but also regulates the learning environment and strategies that allow students to learn.

The characteristics of contextual-teaching and learning are: cooperation between students and teachers (cooperative); mutual help between students and teachers (assist); fun, not boring; learn with passion (enjoyful learning); contextually integrated learning; using multimedia and learning resources; how to learn active students (student active learning); sharing with friends (take and give); critical learners and creative teachers; classroom walls and classroom hallways are full of student work; student reports are not only report cards, but also student work, practicum reports, student essays and so on. The research that will be carried out is to develop modules as teaching materials for CTL-based physics learning. The developed module refers to the theory of knowledge-based constructivism which requires students to be creative in learning.

The learning process carried out requires learning resources. One of the learning resources used is the module. Learning modules are learning resources whose substance emphasizes the independence of students. A module is a tool or facility that contains methods, materials, limitations and evaluation methods that are designed in an attractive and systematic way to produce the competencies that you want to achieve [8]. The learning module has several characteristics, including: 1) designed for an independent learning system, 2) a complete and systematic learning program, 3) contains objectives, materials/activities and evaluations, 4) is presented in a communicative, two-way manner, 5) strives for can replace some of the teacher's roles, 6) focused and measurable language coverage, 7) emphasize the learning activities of students [9]. The use of modules can be utilized to trigger an increase in thinking processes, cognitively and creatively. Researchers develop modules as learning resources because the module has several advantages such as being able to facilitate two-way learning, emphasizing learning activities and not fixating on results, being able to replace the role of the teacher and requiring students to be active during the learning process. The modules to be developed follow the structure of the Ministry of National Education.

Physics is a high school level subject that studies natural phenomena and their interactions. Concepts, theories, principles and laws found in physics must use scientific knowledge. In using the scientific method, students are asked to think creatively in solving the problems they find. So for physics learning, it is necessary to develop modules that can integrate contextual-based creative thinking skills, so that cognitive knowledge of students is formed.

The results of previous research that researchers have found are that not all modules used by students have been integrated with creative thinking skills. There are no physics textbooks for Class X Semester 1 high school physics, especially on Measurement, Vector, and Motion materials that can facilitate creative thinking skills [10]. Discovery of physics textbooks for class X semester 2 that have facilitated creative thinking skills but are still relatively low [11]. The results that there are no physics textbooks for Class XI Semester 1, especially on Rotational Dynamics, Center of Weight and Equilibrium of Rigid Objects and Elasticity and Hooke's Law that can facilitate creative thinking skills [12]. From the three findings above, it can be seen that the availability of integrated learning resources for creative thinking skills is still very low.

Development of Physics Modules with a Science Process Skills Approach on Dynamic Electrical Materials to Improve Creative Thinking Skills for Class X High School Students, it was found that the physics module with a science process skills approach is suitable for use as new teaching materials in schools, the feasibility of the modules is based on an assessment of the module, and is effectively used as new teaching materials in schools [13]. Development of Mathematics Modules with Problem Solving Strategies to Measure the Level of Students' Mathematical Creative Thinking Ability [14]. Development of Contextual-Based Physics Teaching Materials in Quided Inquiry Learning for Class XI SMA/MA can be concluded that contextual-based physics teaching materials in quided inquiry learning for class XI SMA/MA are feasible in terms of validity, practicality

and effectiveness [15]. Development of CTL-based physics modules in Static Fluids and Dynamic Fluids to improve Physics Achievement of SMA class XI IPA [16].

In the description above, the integrated physics module for creative thinking skills has been found in the material of Rotational Dynamics, Center of Weight and Equilibrium of Rigid Bodies as well as Elasticity and Hooke's Law, Measurement, Vector, and Motion, but the integrated physics module has the ability to think creatively on static fluid materials and heat temperatures. not yet found.

Static Fluids and Heat Temperature are physics material for class XI semester 1 which requires high creativity in solving everyday problems. This is due to the demands of static fluid materials which are very applicable in everyday life such as water discharge problems, liquid surface pressure and others. For example in the statement "Have you ever noticed the shape of the legs of chickens and ducks? Can you explain why the surface of the feet of chickens and ducks are different? What is the secret behind the difference in the shape of the surface?" Statements like this are a form of question that will stimulate students' creative-thinking skills in the Flexibiliity aspect, namely facilitating students' to provide many ways to do various things. Therefore, the material should have helped students in improving their creative thinking skills.

Material Temperature Heat that relates heat material in life, especially the phenomenon of heat transfer. This material requires students' high creativity skills to solve everyday problems. For example in the statement "One of the anticipatory steps to prevent infection with the corona virus is to check body temperature as shown in the picture. Therefore, in a number of public places such as shopping centers to airports always apply body temperature checks. From that body temperature, a person can find out his body condition are healthy or not. This is one of the ways to prevent the spread of COVID-19. So what can you conclude from this?" Statements like this are a form of question that will stimulate students' creative-thinking skills in the Flexibiliity aspect, namely facilitating students, to provide many ways to do various things. Therefore, the material should have helped students in improving their creative thinking skills

Development research focuses its studies on the field of design or design, whether it is a design model and the design of teaching materials, products such as media, teaching materials and also processes [17]. So that the meaning of development research is the steps or processes to improve existing products or develop new products that are accounted for. The product can be in the form of objects such as books or modules as learning aids in the classroom or laboratory, but can also be software, such as libraries, educational models, computer programs for data processing, classroom learning, training, guidance, evaluation, management, and others [18].

Previous similar studies have been conducted in relation to the development of modules that facilitate creative thinking skills including: [19][20][21]. Therefore, researchers are interested in developing a Contextual-based Physics Module Integrating Creative Thinking Skills in Static Fluids, Temperature and Heat.

II. METHOD

The module design that integrates creative thinking must be validated first by experts to determine the accuracy of the components of the preparation. The validation questionnaire sheet is prepared based on the module development indicators. These indicators are translated into several statements to make it easier to analyze the advantages and disadvantages of product design.

The physics module based on contextual learning integrates creative thinking skills in static fluid and heat temperature. The type of research that is in accordance with the problems and objectives that have been stated is research and development of R&D (Research and Development). The development of a physics module based on contextual learning integrates static fluid material and heat temperature material to improve creative thinking skills. In this research, the product that will be produced is teaching materials in the form of physics modules. The resulting Physics module will be tested for validity using a questionnaire so that it becomes a quality teaching material and is effectively used.

The research design model used is ADDIE, the steps used in this development are 5 stages. At the analysis stage, a needs assessment analysis is carried out, this analysis is to determine the competencies that must be possessed by students. Next is a task analysis (task analysis), to find out the problems faced and require solutions. At the design stage, the design of the module. This module is structured according to the module development guidelines by integrating aspects of creative thinking abilities. At the development stage, the creation and blending of material content that has been made in the design step. At the implementation stage, the high school physics teacher fills out a practicality instrument that contains statements about the practicality of using the module in learning. Furthermore, the data that has been obtained is analyzed to determine the practical value of

the developed module. At the evaluation stage, it is carried out until the summative evaluation aims at the need for revision.

The validity of the physics module based on contextual learning integrating creative thinking has been made seen from the questionnaires filled out by lecturers as experts. The statistical test carried out is descriptive analysis, which is depicted through graphs. The weighting is based on the Likert scale. According "The Likert scale is used to measure attitudes, opinions and perceptions of a person or group of events or social phenomena". By using a Likert scale, the variables to be measured are translated into dimensions, dimensions are translated into sub-variables and then sub-variables are translated into indicators that can be measured. Then a question or attitude support is made which is expressed as follows:

a. 5 stars for excellent answer.
b. 4 points for good answer.
c. The weight of 3 for the answer is sufficient.
d. Weight 2 for less answers.
e. The weight of 1 for the answer is very less.

Respondents who have responded are given a score. Then add up to find out the score. Then, to find out the value obtained for each statement in each questionnaire category, the score is divided by the highest number of weights, then multiplied by 100. Validity value can be searched with the following equation to get the total averange value for all criteria:

$$Value = \frac{score\ archieved}{maximum\ score}\ \text{X}\ 100\% \qquad (1)$$

Percentage of module validity values using criteria such as Table 1.

Table 1. Criteria of Agreement

Percentage%	Criteria
0-20	Invalid
21-40	Less Valid
41-60	Sufficiently Valid
61-80	Valid
81-100	Very Valid

(Source: Ref[22])

On validity of the module, the analysis carried out is by using descriptive statisties whose results are depicted through graphs. The validation value is in the percentage with a range of 0 – 100. The criteria for the validity value used in this study are in the range of 61 - 100 on the Valid and Very Valid criteria.

III. RESULTS AND DISCUSSION

Research that has been done in general is the validation of the use of contextual-based modules to integrate students' creative thinking skills on static fluid, temperature and heat materials in class XI SMA. To obtain results that are in accordance with the research objectives, after being validated by experts, further revisions will be made by considering suggestions and input regarding the strengths, weaknesses, and limitations of this product. The results of the contextual-based physics module validation are expressed in a bar chart.

Creative thinking that will be integrated in the module contains 4 indicators, namely fluency, flexibility, originality, and elaboration. These four indicators are found in the material, exercises and evaluations in the physics module to integrate creative thinking skills in students. The existence of a physics module that integrates creative thinking skills is expected to improve understanding and develop students' creative thinking skills and can facilitate students in developing new ideas or ideas in problems, providing relatively new ideas in solving problems and being able to detail an idea to make it more comprehensive. quality. So that the competence of students can increase and students' creative thinking abilities can also develop.

The module design must be validated first by experts to determine the accuracy of its constituent components. The instrument used to determine the validity of the product design is an expert validation sheet. Expert validation sheets are prepared based on the indicators specified for the module. These indicators include the feasibility of content, use of language, presentation of teaching materials, completeness of teaching materials,

graphics of teaching materials and character values in the module. These indicators are translated into several questions to make it easier to analyze the strengths and weaknesses of the design.

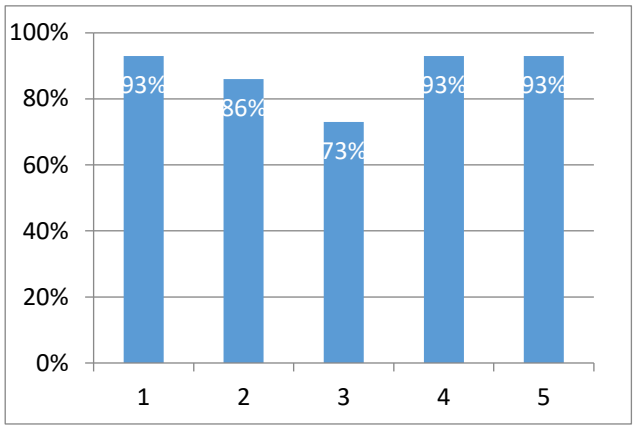
The validation of the contextual-based physics module that integrates students' creative thinking skills is seen from the instrument's validity by experts. The results of the validity by experts are used to determine the feasibility of the product and guidelines in revising the product. This contextual-based physics module integrates students' creative thinking skills and is validated by 3 experts. The score and average value for one assessment component is determined from the score and average value of all indicators contained in the product validation assessment component. The results of the validation of the contextual-based physics module integrating students' creative thinking skills by experts can be seen from the validity of the expert's instrument. The results of the validity by experts are used to determine the feasibility of the module and guidelines in revising the product. Based on the validity assessment instrument by experts on the contextual-based physics module integrating students' creative thinking skills on static fluid, temperature and heat material in class XI SMA, five assessment components were analyzed. The assessment components used are content feasibility, construction feasibility, language feasibility, module display feasibility, and creative thinking feasibility in learning modules.

Carried out taking into account suggestions and input regarding the strengths, weaknesses and limitations of this product. The final value of the validation of the physics module that integrates creative thinking skills can be known through the validity of expert tools. The results of expert validity are used to determine the feasibility of physics teaching materials as a guide in improving the module. The physics module integrates creative thinking skills and is validated by three experts. The score and average value for one assessment component is determined from the average score of all indicators contained in the validation assessment component. The Physics module integrates students' creative thinking skills and is analyzed across five assessment components. The evaluation components used were content feasibility, construction feasibility, language feasibility, module display feasibility, and creative thinking feasibility in the model Physics learning module. The results of the validation of the physics module integrating creative thinking skills will be explained as follows.

The results of the validation of the physics module integrating creative thinking skills will be explained as follows. The design of the creative thinking ability module must be validated first by experts to determine the accuracy of its components. The validation validation sheet is prepared based on the module development indicators. These indicators become several statements to make it easier to analyze the advantages and disadvantages of product design. Based on the description of the views on the benefits of the module, in this study it is easier for students to learn without the presence of a teacher to grow the potential for independent learning.

This study develops a module, where this module consists of Cover, Table of Contents, Introduction where this introduction contains a brief rational description, relevance, learning instructions, and there are also several Learning Activities where this learning activity consists of learning outcomes, learning sub-achievements, main points - subject matter, material descriptions, summaries, assignments, formative tests and there is also a Final Project, Final Test, Bibliography, Formative Test Answer Key and feedback. And this module will be integrated with creative thinking. With a module that is integrated with creative thinking students are expected to be able to develop skills in the form of observing, formulating problems, formulating hypotheses, identifying variables, analyzing data, concluding and communicating in the learning process to prove a concept, so students will play an active and interested role so that motivation to learn will increase, as well as the ability to think creatively.

Based on the assessment used, the validity results can be analyzed for the five components of the physics module, namely: First, the content feasibility assessment component contains five indicators, namely learning modules that are made in accordance with the lesson plans, the substance of the material in the learning modules is correct, and the learning modules are made in accordance with the issues the latest, the facts of the concept/material in the learning module that are delivered are correct, the learning module can add insight to knowledge. The results of the feasibility plot for the content of the contextual-based physics module integrating students' creative thinking skills on static fluid, temperature and heat materials in class XI SMA are shown in Figure 1.



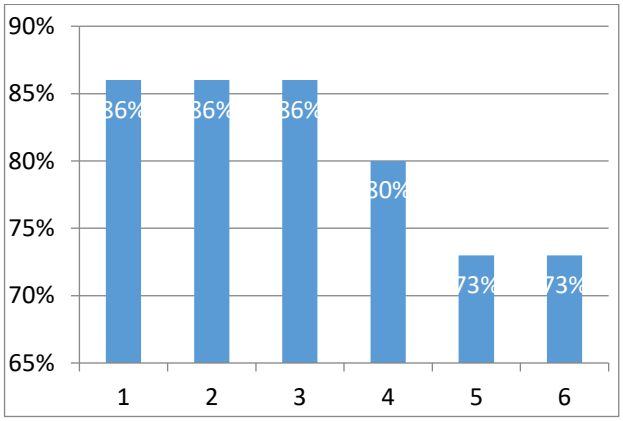
Description :
1 The learning module is made according to the Semester Learning Plan (RPS)
2 The substance of the material in the learning module is correct
3 Learning modules made according to the latest issues
4 The fact that the concept/material in the learning module delivered is correct
5 Learning modules can increase knowledge insight

Fig. 1. Validation Value Content Feasibility Component

The value of the learning module that is made according to the RPS is 93%, the value of the substance of the material in the correct learning module is 86%, the value of the learning module that is made according to the latest issues is 73%, the value of the facts of the concept/material in the learning module that is delivered is already correct is 93%, the value of learning modules can add insight to knowledge is 93%. The scores on the relative feasibility of the content of the module ranged from 73% to 93%.

Based on five elatives on the content feasibility component of the contextual-based physics module integrating students' creative thinking skills, one elative is in the valid category with a value of 73% and four elatives are in the very valid category with a range of values between 86% to 93%. The average value of the content feasibility component is 88%. Therefore, the component of the feasibility of the content of the module is in the very valid category.

Second, the construction feasibility component contains six indicators. The results of the data plot of the value of each construction feasibility indicator on a contextual-based physics module that integrates students' creative thinking skills on static fluid, temperature and heat materials in class XI SMA is shown in Figure 2.



Description :
1. The writing system in the learning module is good
2. The order of the learning module structure is correct
3. The objectives in the learning module are clear
4. The information provided is good
5. Interactivity (stimulus and response) in the learning module is clear
6. The information presented in the learning module is complete

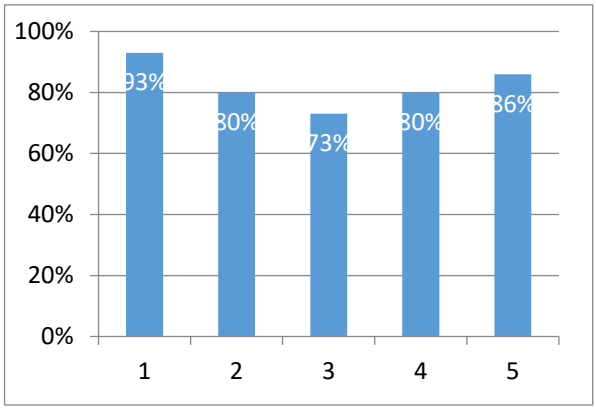
Fig 2. Validation Value in the Construction Feasibility Component

Based on Figure 2, it can be explained that the value of the construction feasibility indicator on the module validity questionnaire is in the range of 73% to 86%. The lowest indicator is 73% in the valid category and the highest indicator is 86% in the very valid category. Where the systematics of writing in the learning module is good, 86% is in the very valid category, the order of the structure of the learning module is correct, 86% is in the very valid category, the objectives in the learning module are clear, 86% is in the very valid category, the information provided it is good, 80% is in the valid category, the interactivity (stimulus and response) in the learning module is clear, 73% is in the valid category and the information conveyed in the learning module is complete, 73% is in the valid category. The average value of the construction feasibility component is 81% which is determined by the value of each of these indicators. So that the construction feasibility indicator can be stated in the very valid category.

Based on six indicators on the feasibility component of contextual-based physics module construction integrating students' creative thinking skills, three indicators are in the valid category with a value of 73% and

80%, while three indicators are in the very valid category with a value of 86% s. From the six indicators, it can be determined that the average value of the module construction feasibility component is 81%. Therefore, the module construction feasibility component is in the very valid category.

Third, the language feasibility component in the contextual-based physics module integrates students' creative thinking skills on static fluid, temperature and heat material in class XI SMA, which contains five indicators. The results of the value data plot for each language feasibility indicator in a contextual-based physics module that integrates students' creative thinking skills on static fluid, temperature and heat materials in class XI SMA can be seen in Figure 3.



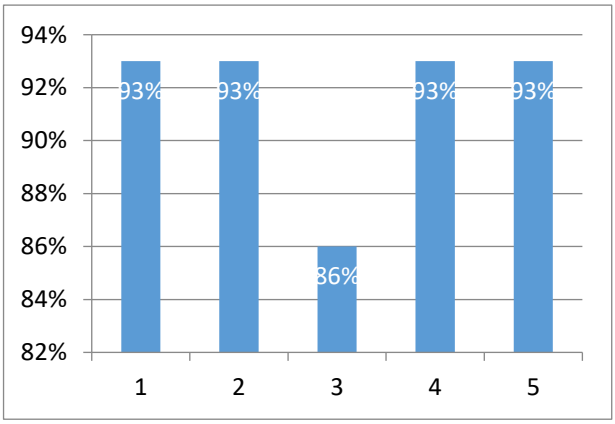
Description :
1 The sentences used in the learning module are clear and easy to understand
2 The relationship between one paragraph and another in the learning module is clear
3 The correct punctuation used in the learning module is correct
4 The connecting words used in the learning module are correct
5 Writing titles and subtitles in the learning module is good

Fig. 3. Validation Value of the Language Component

Based on Figure 3, it can be explained that the value of the language feasibility indicator on the contextual-based physics module integrating students' creative thinking skills on static fluid, temperature and heat materials in class XI SMA is in the range of 73% to 93%. It states that three of the five indicators are in the valid category with a value range of 73% to 80% while the other two indicators are in the very valid category. The average value of the language eligibility component is 82% which is determined by the value of each of these indicators. Therefore, the indicator of the feasibility of the contextual-based physics module language integrating students' creative thinking skills on static fluid, temperature and heat materials in class XI SMA is in the very valid category.

Based on five indicators on the language feasibility component of the contextual-based physics module integrating students' creative thinking skills, three indicators are in the valid category with a value of 73% and 80%, while two indicators are in the very valid category with a range of values from 86% to 93%. From the five indicators, it can be seen that the average value of the language feasibility component in the module is 82% which is in the very valid category. Thus, the feasibility component of the module language is in the very valid category.

Fourth, the module display feasibility component. In this case, there are five indicators. The results of the value data plot for each indicator of the feasibility of the contextual-based physics module display integrating students' creative thinking skills on static fluid, temperature and heat materials in class XI SMA can be seen in Figure 4.



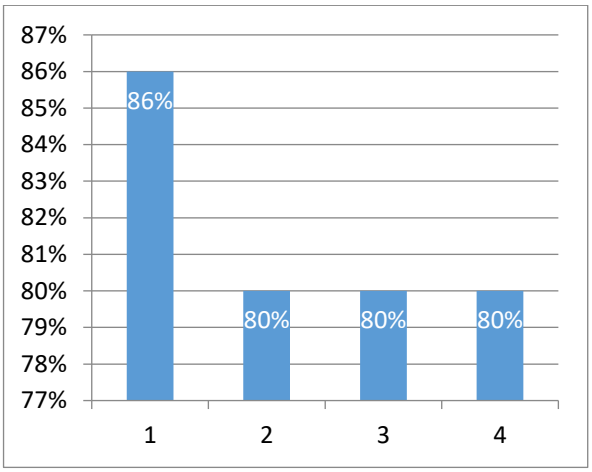
Description :
1 The display at the beginning of the learning module is good
2 The layout of the title and subtitle on the learning module is good
3 The type and size of the font used in the learning module is appropriate and attractive
4 The layout on the cover and between sections in the learning module is already interesting
5 The placement of illustrations, graphics, and pictures in the learning module is already interesting

Fig. 4. Validation Values for Eligibility View Components on Modules

Based on Figure 4, it can be explained that the value of the feasibility indicator for the display of contextual-based physics modules integrating students' creative thinking skills on static fluid, temperature and heat materials in class XI SMA is at 86% and 93% respectively. It states that the five indicators are in the very valid category. The average value of the module display feasibility component is 92% which is determined by the value of each of these indicators. Therefore, the indicator of the feasibility of displaying a contextual-based physics module that integrates students' creative thinking skills on static fluid, temperature and heat materials in class XI SMA is in the very valid category.

Based on the five indicators on the feasibility component of the module display on the contextual-based physics module integrating students' creative thinking skills, all indicators are in the very valid category with a range of values from 86% to 93%. From the five indicators, it can be seen that the average value of the display feasibility component on the module is 92% which is in the very valid category. Thus, the module display feasibility component is in the very valid category.

Fifth, the component of the feasibility of creative thinking in the learning module has four indicators. The results of the value data plot for each indicator of the feasibility of creative thinking in a contextual-based physics module integrating students' creative thinking skills on static fluid, temperature and heat materials in class XI SMA can be seen in Figure 5.



Description :

1. The module has guided students in expressing many ideas in problems (fluency)
2. The module has guided students in generating variations of problem solving ideas or answers to a question (flexibility)
3. The module has guided students in providing relatively new ideas in solving problems (originality)
4. The module has guided students in adding, organizing or detailing an idea so that it can improve the quality of the idea (elaboration).

Fig. 5. Validation Values on the Conformity Component of Creative Thinking in Modules

Based on Figure 5, it can be explained that the value of the feasibility indicator for creative thinking in the contextual-based physics module ranges from a value of 80% to 86%. Where the value of the module has guided students in expressing many ideas in problems (fluency) is 86%, the value of the module has guided students in generating variations of problem solving ideas or answers to a question (flexibility) is 80%, the value of 3. The module has guided students in providing ideas that are relatively new in solving problems (originality) is 80%, value 4. The module has guided students in adding, organizing or detailing an idea so that it can improve the quality of ideas (elaboration) is 80%.It states that three of the four indicators are in the valid category with a value of 80% while one other indicator is in the very valid category. The creative thinking component of this physics module consists of four indicators which include fluency, flexibility, originality, and elaboration. The average value of the creative thinking feasibility component in the module is 81% which is determined by the value of each of these indicators. The feasibility indicator for creative thinking in a contextual-based physics module that integrates students' creative thinking skills on static fluid, temperature and heat materials in class XI SMA is in the very valid category.

Based on four indicators on the feasibility component of creative thinking in the contextual-based physics module integrating students' creative thinking skills, one indicator is in the very valid category with a value of 86% and three indicators are in the valid category with a value of 80%. From the four indicators, it can be seen that the average value of the feasibility component of creative thinking in the contextual-based physics module integrating students' creative thinking skills is 80% which is in the valid category. Thus, the component of the feasibility of creative thinking in the module is in the valid category.

The value of the validity of the contextual-based physics module integrating students' creative thinking skills on static fluid, temperature and heat materials in class XI SMA for each component of the assessment is shown in Figure 6.

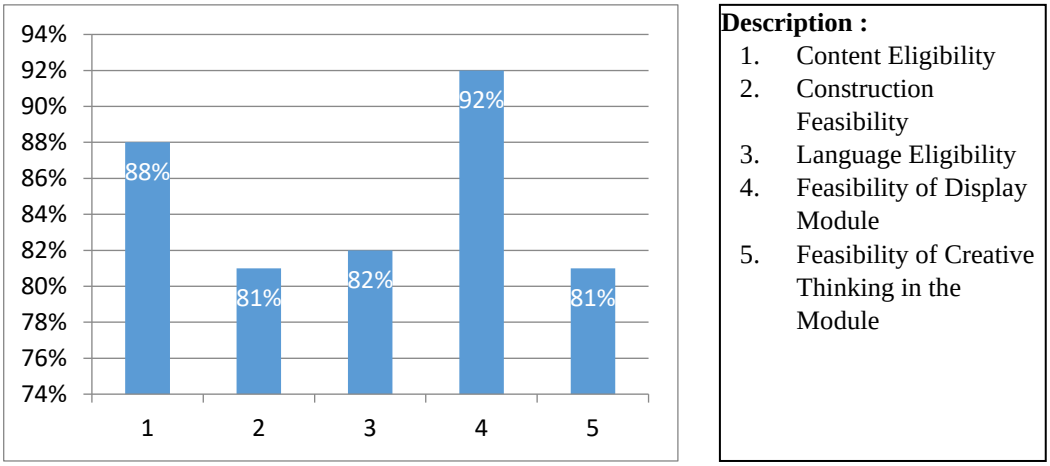


Fig. 6. Average Value of Module Validation Components

Based on Figure 6, it can be seen that the value of each module component varies between 81% to 92% with an average of 84.80%. Based on these values, it can be stated that overall the module components are in the very valid category. Thus, the physics module has a very high level of validity.

The results of the validation by experts can be concluded that the resulting module is valid to be used in the physics learning process to improve students' creative thinking skills. It can be seen based on the module validation assessment components which include content feasibility, construction feasibility, language feasibility, module display feasibility, creative thinking feasibility in the module. Validation of experts obtained an average validity value for all components assessed at 84.80. This indicates that the resulting product is in a very valid category.

Based on the results of the validation and suggestions from the validator on the instrument sheet that has been filled in, it is known that it is necessary to revise the product that has been produced. The revisions were made regarding the appearance and aspects of creative thinking that were integrated in the module. After being revised, the module is more perfect than before.

This is in line with the results of relevant research, where the teaching materials developed are contextually based to facilitate the thinking skills of class XI high school students which are reviewed from their validity, practicality and effectiveness, which are suitable to be used to improve student learning outcomes.

The results of the validation analysis by experts on the physics module integrating the results of the validation analysis by experts on the physics module integrating creative abilities can be said that the resulting product is very valid for use in the physics learning process. Judging based on the assessment of the module according to needs, according to needs, the right model, creative thinking in the module. From the results of the analysis on the validation of experts, the average validity value for all components assessed by the validator is 84.6. This means that the resulting product is in the very valid category according to the product validation criteria that the value of 81-100 is in the very valid criteria. This indicates that the resulting product is in a very valid category. The validity value obtained states that not all components of the assessment have reached perfection. Based on the results of the validation and suggestions from the validator on the validation sheet, it is known that it is necessary to revise the resulting product. The revisions were made regarding the appearance and aspects of creative thinking that were integrated in the module. After being revised, the module is more perfect than before.

Based on the validation results of the physics module integrating creative thinking skills by the validator, there are several suggestions from the validator to be revised again. Suggestions from the validator for the physics module to integrate creative thinking skills are useful for researchers to refine the modules that have been developed to be better.

IV. CONCLUSION

The physics module developed has a score of 84.80 and is in the valid category to be used in the physics learning process to improve students' creative thinking skills. Researchers suggest that undergraduate students can develop a contextual-based physics module that integrates creative thinking skills in other materials, in order to produce a complete learning tool for each high school physics material.

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