

MATERIALS TEACHING OF BASIC SKILLSBASED ON MULTIPLE INTELLIGENCES THEORY IN MUHAMMADIYAH UNIVERSITY

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ABSTRACT

The purpose of this study is to describe the stages of development of basic skills teaching materials based on multiple intelligences theory and analyzing the effectiveness of their use for prospective teachers of Mathematics Education Program in Muhammadiyah Universities towards the aspects of student achievement, the potential of tools and materials, the potential of stakeholder support, as well as content substance and structural flexibility design. This research is a research and development (R & D) research. The series of research and development are data collection, product design, product design validation, design revision, stage I testing, revise the first phase of product, phase II testing, product improvement, and last analysis of the effectiveness of the use. Design validation is done by the learning expert and the media expert. The design validation of the developed instructional material is quite valid (minor revision). The first stage test stated that the developed material is quite feasible (small revision). The second stage test stated that the developed instructional material is feasible (without revision). The developed materials are effectively viewed from the aspects of student learning, the availability of tools and materials, potential support, content substance and design structure flexibility.

Keywords: Teaching Materials, Basic Teaching Skills, Multiple Intelligences.

PRELIMINARY

Gardner (2012: 24) defines intelligence as the ability to solve problems, or create products, which are valuable in one or several cultural and community environments. Basically no students are stupid, because every student has the potential of intelligence. Someone may stand out in some kind of intelligence, but weak on some other intelligence. In a person there are 8 types of intelligence or often called multiple intelligences (multiple intelligences). The eight kinds of intelligence according to Gardner in Hernandez, J., G., V., Noruzi, M., R., and Sariolghalam, N. (2010) include verbal / linguistic intelligence (verbal / linguistic intelligence), visual / spatial intelligence (visual / spatial intelligence), logical-mathematical intelligence, musical intelligence, bodily / kinesthetic intelligence, interpersonal intelligence, and intrapersonal intelligence, and naturalist intelligence. Based on the observations of students of Muhammadiyah University of Sukabumi Magister I in 2016 in junior and senior high school in Sukabumi city, most teachers only use lecture method and use whiteboard as learning media. Practice of learning like this makes the teacher give less attention to the diversity of students' intelligence. Mathematics

teachers involve more logical-mathematical intelligence than any other intelligence in teaching a concept and math skills. Though each student can learn mathematics using variations of different intelligence, mathematics is built on the basis of thinking that involves more logical-mathematical intelligence. Armstrong (2009: 65-67) suggests that learning is designed by considering possible intelligence approaches that match mathematical topics, selecting and sequencing activities in the lesson plan, and then applying them into the learning process. So that in order to involve multiple intelligences in mathematics learning, learning is required in accordance with the theory of multiple intelligences.

Sholikhah, O., H., Budiyono, and Saputro, D, R., S. (2014) conducted research with the result that there is interaction between learning model and type of intelligence to mathematics learning achievement. In addition to learning models, to implement multiple-oriented mathematics learning students need basic teaching skills with multiple intelligences-based indicators. This is because the basic skill of teaching is an absolute requirement for teachers to implement various learning strategies. To form teachers who have basic teaching skills based on multiple intelligences, one of which is done since the prospective teacher is educated in college. Through microteaching courses, basic student teaching skills are established. The teaching process uses teaching materials as a tool.

RESEARCH METHODS

This type of research is R & D research. The product that will be produced in this research is teaching material of basic skill of teaching mathematics based on multiple intelligence theory. These teaching materials will be tested for effectiveness in terms of student achievement, the potential availability of tools and materials, potential stakeholder support, and content substance and design structure flexibility. In this study, the steps used are data collection, product design, design validation, design revision, product testing phase I, product revision phase I, product testing phase II, and the last product refining. Furthermore, the enhanced product will be analyzed on the effectiveness of its use.

Data collection in this phase I research was intended to find data related to the preparation of draft teaching materials. The data were obtained through literature study. Literature studies include the study of teaching materials components and teaching materials content. Components

of teaching materials in question related to what things should be in a teaching material, while the content is related to the material to be described.

At the design stage of the product was done according to the results of literature studies that have been done. Product design is done by making the contents of the teaching materials material embodied in the form of draft teaching materials. The teaching materials contain content and layout of teaching materials. Content teaching materials include sub chapters in teaching materials, materials to be submitted, and exercises or evaluations used. Design validation is done by media experts and learning experts to know the feasibility of teaching materials that have been developed. The validation of teaching materials by the validator is analyzed using descriptive technique percentage. Revisions are made with reference to validation questionnaire validator validation. Questionnaire that has been converted will determine the type of revision that will be done by referring to table 1. If there is revision then the revision is done by referring to suggestions from experts who validate the draft of teaching materials to obtain teaching materials products.

Sources of data in this study were students of Mathematics Education Program of Muhammadiyah University of Sukabumi (UMMI), University of Muhammadiyah Purworejo (UMP) and University of Muhammadiyah Prof. Dr. Hamka (UHAMKA) as well as lecturers of the subjects of microteaching lessons from the three Muhammadiyah Universities (PTM). UMMI Mathematics Education Program students as a source of data in the first phase of testing, while students of Mathematics Education Program of UMP and UHAMKA as a source of data on the trial phase II. The lecturers of the microteaching course from the three Muhammadiyah Universities (PTM) are a source of data analysis of the effectiveness of the use of teaching materials.

Data collection techniques performed for phase I, II trials, and effectiveness of use is by filling a questionnaire. In the first phase of testing, the product was tested on 8 UMMI students. In phase II trial, the product was tested on UMP and UHAMKA students as many as 76 people. For the effectiveness of the use, data collection techniques used is to provide a questionnaire to the lecturer handling microteaching courses (from three universities Muhammadiyah (PTM)).

Instruments used in this study are 3, namely expert validation instruments, experimental instruments in the form of questionnaire assessment of teaching materials by users (students), and the effectiveness of the use of teaching materials. Expert validation on instrument is in the

form of a questionnaire to know the expert's judgment on the compiled teaching materials. Trial instrument is in the form of questionnaire of assessment of teaching materials. Meanwhile, the effectiveness of the use of teaching materials in the form of questionnaires contains aspects of student achievement, the potential availability of tools and materials, the potential of stakeholder support, and content substance and design structure flexibility.

RESEARCH RESULT AND DISCUSSION

5.1 Initial Design of the Product

The teaching materials developed/compiled in this research are basic skills teaching materials based on multiple intelligences theory in Muhammadiyah Higher Education. The development of this resource begins with the search for information about the component of teaching materials. The teaching materials developed in this study are modules, so that the elements or components in the teaching materials are the elements or components of the module. The initial design of teaching materials to be developed includes the following components:

1. Competency Standards
2. Learning Achievement
3. Learning Analysis
4. Scope
5. How to Use Teaching Materials
6. Material
7. Exercise
8. Summary
9. References

The next step after determining the components of teaching materials that will be developed is to compile the content of the component of the teaching materials. The standard of competence, learning achievement, and learning analysis are based on the literature study results on the microteaching lecture unit. The next stage is determining the material in the teaching materials. The material in the form of theory in the teaching materials that will be described is the definition of basic teaching skills, the types of basic teaching skills, aspects observed in basic teaching skills, the definition of multiple intelligences, the types of multiple intelligences, and aspects observed in multiple intelligences. In addition to the description of the theory, the

examples of activities in basic teaching skills based on multiple intelligences are also provided. Illustrations of the activities are stored in the form of a CD as a complement of teaching materials. The materials are then organized into a learning space. The scope of materials in this resource includes:

1. CHAPTER I INTRODUCTION contains about: standard of competence, achievement of learning, analysis of learning, scope, and how to utilize teaching materials.
2. CHAPTER II TEACHING SKILLS TEACHING about: Definitions and Types of Basic Teaching Skills.
3. CHAPTER III MULTIPLE INTELLIGENCES discusses about: the definitions and types of multiple intelligences.
4. CHAPTER IV SKILLS TO LEARN LESSON discusses: objectives, components, examples of activities, aspects, and illustrations of open lessons with regard to multiple intelligences.
5. CHAPTER V SKILL ASK CONCERNING: The purpose of asking questions, components, techniques, examples of activities, aspects, and illustrations ask questions with regard to multiple intelligences.
6. CHAPTER VI SKILL GIVING DEVELOPMENT deals with: definitions, types, examples of activities, aspects, and illustrations of strengthening skills with regard to multiple intelligences.
7. CHAPTER VII SKILL OF VARIATION DISCUSSING about: definitions, types, examples of activities, aspects, and illustrations of skills perform variations with regard to multiple intelligences.
8. CHAPTER VII SKILLS EXPLAIN discuss about: definitions, components, examples of activities, aspects, and illustrations of skills perform variations with regard to multiple intelligences.
9. CHAPTER VII SKILLS GROWING GROUP DISCUSSION discusses: definitions, components, examples of activities, aspects, and illustrative skills guiding group discussions with regard to multiple intelligences.
10. CHAPTER VII SKILLS TO MANAGE CLASS discuss about: definitions, components, examples of activities, aspects, and illustrations of classroom management skills with regard to multiple intelligences.

11. CHAPTER VII SKILLS CLOSING LEARNING discusses: definitions, components, objectives, examples of activities, aspects, and illustrations close the learning skills by taking into account multiple intelligences.

12. CHAPTER VIII CLOSING AND EVALUATION contains about: summary and evaluation question.

The use of teaching materials is divided into two namely the instructions for lecturers and instructions for students. Teaching material is equipped with a CD that contains audio visual illustrations of learning, so that the utilization is not independent of CD playback. This teaching material is equipped with exercises in each chapter and at the end of the chapter there activities that can be used as learning evaluations.

Draft of teaching materials that has been prepared based on the component of teaching materials and content in it is then tested by a validator who is a media expert and learning expert. Based on the first learning expert, from 10 aspects assessed there are 2 items with score 2, 6 items with score 3, and 2 items with score 4. Thus, it reached 60% value range which means quite valid (small revision). Revisions made according to the suggestion of validator and also aspects that still got score 2 are:

- a. The ease of matter to be understood
- b. The suitability of the exercise questions with the given materials

Based on media expert, from 11 aspects that were assessed, there are 5 items with score 4, 3 items with score 3, 3 items with score 2. So, the obtained value range is 64% which means quite valid (small revision). Aspects that still got score 2 are:

- a. Use of font, type, and size of writing on printed materials
- b. Lay out or layout on printed materials
- c. Illustrations, pictures, photos

After design validation, the next stage is design improvement in accordance with the advice of experts to reduce the weaknesses found. Improvements made are:

- a. Increase the quantity of exercise questions.
- b. Simplify the material described in the material
- c. Fix the exercise question items
- d. Consistent use of font / type and enlarge font size
- e. Layout or layout on printed materials made more tidy

f. Added illustrations, pictures, or photos

Advice from linguist 2 about language is not done because transcript is made as it is in accordance with the reality in the video in order to avoid confusion on the user of the teaching materials while watching the video on the CD. The transcript here serves as an explanation of the audio on the CD.

5.2 Results of Phase I Testing

The first phase test was done by distributing questionnaires to the users, some students who took microteaching course of 10 UMMI students. This test was done to find out whether the product has feasibility either in learning aspect, content or material, so the view is feasible to be used. Based on a questionnaire given to 10 students (users) in the first phase of testing, it obtained a percentage of 69% which means quite feasible (small revision).

5.3 Revision Phase I

The first phase of the test showed that the teaching materials were decent enough but required a small revision. Based on these results, then the revision of teaching materials by improving the points that still have a score of 1 (very less) and score 2 (less), namely:

1. Design view
2. Use of font, type, and size of writing on printed materials
3. Layout or layout on printed materials
4. Increase interest in reading

The improvements made are as follows:

1. Redesign the cover
2. Fixed any posts that changed (attached) due to MSword version difference at the time of printing
3. Improve the layout of images and writing
4. Give a little color in the teaching materials

The language is not fixed because the transcript is made in accordance with the reality in the video in order to avoid confusion on the user of the teaching material while watching the video on the CD. The transcript here serves as an explanation of the audio on the CD.

5.4 Results of Phase II Testing

Large-scale field trials were conducted by distributing questionnaires to users, namely some students taking microteaching courses in UMP and UHAMKA as many as 76 students. This trial

was conducted to find out whether the resulting product has feasibility either in terms of learning, content or material, so the display is feasible to use. Based on the questionnaire given to 76 students (users) in the second phase trial, it obtained a percentage of 77% which means feasible (without revision).

5.5 Product Improvement

Phase II trials showed that the teaching materials are feasible (without revision), so the teaching materials are not repaired.

5.6 Effectiveness of Use

The developed teaching materials have been declared feasible in the Phase II trial. The appropriate teaching materials are then re-used in microteaching learning at the three Muhammadiyah Universities. Furthermore, the effectiveness analysis of the use of teaching materials is seen from the aspects of student achievement, the potential availability of tools and materials, the potential of stakeholder support, and content substance and design structure flexibility. Teaching materials used effectively viewed from aspects of student achievement. The teaching materials used are effective seen from the availability of tools and materials. The teaching materials used are effective seen from the potential of stakeholder support. The teaching materials used are effective seen from the substance of the content and the flexibility of the design structure. This can be seen from the percentage obtained that is 85.3% which means the content substance and the flexibility of the teaching materials design structure are very good.

CONCLUDE

1. The stages of developing basic skills teaching materials based on multiple intelligences theory for mathematics teacher candidates in Muhammadiyah Universities started from collecting data about teaching materials component and material that will be described in teaching materials, then designing teaching materials product both content and layout, validating the design of the product to the learning expert and the media expert, revising the design, test phase I, revising phase I, test phase II, revise phase II / product improvement, and lastly analyzing the effectiveness of teaching materials viewed from aspects of student achievement, and materials, potential stakeholder support, as well as content substance and design structure flexibility.

2. Teaching materials developed are effective in terms of student achievement aspects, the potential availability of tools and materials, potential stakeholder support, as well as content substance and design structure flexibility.

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