The Feasible Module of Geometry for Think Pair Share Learning Based on Ki Hadjar Dewantara Teachings

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Abstract. The aim of this research was to develop a module of Geometry at junior high schools for Think Pair Share Learning based on Ki Hadjar Dewantara teachings and to determine the feasibility of the module. This study was used Research and Development (R&D) method. This research has produced a module of geometry. It has been tested twice, namely a limited trial of 5 students and a main trial of 25 students in SMP N 12 Yogyakarta. The module has been validated by the material expert validator and the module expert validator who are lecturers of mathematics education department and the teacher. The mean score for the material is 3.59 which is categorized very well, while mean score the module is 3.77 which is categorized very well too. The student questionnaire responses obtained an average score of 88.09 and the percentage of learning accomplishment was 93.92%. As a result, this module was very well criteria and feasible to use. Eligibility is also supported by the correlation of students' questionnaire response scores and learning achievement tests with a correlation coefficient of 0.53 with a high category, so this module is feasible to use.

1. Introduction

In the 2013 curriculum, students are required to be active in the learning process and the students can learn independently at home. Therefore each subject needs a module to support students' independent learning activities at home and at school [12]. At present the development of teaching materials in the form of modules is a very urgent need. Because there are exercises in the module questions and answers as a result students can learn independently and directed. Modules can also help schools realize quality and effective learning [10]. The application of modules can condition learning activities that are better planned, independent, complete and with clear outputs. The use and empowerment of modules to support learning is a necessity to increase mastery of material for students [5]. Modules must also be accompanied by appropriate learning models. One effective learning model is TPS (Think Pair Share) [1].

This type of TPS learning model allows students to learn more independently in working on given problems because it can give students plenty of time to think, respond, and help each other [4]. TPS type learning is also one way to change the pattern of class discussions that have not been directed. Think Pair Share (TPS) learning model is a type of cooperative learning that is designed to influence student interaction patterns. In TPS students are given the opportunity to think for themselves first then discuss with their friends. Think Pair Share learning model is one of the simple cooperative learning models that gives students the opportunity to work alone and work together with others. Thus what is meant by the type of TPS cooperative learning model is a model that can give students more opportunities to think and think individually to respond to other opinions then help each other in their groups and then share knowledge with other students [6].
In addition, the Teachings of Ki Hadjar Dewantara that can be implemented in the learning process using modules namely Niteni, Nirokke, Nambahi [13]. Niteni means to observe, a kind of observation. Nirokke imitated, especially the best practices. Add it up, so that the resulting module is better than the previous one. 3N is a systematic, serial and gradual method. Each stage must not precede each other in order to produce intact knowledge and skills. If the module is equipped with niteni, niroke and add, then students will be more focused in understanding the questions in the module because there is a process step in understanding the material and working on the practice questions [13].

Based on observations at SMP N 12 Yogyakarta that educators already know the TPS learning model but educators have not applied the TPS learning model to learning and still use conventional methods but sometimes also use group learning but are still not directed and teaching materials used by educators are still in the form of books packages and LKPD made by educators themselves and modules are not yet available. Most students get low marks on geometry material. Based on these descriptions, researchers are interested in developing teaching materials entitled The Feasible Module of Geometry for Think Pair Share Learning Based on Ki Hadjar Dewantara Teachings.

2. Methods
This research uses the development research method. The product produced in this study is a geometry module for the learning of think pair share based on the teachings of Ki Hajar Dewantara namely niteni, niroke, add. The selected development model follows a simplified procedure from the Borg & Gall model [8] which consists of 5 steps namely product analysis to be developed (exploratory study), initial product development, Expert validation and product revision, limited field trials and revisions products and main field trials and end products [9]. The subjects of the study were students of class VIII E, SMP N 12 Yogyakarta, who were taking material on the subject matter of cubes, beams, prisms and pyramid. Field trial place in Yogyakarta State Junior High School 12th grade VIII in the even semester of the 2018/2019 school year. Limited field trials were conducted on 5 students, namely VIII E class at SMP N 12 Yogyakarta. Whereas the main field trial was conducted on 25 students. Qualitative data in this study were used in the form of quality assessment levels based on a Likert scale with a scale of 4 [2]. Quantitative data in this study were taken from validation sheets filled in by module experts and material experts consisting of two lecturers and one teacher. Data collection techniques using product validation techniques and product trials. Data is processed using descriptive statistics. The research instruments used were validation questionnaire, trial questionnaire and interview sheet.

3. Result and Discussion
The results of this study produce a product in the form of a geometry module. Geometry topics discussed in this module are cubes, beams, prisms and pyramid [7]. This study aims to determine the quality of the teaching module based on Ki Hadjar Dewantara for geometry material based on the assessment of the validator and determine the response and evaluation results of students towards learning by using modules that have been developed. The learning media is packaged in the form of modules for TPS learning that are presented using Ki Hadjar Dewantara's teachings, namely 3N (Niteni, Nirokke, Nambahi) [11]. This module also includes pictures and illustrations that support the presentation of the material.

The process of developing a teaching module based on ki Hadjar Dewantara's teachings in this study refers to a simple model [8] consisting of 5 steps. The initial stage conducted by researchers is to analyze the products to be developed namely curriculum analysis conducted by reviewing Graduates' Competency Standards, Core Competencies and Basic Competencies to set indicators and learning objectives on geometry for class VIII that are consistent with the 2013 curriculum. Then Analysis of Literature source material consists of books or articles / journals relating to Ki Hadjar Dewantara's teaching-based learning, books on mathematics subject packages related to geometry material and various reference books [3].
Furthermore, the analysis of junior high school students was carried out with preliminary study activities to SMP N 12 Yogyakarta. This preliminary study activity is an interview with a mathematics teacher. The results of the preliminary study activities are teaching materials used in SMP N 12 Yogyakarta using books from the government. In the process of learning mathematics in SMP N 12 Yogyakarta especially in class VIII, teachers still use conventional methods or lectures sometimes also use other learning methods but, still not directed. Next is to develop an initial product that is Drafting the Needs of Ki-Based Dewantara's Mathematics Module Needs. The draft needs of this module are based on the results of curriculum analysis that has been done in the previous stage. Gathering Reference Geomoetri Material Material presented in the development of mathematics modules based on the teachings of Ki Hadjar Dewantara is material to build flat side space subject matter of the geometry of cubes, beams, prisms and pyramid. Definition, properties, surface area, volume of each geometry.

The next stage of development is to make a mathematical module for learning Think Pair Share (TPS) based on Ki Hadjar Dewantara's teaching on geometry material. The source consists of books or articles / journals related to the learning of Think Pair Share based on the teachings of Ki Hadjar Dewantara. The following is an example of the display of the module based on the teachings of Ki Hadjar Dewantara 3N (Niteni, Nirokke, Nambahi).
The learning modules developed have been validated by experts in the material and media fields. Validators from material and media experts are two lecturers of mathematics education at the University of Sarjanawiyata Tamaniswa Yogyakarta at least holding the position of assistant expert and one mathematics subject teacher at SMP N 12 Yogyakarta. The module developed was revised based on validator comments and suggestions.

The module validation results are used to determine the quality of the modules developed. The validation components of the module include: module size, module cover design, module content design. obtained the average results of the first validator is 3.66, the second validator is 3.88 and the third validator is 3.82. So the average of the module validators is 3.77. With very good criteria. The results of the material validation are used to determine the quality of the material being developed. This material validation covers aspects of material, presentation, language and 3N (Niteni, Nirokake, Nambahi). the average results obtained from the first validator are 3.4, the second validator is 3.6 and the third validator is 3.78 so the average of the three validators is 3.59 with very good criteria.

Furthermore, the validation of the learning achievement test instrument uses logical validation which consists of content validity and construction validity. The learning achievement test instrument developed has undergone content validation and construction validation conducted by mathematics teachers. The validation results state that the questions are valid. Next, a small-scale field trial was conducted. Data sources from this small-scale field trial were 5 students of class VIII E of SMP N 12 Yogyakarta.

Large-scale field trials were carried out on all students of class VIII E at SMP N 12 Yogyakarta with a total of 25 students. This trial was conducted through a teaching process based on the teaching of Ki Hadjar Dewantara for geometry. The developed module has been tested on students of SMP N 12 Yogyakarta class VIII E. Student questionnaire response scores were taken from 25 students. From the data obtained can be calculated scores through the frequency distribution with the step of determining the average Questionnaire Score, Data that has been obtained through a questionnaire by students will be changed to quantitative values. Obtained the number of student questionnaire scores 2286 with the number of test subjects 25 students. So the average of the questionnaire scores is 88.09. With very good criteria. Based on these results it can be concluded that the geometry module for Think Pair Share (TPS) learning based on Ki Hadjar Dewantara's teaching in junior high school is appropriate.

From the test of learning outcomes obtained an average of 83.2 learning outcomes with the number of students who reached the KKM of 93.92% and did not reach the KKM of 8%. From the correlation calculation results obtained correlation coefficient 0.53, meaning this correlation is significant because r table 0.396, the learning module which has been validated by the module expert validator and the material expert generates some comments and suggestions. The term 3N should always be included in the Indonesian language. Each unit should be included (for example: a unit of length, a unit of area, cm, etc.), to avoid ambiguous questions, It is better to add contextual questions. Comments and suggestions are used as a reference in improving the learning module.
The learning module must go through the limited field trial stage first. The limited field trial was conducted on 5 students of SMP N 12 Yogyakarta consisting of 5 students of class VIII E. The purpose of taking students' responses in the limited field trial was to obtain comments and suggestions which were then used as references for the module improvement learning. And the learning module has been improved according to comments and suggestions.

The purpose of limited field trials is to validate the learning modules that are developed. The results of limited field trials for this learning module are valid, but there are still inputs from students. Inputs from the limited field trials by the 5 students are "The writing of Niteni, Nirokke, Nambahi should be given a meaning to be clearer" and the input has been corrected with. And the result of these improvements is to add meaning to the word "Niteni which is paying attention, Nirokke is imitating, and Add is adding". Thus it can be concluded the results of the learning module validation are in valid criteria in terms of all aspects so that the learning module that is made is suitable for use.

4. Conclusion

Based on the results and discussion it can be concluded that this research has succeeded in developing a module based on Ki Hadjar Dewantara's teaching for Think Pair Share learning on Geometry material in junior high school. In the process of making researchers refer to the teachings of Ki Hadjar Dewantara namely Niteni, Nirokake, Nambahi, while in the learning process the research module refers to the Think Pair Share learning model. The product produced from this research development is the geometry module. From the results of the validation by the mathematics education teacher at the Sarjanawiyata University and the Mathematics teacher of SMP N 12 Yogyakarta, the mean score of the results of the validation of the material is 3.59 with a very good category and the average score for the results of the module validation is 3.77 with a very good category. While from the results of field trials by 25 students of class VII E 12th Junior High School in Yogyakarta, an average score of 88.09 was obtained with a very good category. Based on the calculation of students' questionnaire correlation scores with learning outcomes tests, obtained correlation coefficient of 0.53. thus Ki Hadjar Dewantara's teaching-based module for Think Pair Share learning on Geometry material in junior high schools is appropriate.

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