

# DEVELOPMENT OF MATHEMATICS CURRICULUM OF MADRASAH ALIYAH NEGERI 2 MALANG FOR SPECIAL INTELLIGENT STUDENTS

MOH. MAHFUD EFFENDI,

<sup>1</sup>Lecturer in Mathematics Education, University of Muhammadiyah Malang

\*effendimahfud4@gmail.com

EDI SUTOMO

<sup>2</sup>Teacher in Madrasah Aliyah 2 Malang

Edisutomo1985@gmail.com

## ABSTRACT:

The purpose of this research is to develop a mathematics curriculum for special intelligent students in Madrasah Aliyah Negeri 2 Malang. The development of this curriculum focuses on curriculum reorganization which includes developing content, determining the allocation of study time in a week, and distributing it in four semesters or two years.

The method used is Research and Development, and place of research in Madrasah Aliyah Negeri 2 Malang. Data collection techniques using document, questionnaire and interview techniques. This Research and Development involves mathematics teachers who teach classes in special intelligent students, especially in analyzing the needs of teaching material through focused group discussions.

The mathematics curriculum for special intelligent students is a differentiation curriculum. Development of teaching materials uses escalation and compaction of materials by considering scope and sequence, both vertically and horizontally. At the implementation stage in the classroom, it still requires repetition of the previous material, required the development of teaching materials, and learning innovation.

The results of this study are expected to be useful and become a reference in developing curriculum theory, especially

the development of mathematics curriculum for special intelligent students in Madrasah Aliyah or in Senior High Schools. Practically, this mathematics curriculum can be used in learning mathematics for special intelligent students at Madrasah Aliyah

During this time, the mathematics curriculum for special intelligent students, using the regular curriculum. The curriculum should be different, because the curriculum was developed based on the needs and abilities of students. In addition, the development of mathematics curriculum content in schools must consider the scope, and sequence of teaching material

**KEYWORDS:** curriculum mathematics, special intelligent student.

## INTRODUCTION:

Madrasah Aliyah (MA) is different from public schools, because in the MA curriculum there are lessons in the Qur'an, hadith, ahlaq, fiqh, and the history of Islamic culture (Syukur, 2004). Therefore, the MA requires a different curriculum, which can be developed from the public school curriculum. This differentiated curriculum can stimulate and facilitate the integration of spiritual, logical, ethical and aesthetic development, creative, linear and convergent systematic, to grow or maximize the potential of students (Hawadi, 2004; Munandar, 2009; Tomlinson, 1999).

The mathematics curriculum for special intelligent students (SIS) at MAN 2 Malang, which only takes 4 semesters, uses the regular curriculum. This suggests that a differentiated curriculum has not been developed specifically in mathematics, because it still uses the mathematics curriculum for regular students. When there is a change of teachers in the new school year in this SIS class, the curriculum and learning also changes, because there is no curriculum. This is not an ideal condition if you pay attention to the relevance and burden of SIS with 4 semesters of study time.

For this reason, the focus of this research is the reorganization of differentiated curriculum content for SIS. Therefore, the aim is to determine the procedure for developing differentiated mathematics curriculum content for SIS in the Mathematics and Natural Sciences Program in the MA. By compiling this differentiated mathematics curriculum content, the curriculum and mathematics learning can be applied systematically and hierarchically, not overlapping and overloading teaching material in its implementation

#### **LITERATURE REVIEW:**

The curriculum must prepare students by providing experience to be able to live in their era. Therefore, this curriculum must be designed by setting goals, managing content and learning materials, as well as how they are implemented and how to achieve the goals set (Unesco, 2004; Levin, 2007; De Coninck, 2008; Sahlberg, 2011; Alberta Education, 2012; Depdiknas, 2013). This design is an important process in developing a comprehensive and student-centered curriculum (Khan & Law, 2015). Potential students can be optimized through a curriculum that suits the needs and learning burden of students (Sujinah, 2012; Murtianto & Nizaruddin, 2013; Gibson & Mitchel, 2005).

The principles of developing a differentiated mathematics curriculum are: 1) emphasis on the delivery of mathematical concepts, 2) the many aspects of student characteristics that appear in each process of teaching and learning activities, 3) different assessments for different classes (Dacey & Lynch, 2007; Dacey & Salemi, 2007), which is based and adapted to the needs and abilities of students (Smutny, 2003). Thus, the content standards (Permendikbud no 24, 2016) are curriculum materials for regular students who need to be differentiated. In addition, the development of the mathematics curriculum must also fulfill the following principles: 1) coherent, interconnected and integrated, 2) focus on the things that are important, and 3) can be implemented both horizontally and vertically (NCTM, 2000). In its implementation, curriculum organization is less attention. For examples derived material used Physics class XI in the first semester, while derived material in mathematics was in the second semester in the same class. This certainly affects the process and learning outcomes, because it is related to the order and scope of teaching material, as well as student learning experiences (Mulligan & Mitchelmore, 2009; Dreyfus, 2012; Effendi, 2012)

In a compacted curriculum, students are not recommended to learn something that has been mastered. This will cause students to become bored, even under certain conditions will cause the achievement of SIS to be low. The Department of Education and Training (2004) states that there are two models of curriculum differentiation, namely the school level and the class level. Differentiation at the school level shows focus and priority targets and implementation options for SIS, while differentiation at the class level is indicated by the suitability of the level of curriculum challenges applied. Differentiation requires an understanding of the integration of curriculum,

instructional and assessment for different SIS with regular students in learning styles, interests, and abilities as well as one of the key services that must be provided (Baska, 2006; Gross, 2000; Croft, 2003)

#### **METHODOLOGY:**

This research uses Research and Development Research, with a procedural model. This research was conducted at MAN 3 Malang. The research subjects are mathematics teachers who teach in SIS classes. Data collection techniques using documents, questionnaires, and interview techniques. Research procedures include document study, BC (Basics Competencies) mapping and material through Focused Group Discussion (FGD), research design and instrument development, instrument validation and curriculum draft, revision, implementation test.

Validation and implementation tests are evaluating the alignment, effectiveness and feasibility of the curriculum draft. This alignment test is carried out by the teacher through the FGD, using the Goal Oriented Evaluation Model (Arifin, 2011). The analysis used is a qualitative descriptive analysis using Interactive Model of Analysis (Miles & Huberman, 1991)

#### **DISCUSSION / ANALYSIS:**

Theoretically, NCTM groups materials for SHS (Senior High School) are: algebra, calculus, financial mathematics, logic, mathematical projects, measurements, numbers, enumeration rules, probability, functions and relations, statistics and trigonometry. The mathematics curriculum framework for grades 10-12 is divided into 3 parts, namely: Apprenticeship and Workplace Mathematics, Foundations of Mathematics, Pre-calculus. Topics that must be taught are algebra, geometry, measurements, numbers, statistics and probabilities. The Foundations of

Mathematics section is designed not only to equip students to have the ability to understand mathematics and critical thinking skills, as well as a basis for continuing studies. The material in this section is financial mathematics, geometry, measurements, numbers, logic, functions and relations, statistics and probabilities. Finally, Pre-Calculus is a deepening of the Foundation of Mathematics. The material learned includes algebra and numbers, measurements, functions and relations, trigonometry, rules of enumeration

The next step is identification of content standards. The order of material is restructured, taking into account correlated curriculum, horizontally and vertically. The horizontal dimension includes the compilation of the scope or scope of curriculum content, while the vertical dimension includes the arrangement of material sequences based on the degree of difficulty. The next step is the distribution of time allocation for the SIS class.

This process uses the principle of compacting the curriculum, this principle streamlines the amount of time student's use in the non-SIS curriculum. The principle of compacting the time curriculum is used because in SIS classes learning that is normatively completed for six semesters for regular classes is condensed into four semesters. Compaction of this time allocation uses the rationalization of each sub-material based on the analysis of the material and the level of thinking in each indicator by taking into account the prerequisite material to study it and the use of teaching material for the prerequisites in the next material.

Research by the National Research Center on the Gifted and Talented released by the Department of Education and Training State of NSW in 2004 found that compaction can be carried out between 40% - 50% (material is too easy for SIS). In art and

mathematics lessons, compaction can be carried out up to 70%. For SIS, learning activities can be done by: 1) no face-to-face, independent learning with preview teaching materials; 2) assignment; or 3) a little practice, no homework

#### CONCLUSION:

The mathematics curriculum for SIS is a differentiation curriculum. Development of teaching materials uses escalation and compaction of materials by considering scope and sequence, both vertically and horizontally. At the implementation stage in the classroom, it still requires repetition of the previous material, required the development of teaching materials, and learning innovation.

#### LIMITATION AND STUDY FORWARD:

This study discusses the development of mathematics curriculum content for SIS in the MA in the MIA Program, so that it can be developed in other programs at SHS or YHS.

#### ACKNOWLEDGEMENT:

Thank you to the FKIP dean, Mr. Nur Widodo, and the principal of MAN 2 Malang for your help and motivation, so that this research and article can be completed

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