

## Research Article

# Development of teaching Materials and Training Self Efficacy Teaching module on teacher performance of SMA/MA

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### Abstract.

This study aims to develop teacher teaching materials and assess the self-efficacy of teaching on the performance of SMA/MA teachers in Kecamatan Sipirok. On this occasion, the teaching materials developed were in the form of science (mathematics) teacher teaching materials and self-efficacy training modules for teacher performance. This study uses the development of Borg and Gall. This study aims to determine how the development of teaching materials and training modules self-efficacy on the performance of SMA/MA teachers. The research data were collected by means of tests, questionnaires, observation and documentation. All research instruments were developed by the researchers themselves. The subjects in this study consist of 30 SMA/MA teachers in Sipirok District. This study produces teacher teaching materials and training modules for self-efficacy teaching valid and practical teacher performance, and produces effective teaching materials in improving the performance of SMA/MA teachers.

**Keywords:** Teacher performance; development; self-efficacy; training

## 1. Introduction

Research experts in the world of education are always working to improve the effectiveness and quality of learning and teaching. In creating and improving the quality of learning and teaching in schools, of course, it cannot be separated from the role of a teacher. Teachers are required to have and be able to plan effective and quality learning so as to achieve the expected results. A teacher must be able to develop teaching preparation and pay attention to the interest and attention of students towards the material used as study material. Teachers must be able to act as facilitators, transformers, motivators and encourage students to learn using a variety of media and learning

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resources and even develop good teaching materials that can support competency formation. Therefore, the above is influenced by the performance of teachers in schools in carrying out their duties as educators who are responsible at the time of teaching. Teaching quality standards must refer to the main duties of the teacher as an educator with basic abilities as educators, as teaching staff, and trainers with general and specific abilities as teachers / trainers, all of which are integrated as a whole in the person of the teacher so that they are able to produce resources. Increasing the quality of professionalism of educators or teachers will encourage the improvement of the quality of education both the process and the results [2]. Teacher professionalism is not just knowledge of technology and management but more of an attitude, professional development is more than a technician, not only having high skills but having a required behavior [3].

Mathematics is a subject that students still consider difficult to date. Whereas, on the other hand, mathematics is an important subject in human life, mathematics plays a role in almost all aspects even in today's technological and digital societies [4]. The development of mathematics learning is still being studied by mathematics education experts. This is because the field of mathematics is still developing as widely as human activity. This means that mathematics develops from real cases that exist in society itself. If we look at the current conditions of learning mathematics, the development of mathematics learning rarely departs from real cases and seems formal in learning at school. This resulted in neglecting the application of mathematics to solve everyday problems. The problems that exist in learning mathematics in schools require a way out so that it does not occur continuously being trapped in wrong or wrong learning activities. This quality will be achieved if factors such as curriculum, teachers, processes

teaching and learning, teaching materials, school management and others are met properly. Learning Mathematics can be viewed as the efforts of teachers, lecturers, trainers (for which the teacher is written) in helping students, students, and trainees (for which students write it) understand or become skilled in mathematics. Because the teacher intends to help students learn mathematics, the teacher needs to know how the actual path or process of mathematics can be understood or mastered by students. If this is not the case, it is certainly difficult for a teacher to help students learn mathematics [5] '.

Learning materials are student external factors that can strengthen internal motivation to learn. One way of learning that is able to influence learning activities is to include learning materials in these activities. Learning materials are designed completely, in the sense that there are elements of adequate media and learning resources that will

affect the learning atmosphere so that the learning process that occurs in students becomes more optimal [6]. The accuracy of the teaching materials prepared by the teacher will help students' reasoning processes to understand basic concepts, develop student understanding, motivate students to develop their thinking, and foster creative thinking using mathematical procedures. Mathematics teaching materials are full of symbols, abstract material, beginning with the understanding of the basics, definitions, arguments, and even pictures that are quite difficult for students, thus the selection of teaching materials, learning media, and appropriate learning strategies will facilitate students' understanding. 7]. In this research, development research was carried out. Development research aims to produce learning tools, such as syllabus, teaching materials, media, practicum modules, student work exercises, tools to measure learning progress, tools to measure learning outcomes, and so on. The background for the need to conduct development research is the existence of problems related to inappropriate learning tools [8].

Based on the objectives of this study, one thing that needs to be studied is about self-efficacy, namely mathematics self-efficacy and mathematics teacher self-efficacy. Self-efficacy can be in the form of how a person feels, how to think, self-motivation, and the desire to have something. These beliefs have various effects through four main processes. Namely cognitive, motivational, affective and selection processes [9]. One's efficacy will influence the actions, efforts, persistence, flexibility in differences, and the realization of the individual's own goals. Someone will run something if he feels competent to do it and avoid feeling inadequate. Ozder in his research stated that the self-efficacy of novice teachers about the dimension of "using learning strategies in the classroom" is higher than their beliefs about "ensuring student involvement in the classroom". In addition, their self-efficacy beliefs about "classroom management" were higher than their beliefs about "ensuring student involvement in the classroom [10]. Then Bray-Clark, N & Bates have shown that teacher effectiveness is an important variable in consistently teaching teacher effectiveness. related to teacher behavior and student learning outcomes. In addition, it has been shown that schools with high-performing professional development integrate key dimensions that support and reinforce skills development beliefs and effectiveness. It is the concern of the paper that professional development frameworks for teachers should include self-efficacy as a theoretically healthy focus of training design that aims to improve teacher competence and by extension improve student outcomes [11]. The results of Mojavezi & Tamiz's research show that teacher self-efficacy has a positive effect on student motivation and achievement. research and its pedagogical implications are discussed, and recommendations for

further research are provided [12]. Then Rusdyanto's research resulted that there was a significant relationship between the level of self-efficacy and the level of teacher performance at the Gresik IRADA Elementary School [13]. Furthermore, the results showed that the professional performance of physics teachers who graduated from undergraduate physics education teaching in SMA in Kupang was in a good category, with a score of 3.77 on a 5-scale. Meanwhile, the self-efficacy of physics teachers who graduated from physics education undergraduate teaching in SMA in Kupang is in the high category, with a score of 3.97 on a 5-scale [14]. .

In his research, Pardimin stated that self-efficacy in teaching mathematics is a teacher's belief in his ability to organize and carry out mathematics learning actions in order to achieve an appropriate goal in mathematics learning. He also has shown that self-efficacy in mathematics and mathematics teaching self efficacy has a great correlation between the two [15]. Furthermore, it is stated that self-efficacy teacher is an important variable that affects a teacher in choosing [16]. Thus, self-efficacy teacher is very important in better and more effective learning and teaching activities. Based on this explanation, the development of teaching materials is very important for teachers to do. And based on the importance of self-efficacy that teachers have, that the belief in their ability to teach as well as possible is sufficient to determine the efforts they make to achieve optimal student achievement, the authors want to develop mathematics teaching materials and develop self-efficacy mathematics in teaching mathematics on professional performance. Mathematics teacher in the form of research activities, by choosing the research title: "Development of teaching materials and teaching self-efficacy training modules on the performance of SMA / MA teachers".

## 2. Methods

This research was conducted at SMA / MA Sipirok Tapanuli Selatan. This type of research is research and development with the borg and gall method. The steps in this development research include preliminary studies, preparation of teaching materials and modules, validation of teaching materials and modules, revision of the results of validation of teaching materials and modules, field trials, revision of field trial results and field trials [17].

**Data Analysis Techniques** Data analysis techniques in this study are to determine whether the product developed meets eligibility requirements, validity using quantitative descriptive. The data in this study are data sourced from expert validation sheets,

teacher assessment sheets, peer assessments, mathematics supervisors, student interest questionnaires. The steps taken to analyze the data are: calculating the actual total score obtained from the expert / practitioner's assessment, the data is converted into five-scale qualitative data as a conversion [18]. The data analysis in this study is explained based on the type of instrument used in each stage of the research development.

## 2.1. Preliminary Study Instrumen Analysis Techniques

In the preliminary study in the form of interviews, observations, a list of mathematical material elaborations analyzed descriptively as a background for the need for modules. The results of the reviews of various text books as well as SK and KD Mathematics for SMA / MA were also analyzed descriptively as a reference for compiling modules.

## 2.2. Instrument Analysis Technique of Module Eligibility

Data obtained during module validation is the result of the validator's assessment of the module through the feasibility scale. The analysis was conducted in the form of descriptive quantitative and qualitative. Qualitative data in the form of validator comments and suggestions. Quantitative data in the form of scores of material expert and media expert judgments using a Likert scale with four scales then explained qualitatively.

## 2.3. Field instrument test

Analysis techniques The data analysis technique obtained is to use descriptive analysis of the development model of the borg and gall method

## 3. Results and Discussion

Based on the results obtained in hypothesis testing, it can be argued that:

### **3.1. Mathematics Teaching Materials Development of High School / MA Teacher Performance in Sipirok District**

The resulting Draft-B was validated by experts. Validation of experts is focused on the format, content, illustrations, and language that includes the mathematics teaching materials developed. The results of expert validation are in the form of corrections, criticisms, and suggestions. Then the mathematics teaching material has been declared valid by the validator. It can be seen from the four validators giving an assessment of 3 and above for each component component in the teaching material with a fairly good, good and very good assessment. The total average is 4.3583. The results of the validation of the mathematics module are in the "categoryVery Good / Very Valid". Points that were revised in mathematics teaching materials include problems in teaching materials that must be contextual, language is simplified. Fix the writing according to the instructions. Based on the 1st trial (simulation), mathematics teaching materials experienced few revisions. So that researchers make improvements to the legibility test so that mathematics teaching materials can be used properly.

### **3.2. Development of the Training Module on the Self Efficacy Teaching Performance of SMA / MA Teachers in the Sipirok District**

The resulting Draft-B is validated by experts. Expert validation is focused on the format, content, illustrations, and language which includes the training module self-efficacy teaching developed. The results of expert validation in the form of corrections, criticisms, and suggestions are used as the basis for revising and improving the modules. Teaching training self-efficacy that are made. The teaching training module self-efficacy has been declared valid by the validator. It can be seen from the four validators giving an assessment of 3 and above, where the components in the module get quite good, good and very good ratings. The total average is 4,4197. The results of the validation of the training module Self Efficacy are in the "categoryVery Good / Very Valid". Based on the 1st trial (simulation) the training module Self Efficacy did not undergo a revision. So that researchers can immediately use the training module Self Efficacy on the legibility test so that the module can be used properly.

### **3.3. The Effectiveness of the Development of Mathematical Teaching Materials and Self Efficacy Teaching Modules on the Performance of High School / MA Teachers in Sipirok District**

In implementing mathematics teaching materials and training modules Self Efficacy, teachers must be able to manage students and learning and training infrastructure and control them in a pleasant atmosphere for achieve predetermined goals. A teaching material that is said to be effective can be seen from the components: (1) student activity, (2) the teacher's performance ability to manage learning, and (3) student responses. therefore, the results of the research on the effectiveness of mathematics teaching materials through the cooperative learning model are presented below.

#### **3.3.1. Student Activities**

From the observation, it was found that the percentage of student activity using mathematics teaching materials through cooperative learning models. Whereas the average indicator of student activity is already in the boundary criteria for the effectiveness of learning, then the mathematics material does not undergo revision based on the results of observations of student activity, so it is in the effective category

#### **3.3.2. Teacher Performance Ability**

The results of the assessment of the teacher's performance ability to manage learning, based on the criteria for the ability of the teacher to manage learning, the ability of the teacher to manage learning at each meeting has reached the "very good" and "good" categories and is already in the effective category.

#### **3.3.3. Student Responses .**

Student response questionnaires are given to 30 students after participating in learning using mathematics teaching materials through the cooperative learning model for Relationships and Functions, the results of the analysis show that student responses to all aspects, especially the mathematics module are above 80%, namely at 90% and above. This means that every aspect is responded positively by students so that the mathematics module does not undergo revision based on student responses. So it can be said that mathematics teaching materials through cooperative learning models have fulfilled the effective assessment of students and teachers. So that the teaching

materials that have been made have been effective in increasing student activity and teacher performance. A training module to Self Efficacy teach teachers to be effective can be seen from the components: (1) teacher performance abilities, and (2) teacher response. Therefore, the results of the research on the effectiveness of the training module are self-efficacy teacher's presented below.

1. *Teacher Performance Ability*. The results of the assessment of teacher performance abilities in managing training learning, based on the criteria for teacher performance abilities in managing training, the ability of teacher performance at each module session meeting has reached the category "very good" and "good" and is already in effective category.
2. *Teacher Response*. The teacher response questionnaire given to 30 teachers after participating in training using the training module self-efficacy for 4 sessions or 4 module sessions, the results of the analysis show that the teacher's response to all aspects, especially the training module, self-efficacy is 90% to on. This means that every aspect is responded positively by the teacher so that the training module self-efficacy does not experience a revision based on the teacher's response. So it can be said that the training module self-efficacy has fulfilled the effective view of the teacher. So that the training module self-efficacy that has been made has been effective in increasing teacher activity and teacher performance.

## 4. Conclusions

Based on the development of mathematics teaching materials using the 3-D model or the modified Borg and Gall method, mathematics teaching materials are produced through a valid and practical cooperative learning model for the topic of Relationships and Functions in SMA / MA which have been tested twice. It can be seen from the results of the validator validation: the total average of mathematics teaching materials is 4.3583 which is categorized as very good / very valid. Based on the development of the training module Self Efficacy using the 3-D model or the modified Borg and Gall method, training module Self Efficacy a valid and practical in SMA / MA has been tested twice. It can be seen from the results of validator validation: the total average of the training modules is Self Efficacy 4.4197 categories very good / very valid. Mathematics teaching materials are effective for teaching the topic of Relations and Function in SMA / MA. This is indicated by student activity: effective, the ability of teacher performance: effective and student responses to learning: positive. Likewise, the training module Self Efficacy is



effective. This is shown by teacher performance: effective and teacher response to module training: positive.

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