Validity of High School Physic Module With Character Values Using Process Skill Approach In STKIP PGRI West Sumatera

M Anaperta*1, H Helendra1, R Zulva1
1Physics Education Program, College of Teacher Training and Education (STKIP) PGRI West Sumatra, Padang, Indonesia

*mega.syani@yahoo.com

Abstract This study aims to describe the validity of physics module with Character Oriented Values Using Process Approach Skills at Dynamic Electrical Material in high school physics / MA and SMK. The type of research is development research. The module development model uses the development model proposed by Plomp which consists of (1) preliminary research phase, (2) the prototyping phase, and (3) assessment phase. In this research is done is initial investigation phase and designing. Data collecting technique to know validation is observation and questionnaire. In the initial investigative phase, curriculum analysis, student analysis, and concept analysis were conducted. In the design phase and the realization of module design for SMA / MA and SMK subjects in dynamic electrical materials. After that, the formative evaluation which include self evaluation, prototyping (expert reviews, one-to-one, and small group. At this stage validity is performed. This research data is obtained through the module validation sheet, which then generates a valid module.

1. Introduction
Science learning has characteristics that support student knowledge. In order for students to study physics correctly, then physics as one branch of science should be introduced intact, whether it concerns the object, the problem, or the level of organization of the objects around. Process skills become an integral part of physics learning.

Facts in the field, especially students of STKIP West Sumatra, especially Physics Education showed that students often perform activities that are less useful during the learning took place, such as when the lecturer asks students to discuss with friends sebangkunya most of the students just talk. In addition, very few students who want to convey ideas or opinions about learning materials and many students who tend to be lazy to think independently.

A process skill approach is a learning approach oriented to the IPA process. In implementing physics learning with process skill approach, it is required that the character-oriented module using the process skill approach with model innovation and learning strategy is expected to create an active learning atmosphere, facilitating the mastery of the material.

2. Research Method
The type of research conducted is research development. According [1] research and development method is a research method used to produce a particular product, and test the validity, practicality and
effectiveness of the product. It also states that development research is an effort to develop and produce a product in the form of materials, media, tools or learning strategies. This model of learning strategy development uses a development model proposed by Plomp [2] consisting of phases (1) preliminary research, (2) the prototyping phase, and (3) the assessment phase.

2.1. Phase Design and Realization (prototyping phase)
In this phase, the formulation or planning of the module is done. The design of this module refers to the instructional development guidelines issued by depdiknas. The design of modules is made in accordance with established indicators and based on the format that is tailored to the needs of the researcher. In this phase, there is a formative evaluation that includes self-evaluation, expert reviews, one-to-one, small group, and field test. The design flow for formative evaluation is shown in Figure 1.

![Figure 1: Formative Evaluation Design Layout](image)

1) **Self Evaluation**
At this stage, module designing will be developed. Designing is based on the results of the initial analysis or problem identification, needs analysis and concept analysis or material content, and the literature review required in the learning strategy.

2) **Expert Review**
At the expert review stage, an expert judging and evaluating the module has been designed. The experts assess the validity of content, constructs, and language. Expert advice is used as a reference to revise developed modules. The main parts that are validated are the suitability of KD, indicators, correctness of concepts and the language used. The input of the validator is used to fix and revise the module developed so that a valid module is generated.

3) **One-to-one**
In the one-to-one stage, a design trial has been developed to students and lecturers who become testers. The results of this trial are used to revise the designs that have been made.

4) **Small group**
The revised results of the expert's study and the difficulties experienced during the pilot in the first trial were used as the basis for revising the module, then the results were tested on a small group. The results of this trial are then used for revision before testing in the field test stage. After modifying the module based on the suggestions and comments of the students in the small group, obtained the results of the analysis of the module.

5) **Field Test**
Small group revision results were tested on the subject. This test is a field. Modules that have been tested on field tests are modules that meet the already validated quality criteria.
2.2. Assessment phase
This phase is done to test the modular level of practicability. This stage is conducted to find out whether the module can be used to achieve the goal in improving the quality and achievement of student learning. In this research, the practicality of Physics Course Module of SMA / MA and SMK can be known from activity and student learning result after learning strategy. At this study, researchers only conduct preliminary research phase and design phase because at the early stages, researcher only completes the product validation stage.

3. Data Collection Techniques and Research Instruments
The data collection technique for determining Module validation is through validation and discussion with validators. Data collection techniques used for knowing the validation of the modules that characterized by the process skills approach. For this purpose the instruments used in this study are the validation sheet.

The validation sheet contains items that reveal the validity and constructs. The content of validity and construct in Modules, based on statement from Depdiknas Book Center 2006 which has been modified by Salmiah (2008: 41). The collected validation data is then tabulated. The tabulated results of each bill are searched for percentages, by formula

\[ P = \frac{\sum \text{score}}{\text{max score}} \times 100\% \]  

(1)

Based on the percentage results, each bill is categorized into:

| (%)   | category      |
|-------|---------------|
| 0-20  | Invalid       |
| 21-40 | Less valid    |
| 41-60 | Quite valid   |
| 61-80 | Valid         |
| 81-100| Very valid    |

(Reference [4])

Descriptive technique is used to describe data of prototype validation discussion with expert.

4. Results and Discussion

Validation of high school Physics modules using the development model proposed by Plomp has the following results:

Module Validation
Module validation is performed to determine if the device created is valid to be tested or not. The validator gives an assessment by filling the validation sheet. In validating, validators are required to provide judgments and opinions on modules that have been designed and revised in advance. Validation is said to be completed if the validator has stated that the module designed is valid and feasible and ready for trial.

The validation results provided by the learning validator are developed. From the validation results are analyzed. If the result of the analysis states that the module is not valid yet, then the
A revision is made to obtain a valid module. Validation results have been done by the validator shown by Table 2.

| No | Indicator                          | Validator | Average | Category      |
|----|-----------------------------------|-----------|---------|---------------|
| 1. | Feasibility of Content            | 92        | 92      | 94            | Very Valid   |
| 2. | Construction Feasibility of (Component of Presentation) | 95 | 95 | 95 | Very Valid |
| 3. | Language Components               | 92        | 95      | 95            | Very Valid   |

Based on Table 2, it shows that the contents of Modules that have been designed have a category very valid. This is seen from the feasibility of the contents of the value given 94 validator. Module Construction gets a value of 95 which means it is also categorized very valid. The use of Indonesian language scores 95. This means that the Indonesian Language used in the Module has also been very good.

5. Conclusion
Validation results from the validators show that the character-oriented module values on the process skill approach are highly valid.

Acknowledgments
Acknowledgments to the research and technology ministry of the Directorate General of Higher Education for the assistance of the research fund providers of 2017 and the parties concerned.

References
[1] Sugiono, *Metode penelitian kuantitatif, kualitatif dan R&D*. Bandung : Alfabeta. (2009), p. 407-408
[2] Plomp, Tjeerd. "*An Introduction to Educational Design Research*”. Enschede: University of Twente.(2010), p.15
[3] BSNP. 2008. *Paduan Pengembangan Perangkat Strategi Pembelajaran KTSP*. Jakarta: Depdiknas.
[4] Riduwan, *Belajar Mudah Penelitian Untuk Guru, Karyawan Dan Peneliti Muda*. Bandung : Alfabeta. (2009), p.102