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Focusky application-assisted module teaching materials based on creative problem solving (CPS)

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ABSTRACT Learning media is an important part of learning. Through the use of learning media, the material will be conveyed easily. Apart from that, it can also help students absorb information to achieve learning objectives. This research aims to develop teaching materials in the form of modules assisted by the CPS-based Focusky application and to determine the feasibility and practicality of these modules. This type of research is development research using the Thiagarajan development model. Media development was conducted on class VII social arithmetic material at MTs Darul A'mal Metro. The data collection instruments used in this research were pretest questions used to determine students' problem-solving abilities, media expert and material expert questionnaires used to test the quality of the module's teaching materials, and student response questionnaires to test the practicality of the module being developed. The data collection methods used in this research are interviews, documentation, and questionnaires. This research produces a product in the form of module teaching materials assisted by the CPS-based Focusky application on social arithmetic material. The results of the assessment by media experts received in the very appropriate category, and the assessment from material experts by lecturers in the very appropriate category. Meanwhile, based on trials on class VII students, totaling 27 students at MTs Darul A'mal Metroin very decent category. In this way, the module teaching materials developed can be used as a medium in mathematics learning.

1. INTRODUCTION

Teaching materials are an important component to support learning. Teaching materials contain information systematically by presenting competencies that students in implementing learning will master (Khasanah & Fadila, 2018). The material in the teaching materials refers to the curriculum based on the level of achievement of predetermined competency standards and basic competencies. Using teaching materials can help students direct the learning activities that should be taught in the learning process and can monitor students' acquisition of information (Nurdyansyah & Nahdliyah, 2018). The selection of teaching materials must be adjusted to students' needs. However, existing teaching materials emphasize the content rather than the process and context dimensions (Rostikawati & Permatasari, 2016).

The current use of teaching materials does not support students' abilities. If the teaching materials only mention the definition of material, students' ability to solve problems will not be trained or developed. As a result, students will only memorize, and learning will not be meaningful (Kharisma & Asman, 2018).

Facts in the field show that conventional teaching materials are still often found, such as teaching materials that are just used, instant, and without any effort to plan and make them yourself (Irafahmi & Andayani, 2016). As a result, the teaching materials are not contextual, monotonous, and uninteresting and do not suit students' needs (Astuti, 2017). The conventional forms of teaching materials are textbooks donated by the government and worksheets purchased through distributors who come to schools (Zuriyah et al, 2016).

Like the teaching materials used at MTs Darul A'mal in the form of printed teaching materials from publishers, this teaching material is considered not optimal in meeting the needs of teachers and students in the learning process, especially mathematics learning. Based on the results of interviews with MTs Darul A'mal teachers, teaching materials originating from publishers already have study guide components, but supporting information and work steps in solving questions are still lacking, so their use only allows one-way communication, which results in a lack of opportunities for students to develop thought patterns and concept formation. As a result, understanding the material being taught becomes less than optimal.

MTs Darul A'mal mathematics teachers create their teaching materials in the form of worksheets to support learning that are adapted to students' learning conditions, which include environmental, cultural, and geographical criteria, as well as student development stages, initial abilities that have been mastered, interests, family background, etc. However, teachers' development of teaching materials

has not optimally met these needs. Because there are still several problems in learning, such as students' lack of interest and motivation to participate in the learning process.

Developing teaching materials in other forms is necessary, including developing technology-based teaching materials. This is also motivated by demands for increasingly sophisticated technological advances in education. For this reason, in this research, the teaching materials developed are technology-based modules. Applications that can be used to develop modules include PowerPoint or modules in web form (Harahap & Fauzi, 2017). In this research, module development was carried out with the help of the Focusky application.

Focusky is software for learning media that is easy to implement in learning with satisfactory results. Focusky application-based module development is designed to meet the needs of students in the digital era (Mistianah & Qomariah, 2019).

An appropriate learning approach must accompany good module development. An approach that can be used to help students understand the material and help solve factual problems critically and creatively is the Creative Problem Solving (CPS) approach. CPS is a process, method, or system for approaching a problem imaginatively and effectively. The CPS model emphasizes problem-solving skills accompanied by strengthening creativity (Swestyani et al., 2017).

Focusky module, it is hoped that it can be a solution to improve students' problem-solving abilities. The teaching materials that will be developed are, of course, different from the teaching materials that previously existed at the school, where the CPS-based focusky-assisted module teaching materials present a more attractive appearance and can help students to develop their responses creatively.

From the results of the analysis, there are several indicators of social arithmetic material, namely differentiating the unit price and the total price of an item, calculating the unit price and the overall price of an item, determining the selling price and purchasing price, determining the amount of profit and loss, calculating the size of the discount, carrying out appropriate trade calculations. Involving gross, tare, and net, explaining savings interest, calculating savings interest, and taxes (Azizah, 2017).

It can be seen from several studies that, in general, students have homogeneous mathematics learning abilities and can solve problems in groups. However, in learning, students only focus on memorizing formulas without understanding the use of these formulas, making it difficult to solve non-routine problems (Azizah, 2017). The main source of difficulty experienced by students in solving problems is converting written words into mathematical operations and symbols. For this reason, treatment is needed to overcome the obstacles that occur. By looking at the difficulty of the material being taught, learning media is needed to help students solve these problems.

Based on the problems explained, this research aims to produce a product in the form of module teaching materials assisted by the Focusky application based on Creative Problem Solving (CPS) on social arithmetic material and knowing the module's feasibility and practicality.

2. METHOD

Research and Development aims to produce a product. This research model uses the Thiagarajan flow, namely 3D, which has four stages: Define, Design, Develop and Disseminate (Gall et al, 2013). However, this research was only limited to the development stage. The research was conducted in class VII of MTs Darul A'mal Metro, totaling 27 students. The module development procedure using the 4D method is as follows (Nurkhasanah et al, 2018):

2.1 Definition Stage

The definition stage aims to determine and define the needs faced in mathematics learning. The definition stage includes students' developmental needs, curriculum, school conditions, and problems faced in the learning process related to the teaching materials being developed.

2.2 Design Stage

At this stage, the researcher designs an outline content framework for the developed product. Researchers began to prepare the Focusky draft I module along with learning tools that had to be prepared before being tested. This draft is called draft I, which mathematics lecturers and teachers validate.

2.3 Development Stage

Focusky application-assisted module teaching materials that are suitable for use.

3. RESULT & DISCUSSION

3.1 Definition Stage

The definition stage is carried out to define development requirements. To determine development goals and limitations, researchers conducted a needs analysis. The analysis includes four main activities, namely as follows:

3.1.1 Learner analysis

Student analysis is carried out to determine student characteristics, including academic abilities and students' level of cognitive development. Academic ability is carried out to determine the extent of students' abilities in understanding the material and completing the tasks given. Meanwhile, the level of cognitive development is needed so that the focusky- assisted teaching materials developed can help improve students' cognitive abilities.

Researchers made observations regarding the characteristics of MTs Darul A'mal Metro students. When viewed from cognitive and academic conditions, class VII students are heterogeneous students. This is proven by pre-test data showing that only 22% of students have completed mathematics lessons. Meanwhile, the other 78% did not reach the KKM of 75.

This data is reinforced by the results of interviews that most students tend to focus on memorizing formulas, so they often have difficulty solving other problem-solving questions.

3.1.2 Task analysis

The task analysis carried out by the researchers was analyzing the Core Competencies (KI) and Basic Competencies (KD) that apply at MTs Darul A'mal. The task analysis

is adjusted to students' understanding to achieve minimum competency.

3.1.3 Material analysis and learning objectives

Researchers carried out material analysis and learning objectives in social arithmetic material. Preparation of material by KD and KI in the RPP includes the total unit value, sales price, purchase price, profit, loss, discount, gross, tare, net, savings interest, and tax.

3.2 Design Stage

After the preliminary stage, the researcher then carried out the design stage. The design steps in developing a module assisted by the Focusky application are as follows:

3.2.1 Format selection

After carrying out several analyses at the definition stage, the next step is for the researcher to select the format that will be used to develop the module. Module development is adjusted to KD, KI, and the 2013 curriculum syllabus. The material and evaluation questions in the module are prepared based on the CPS model used in this development. The CPS-based module on social arithmetic material is presented using the Focusky application, equipped with interesting pictures and animations.

3.2.2 Media preparation

When preparing the Focusky module, several steps must be followed. The steps taken by researchers are as follows:

a. Selection of attractive templates as material for delivering material on Focusky
b. Create KI, KD, Indicators, and concept maps on Focusky slides.
c. Choose the type of font and font size used in writing the material. The font used is Comic Sans MS.
d. Create appropriate color combinations on slides to support the learning process.
e. Choosing the CPS context as a base in the module on Focusky, this context includes everyday problems related to social arithmetic.
f. Compile material on Focusky, equipped with interesting images and animations.

3.3 Development Stage

Media expert validation was carried out by one of the lecturers, who is an expert in developing learning media from the Mathematics Education Study Program at the Ma'arif Islamic Institute (IAIM) NU Metro.

Validation results from media experts show a total assessment score 72 with 15 assessment criteria. Regarding media quality, it got a score of 90%. Meanwhile, the media display aspect scores 9.5%, and the media design aspect as much as 94.3%. The total final score obtained was 93%. Based on these results, module focusky CPS-based was declared suitable for testing without revision.

Material expert validation was carried out by one of the mathematics teachers at MTs Darul A'mal Metro, who the researcher chose as a material expert in developing the CPS-based focusky module. The validator then fills out the questionnaire given by the researcher. This questionnaire consists of 15 questions. The aspects assessed include the quality of the material's content, implementation, appearance, and language used in delivering the material.

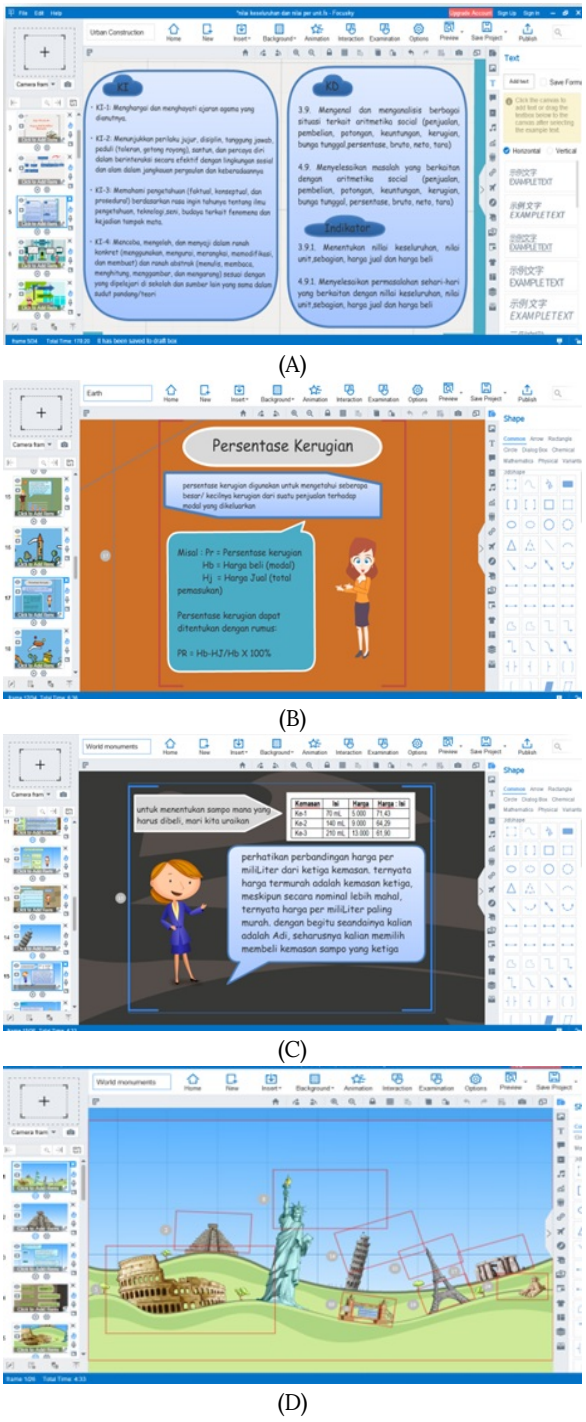

FIGURE 1. templates as material for delivering material on Focusky (A) KI, KD and Indicator Design, (B) Preparation of material on focusky, (C) CPS-based question analysis, (D) Focusky initial slide

Material expert validation obtained good results. Proven by the results of the questionnaire score analysis regarding content quality, it got a score of 8.67%. Meanwhile, the implementation aspect gets a score of 80%. The visual aspect is 8.5%, and the linguistic aspect is 75%. The total final score obtained is 80%. Based on these results, the material in the module focusky CPS-based was declared suitable for testing without revision.

3.4 Development

Products declared feasible by the validator are then tested in real situations. There were two trials in taking student responses. The first trial was a small group trial, and the second was a large one. Small group trials are carried out on a smaller number of students. Meanwhile, large group trials were carried out on more students.

Small group trials were conducted on 10 class VII students at MTs Darul A'mal Metro. Responses regarding the module teaching materials assisted by the Focusky application that were developed were carried out by filling in the questionnaire that had been provided.

Results of Student Responses in Small Groups The results of small group trials show that the percentage of student responses to the module teaching materials assisted by the Focusky application that was developed was 67%. Based on the achievement level qualifications explained in the previous chapter, this percentage is in the good category. In small group trials, improvements were obtained in the presentation of the material.

In large group trials, Researchers conduct learning using modules focusky in class VII P MTs Darul A'mal Metro, totaling 2 7 students. Students were asked to fill out a ten-question questionnaire to find out the response to using this module.

Based on the results of large group trials in class VII P, the total percentage obtained from all questions was 81% of students interested in the Focusky module, while the other 19% were not interested in this media. So, based on the media achievement level qualifications previously explained, the CPS-based Focusky module is categorized as very good.

This research and development aims to produce products as module teaching materials assisted by CPS-based Focusky applications. Apart from that, it is also to determine the feasibility and practicality of the product being developed. The research began by conducting a pre-survey at MTs Darul A'mal to find information about the teaching materials used, the mathematics learning process, and the obstacles often experienced during the learning process. Teachers and students experience both. After obtaining the desired information, the researcher determines the problem's solution and the development model used in developing a product.

After analyzing student needs, the researcher planned to create teaching materials. The teaching materials developed are adapted to increasingly sophisticated technological developments. According to Munir, technology-based learning not only conveys information, but can also condition students to learn because the student's learning process marks the teacher's success in teaching and learning effectiveness. In addition, success in learning is also influenced by the environment. In line with this, Trianto also stated that in constructivism theory, students must find and transform complex information, check new information with old rules, and then revise them if they are inappropriate (Sudarsana, 2018).

The development of this teaching material uses the CPS-based Focusky application. The function of the Focusky application in this teaching material is to support and assist in conveying the material being taught. At the same time, CPS is an approach used to help students improve their problem-solving abilities. The initial design of teaching materials assisted by the CPS-based Focusky application was in the form of presentation slides equipped with images, animations, accompanying music, and other objects. The final result of this teaching material is a video file that can be displayed.

In Kirwani's opinion, the appropriate and varied use of animation can help students' passive attitudes (Sandi et al., 2016). In Dina Akhsanti's research, animation media can improve the quality of learning and increase learning motivation, impacting student learning outcomes (Akhsanti, 2019). Meanwhile, according to Marchita Y, music is used as entertainment and can also express feelings and convey moral messages. Likewise, Susanti DW and Rohmah FA stated that music can improve student learning and influence brain performance. The presence of pleasant sounds in music can prevent learning difficulties due to anxiety in the learning process (Roffiq et al, 2017).

The process of developing teaching materials has been adjusted to the steps of the development model. Media experts have also validated the design of the teaching materials developed. This validation showed that teaching materials assisted by the CPS-based Focusky application were considered suitable. This can be proven by the average media expert assessment result of 93% in the category "Very Suitable for Use". After validation by media experts, material validation is then carried out. The aim is that the material presented is by the KI and KD and meets the standards of good and correct writing. As a result, the material in the teaching materials developed by researchers was categorized as adequate, with a score of 80

After the validation process was complete, the researcher conducted a trial to determine the practicality of the module teaching materials. Product trial carried out on class VII MTs Darul A'mal Metro students, totaling 27 students. At the trial stage, the researcher delivered social arithmetic material with the CPS concept, which was implemented in the material and questions provided. Researchers also distributed student response questionnaires consisting of 10 questions. The results of product trials were 81% of students gave good responses.

Based on the results of the validation and trials carried out, a product has been obtained as module teaching materials assisted by the CPS-based Focusky application, which is appropriate and declared suitable for use as a medium to assist problem-solving abilities. However, this module still has several shortcomings, namely the lack of further explanation of social arithmetic formulas. This deficiency is caused by the researcher's limited time in compiling the module. So that further research is needed to make this module even better.

4. CONCLUSION

The feasibility of the module was obtained from the validation results of media experts who obtained in the category "Very Suitable for Use". The material validation results were categorized as feasible. So, based on this assessment, the module can be tested on students. The practicality of the module is obtained from assessing student responses. The trial was carried out in class VII P MTs Darul A'mal, totaling 27 students. At the trial stage, students filled out a questionnaire consisting of 10 questions which were then analyzed by researchers. As a result, as many as 81% of students responded well to the tested modules.

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