

Practicality of Basic Electronic 1 Module Integrated Character Value Based on Conceptual Change Teaching Model to Increase Physics Students' Competency

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Abstract—This research is motivated from the unavailability of teaching materials in accordance with the characteristics of students. Teaching materials that are developed not only to make the student into a person who has a high intellectual, but also be able to educate students into a figure who has the character values. The Basic Electronics Module 1 is developed based on that. The developed module integrates character values and conceptual change teaching models so that students are able to build their own scientific knowledge based on learning experiences. In this research, it is seen that the basic electronics module practicality 1 integrated the character values based on the conceptual change teaching model. Practicality is seen from the instrument of practicality and module implementation by lecturers and student's practicality. From the result of the analyzed instrument, it was found that the basic electronics module 1 integrated the character values based on the conceptual change teaching model used has a very practical category.

Keywords—*practicality, basic electronic 1 module, character values, conceptual change teaching model*

I. INTRODUCTION

Teaching is an effort made by lecturers to create conditions that can support the learning process. The learning process has three important components, namely lecturers, students and teaching materials. These three components cannot be separated from one another because the material is a benchmark in the interaction of lecturers and students. The material for the lecturer is interpreted as a knowledge that must be transferred to the students. On the other hand, material for students is as a knowledge that is obtained later.

Knowledge gained by students is not fully transferable by lecturers, because knowledge is not only to be remembered but also to be understood. Therefore, it needs a teaching material that is suitable with student characteristics. The teaching material developed is Basic Electronics 1 module. The basic electronics module 1 is developed based on material analysis, needs analysis and literature analysis. Based on the questionnaire it was found that 83% of students agree that the material given by the lecturer should be related

to the basic concept of Basic Electronics 1 found in real life, 81% of students agree that learning must be associated with character values, while 38% of the existing literature has not been able to guide students to find and build their own concepts.

One of the learning models that can lead the students to build their own knowledge based on the learning experience is the conceptual change teaching model. The conceptual change teaching model was developed [1]. The conceptual change model which is based on constructive knowledge [2]. In addition to the learning model, character values are also required in a teaching material. The values of the characters are religious, honest, tolerant, disciplined, hard work, creative, independent, curiosity, spirit of nationalism, love of the homeland, respect, communicative, peace loving, reading, democracy, caring environment, and responsibility [3]. Building the character of children is needed in order to prepare a quality generation in the future [4].

Many studies show results related to Model conceptual change teaching, one of which [5]. This study mainly explores the conceptual change before and after teaching concept mapping on technical and vocational university students. The result states that there is a change of concept as many as 35 students of Higher Education in Taiwan who have followed the learning process. The change of concept occurs because the students are required to find their own knowledge with the help of concept map.

Further study in [6] shows results related to character education. The results suggest that character education is an important part of the academic success of a child and a school should focus on character education. With this in mind, further studies like this might be conducted. This study is looking at the practicality of basic electronics module 1 integrated values of character based on conceptual change teaching.

The rest of this paper is organized as follow: Section II describes the data used and proposed research method. Section III presents the obtained results and following by discussion. Finally, Section IV concludes this work.

II. DATA AND PROPOSED METHOD

Participants in this research were 12 students of semester 4 (12 females, with a range of age between 19 and 20 years), dan 1 lecturer (1 male, with age 40 years) and they were all residents in Padang (Sumatera Barat). Their educational backgrounds were of physics education department (12 students). And 1 lecturer of master's degree teaching in physics education department. The research was conducted at a private university in Sumatera Barat in Februari until Mei 2018.

The method used in the research is Development Research. The development research carried out refers to the model of development of learning tools [7], which pass through the steps of: (1) preliminary research, (2) design and realization (prototyping phase), and (3) assessment phase). In addition, at this stage also conducted formative evaluation which includes, self-evaluation, prototyping (expert review, one-to-one, and small group) [8]. This study will discuss the practicality of basic electronics module 1 integrated values of character based on conceptual change teaching model. The selected participants are required to fill out the worksheet of practicality and module implementation by lecturers and students' practical instruments.

After the data collected then analyzed and then inserted into the criteria of practicality of Basic Electronics 1 module. The criteria used for practicality can be seen in Table I.

TABLE I. CRITERIA OF PRACTICALITY OF BASIC ELECTRONICS 1 MODULE

No	Interval	Category
1	0-20	Very in practice
2	21-40	In practice
3	41-60	Less practice
4	61-80	Practice
5	81-100	Very practice

III. RESULT AND DISCUSSION

The result of practicality of basic electronic module 1 integrated values of character based on conceptual change teaching model is seen from instrument of practicality and module implementation by lecturer and student practicality instrument

A. Result of Instrument of Practicality and Module Implementation by Lecturer

1) Percentage of practicality and module implementation by lecturer at each class

Practicality and module implementation by lecturers are seen for 9 meetings. This is because because the Basic Electronics 1 module is integrated the character values based on the conceptual change teaching model developed have 9 chapters. Percentage of practicability and module implementation by lecturer for each meeting can be seen on Figure 1.

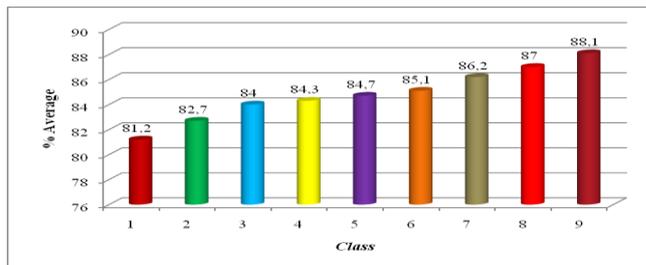


Fig. 1. Percentage of practicality and module lecture by lecturer at each class

Figure 1 shows that the average percentage of practical value is in the range above the 81 value with the lowest value of 81.2 and the highest score of 88.2. The graphic above shows that the practicality of each meeting has increased. This is caused by the increasing number of meetings, so the lecturer becomes more practical in using the module. Based on the existing criteria we can conclude that the module developed has a very practical category.

2) Percentage of Practicality and Module Implementation by the Lecturer for Each Component

The practicality and module implementation by the lecturer has 5 components, namely the contents of the module, the presentation in the module, the ease of use of the module, the implementation and the benefit of the module for the lecturer. Each component has 4-5 indicators. Percentage of practicability and module implementation by lecturer for each component can be seen on Figure 2.

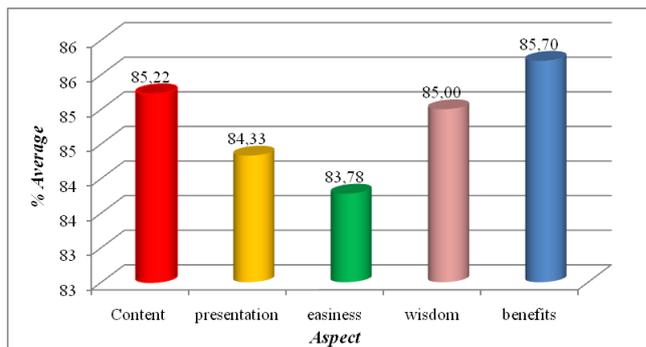


Fig.2. Percentage of practicality and module implementation by the lecturer for each component

Figure 2 shows that the average percentage of practical value is in the range above 83 with a low of 83.78 and a high of 85.70. The component that has the highest average value is on the benefit aspect of the module for the lecturer. Based on the existing criteria we can conclude that the module developed has a very practical category.

B. Results of Students' Practical Instruments

1) Percentage of practicality of each student at class

Student practicality assessment was seen for 9 meetings. This is because the Basic Electronics module 1 integrated the character values based on the conceptual change teaching model that is developed have 9 chapters. Percentage of students practicality for each meeting can be seen in Figure 3.

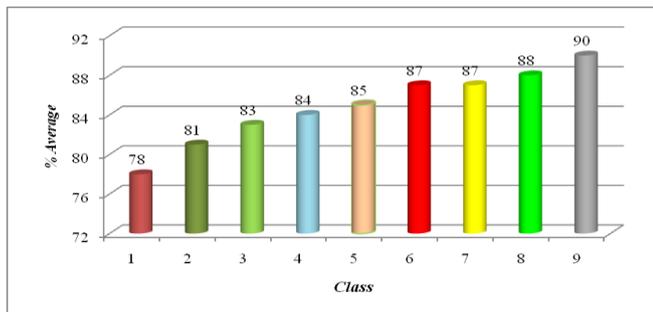


Fig. 3. Percentage of practicality of each student at class

Figure 3 shows that the average percentage of practical values is in the range of the lowest value 78 and the highest value of 90. The graph above shows that the practicality of each meeting has increased. This is caused by the increasing number of meetings, so students are accustomed to using modules. Based on the existing criteria we can conclude that the module developed has a practical and very practical category.

C. Percentage of student practicality of each component

Assessment of practicality of students have 4 components. They are ease of learning, material integrity, mastery of the material and motivation in learning. Each component has 3-4 indicators. Percentage of students for each component can be seen in Figure 4.

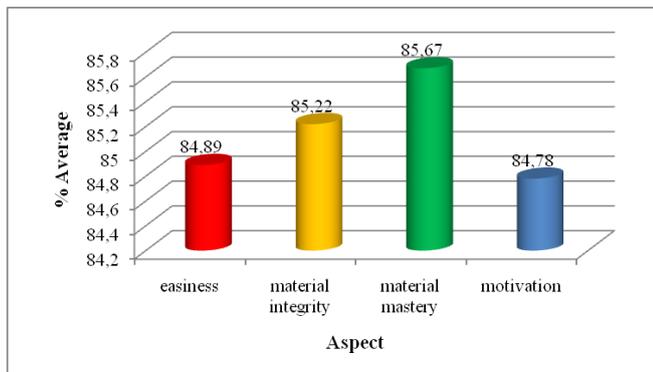


Fig. 4. Percentage of student practicality of each component

Figure 4 above shows that the average percentage of practicality value is in the range above 83 with a low of 84.78 and a high of 85.67. Components that have the highest

average value is on aspects of mastery of the material. Based on the existing criteria we can conclude that the module developed has a very practical category.

IV. CONCLUSION

Some of the advantages of modules can be seen from the contents of modules such as the contents of the module in accordance with the achievement of learning, modules tailored to the characterization of students, Module substance has been made in accordance with the indicator. In terms of serving, the module is made according to the instructions and contains the character value, Presentation of the material in the module has been in accordance with the order of the material. In terms of ease of module aspects, it can assist students in preparing the material. In addition, the module makes students more active during learning.

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REFERENCES

- [1] R. Driver and V.A. Oldham A constructivist approach to curriculum development in science. *Studies in Science Education*, 13, 1986. 105-122.
- [2] W.W. Cobern. "World View Theory and Conceptual Change in Science Education". *Science Education* (80) 5 1996, pp 579-610.
- [3] Kemendiknas *Character Education Implementation Guide*. 2011. Jakarta: Kemendiknas.
- [4] M. Syukri. *Pendidikan Berbasis Karakter Melalui Pembelajaran Kontektual di Sekolah: Pengalaman Sekolah Karakter*. 2010. Jakarta: Universitas Terbuka.
- [5] H. L. Chen. In: *Joint International IGIP-SEFI Annual Conference Trnava, Slovakia*. : Cheng-Shiu University.2010
- [6] A. Pala. The Need For Character Education. *International Journal Of Social Sciences And Humanity Studies*, 3(2). 2011, 2-10.
- [7] T. Plomp. *An Introduction to Educational Design Research*. 2010 University of Twente: Enchede.
- [8] Riduwan. *Saklar Pengukuran Variabel-variabel Penelitian* 2012. Bandung: Alfabeta.