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Analysis of Remedial and Enrichment of Mathematics Teaching in a Junior High School in Bandung

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Abstract. Remedial and enrichment are processes that must be carried out by teacher based on the results of the assessment (as, of, and for learning). The importance of remedial and enrichment is to help and facilitate all the needs of students including achieving mastery learning and maximizing students's competency. This study aims to analyze remedial and enrichment processes carried out by mathematics teacher in a junior high school in Bandung. The method of this study was qualitative with descriptive approach. The data were collected by using observation, interview, and literature review. The subject of this study was a seven grade teacher of a junior high school. The result of the study shows that the teacher conducts remedial and enrichment conditionally. Remedial techniques used by the teacher are giving assignments, and/or giving remedial teaching. Furthermore, enrichment technique used by teacher is giving non-routine tasks for students. The implementation of the remedial and enrichment is not consistent for each event (daily assessment) because of some constraints, such as availability of time. Besides that, the teacher applies same strategy as before (not in remedial and enrichment).

Keywords: Remedial, enrichment, mathematics.

INTRODUCTION ~ Assessment is one important aspect in the implementation of education. Guiterrez et al (2016) views assessments as means to implement the curriculum. Assessment is also one of the professional abilities that absolutely must be possessed by teachers (Setiawan, 2017). In reality, there are still many problems related to assessments faced by teachers in Indonesia, especially after the enactment of the 2013 curriculum. The results of monitoring and evaluation of the implementation of the 2013 curriculum at the junior high level in 2014 showed that one of the difficulties of educators in implementing the 2013 curriculum was assessment. Approximately 60% of educator respondents stated they have not been able to design, implement, process, report, and utilize the results of the assessment properly.

In connection with the use of assessment, often the use of assessment is only to find out the achievement of learning outcomes, whereas what is more important is how assessment can improve the ability of students in the learning process (Kemendikbud, 2017). In line with the opinion of Guskey (2003) which stated that the best classroom assessments also serve as meaningful sources of information for teachers, helping them identify what they are taught well and what they need to work on.

The assessment results are closely related to the diversity of students during the learning process, including the variety of intellectual abilities, attitudes and temperaments, as well as their interests and emotions. Methodology and all aspects of learning created by teachers, teaching materials, learning resources,

media, and class situations also help provide encouragement and obstacles in student learning (Widdiharto, 2008). This diversity affects students in achieving mastery learning as a minimum standard of achievement in a subject stated in the Minimum Mastery Criteria (KKM), so there are students who have reached KKM and there are students who have not yet reached KKM.

Every student should not only have the right to approach mathematics equally, but should also learn and understand mathematics equally (Yang et al, 2014). The task of the teacher as a learning facilitator in the classroom is obliged to help and facilitate all the needs of students including in achieving mastery learning and maximizing the self potential students have. Through the use of assessment results, teachers can follow up on the results of the assessment. According to Kemendikbud (2017), a follow-up of the results of the assessment is in the form of remedial and enrichment programs. Remedial is done for students who have not reached the mastery learning stated in KKM, while enrichment is given for students who have reached KKM.

The term remedial comes from the words *remedy, remedial, remedies* (English) which means medicine, repair, or help. Therefore, remedial means things related to improvement. According to Prayitno in Izzati (2015), remedial is a form of assistance given to a person or group of students who are facing learning problems with a view to correcting mistakes in their learning processes and outcomes.

In its implementation, Bloom and his colleagues in Guskey (2007) stressed, however, that to improve student learning, assessments must provide feedback (identifying students' individual learning difficulties) and be followed up with correctives (specific remediation strategies). Remedial learning is given as soon as the assessment results are analyzed by the teacher and the results are given to students so that they can be used to find out their weaknesses and difficulties (Kemendikbud, 2017). Thus, the remedial is done by first analyzing the results of the assessment and diagnosis of student learning difficulties.

Some related research emphasizes the need for an effective strategy in implementing remedial. Research by Saputra and Suhito (2015) applying an adaptive remedial teaching strategy with an active learning background successfully cures students' mathematical learning difficulties. The results of research by Izzati (2015) showed a significant positive effect on student mathematics learning outcomes by implementing remedial and enrichment programs through peer tutoring learning. In addition, the use of technology in remedial programs has been investigated by Hsieh et al (2013). This study provides an online learning system that automatically searches for relevant learning concepts

and remedial teaching materials for learners.

Enrichment techniques can be done by group study or independent study (Kemendikbud, 2017). Group learning can be done by a group of students who have a particular interest given the task of solving problems, reading in the library related to KD which is learned during school hours or outside school hours. Problem solving was given to students in the form of solving real problems. In addition, students can be asked as a group to complete a project or scientific research. Independent learning, namely independently learners learn about something that is of interest, become a tutor for friends in need. Real problem solving activities, project assignments, or scientific research can also be carried out by students independently if these activities are of individual interest.

Unlike remedial, there is only a little number of enrichment related research. One of them is Antari et al (2017) research that describes the implementation of teaching enrichment in one of the vocational high schools. The results were obtained that the implementation of enrichment teaching in Indonesian language learning went well even though there were some problems faced by the teacher, namely differences in student motivation and interests, the regulation of learning time, and the availability of facilities and infrastructure in the implementation of enrichment teaching.

Previous studies have shown the importance of remedial and enrichment programs because of their influence in improving learning outcomes (Hikmatiar, 2019; Izzati, 2015; Yang et al, 2014). Most studies focus on one program; remedial or enrichment. This study aims to analyze the remedial and enrichment processes carried out by teachers in one of the junior high schools in the city of Bandung so as to discuss the two programs. In research related to the evaluation of the program process, it is usually not discussed the step of determining students as one of the first steps in implementing a program, where this step is very closely related to the determination of KKM. Referring to the Ministry of Education and Culture (2017) that after KKM is determined, the learning achievements of students can be evaluated for completeness. Researchers deem it necessary to review also related to the determination of students based on KKM so that it is discussed in this study.

METHOD

The method of this study was qualitative with a descriptive approach. The data were collected by using observation, interview, and literature review. The data analysis technique conducted through data collection, data reduction, data presentation and conclusion (Miles & Huberman, 1984). The subject of this study was a grade seven teacher of a junior high school. Teacher's educational background is a mathematics education graduate from one of the best education universities

in Indonesia. The teacher has experienced teaching for around two years and has won an award as the best teacher in the school based on school assessment standards. The use of several methods (observation, interview, and literature review) is as triangulation. According to Christensen (2015), triangulation provides a better understanding of the phenomenon under study. In this study, observations were made while learning in class by the teacher who was the subject of the study. The focus of observation is the assessment made by the teacher during the learning process. Next, interviews were conducted with the teacher, including how the teacher determines students who take remedial and enrichment, remedial and enrichment implementation (steps, methods, and time), as well as problems faced by the teacher in their implementation. Referring to the Ministry of Education and Culture (2017), remedial steps include analysis of learning outcomes, diagnosis, and treatment (treatment).

RESULTS AND DISCUSSION

Based on observations, the teacher has tried to make an assessment during the learning process (*assessment for learning*) through questions and answers and checking the results of student work (practice questions). Student responses are used as feedback by the teacher in making improvements by guiding or directing students in order to obtain correct solutions to the questions given by the teacher. *Assessment of learning* is done by teachers by conducting daily assessments, midterm assessments, and end of semester assessments. These three assessments are used by the teacher to obtain the value aspects of knowledge. As for the assessment of aspects of skills which are also aspects of assessment based on the 2013 curriculum, it is recognized that teachers are still difficult to do because of the lack of clarity of indicators for these aspects. The following is the acknowledgment from the teacher regarding the assessment of aspects of skills.

Teacher : "The attendance, daily assessment, assignments, midterm assessments, and end of semester assessments have entered knowledge. So the skills are taken from everyday ... "
Researcher : "What do you mean "from everyday"?"
Teacher : "Yes, from working on daily practice questions ... Because it is still confused, so it would be subjective... "

Thus, what is used as a teacher's reference to determine the completeness of student values is the value of knowledge aspects. Based on the assessment results obtained by the teacher from the daily assessment, midterm assessment, and end of semester assessment, not all students reach the KKM. On average about 30% of all students get grades below the KKM based on the results of the daily assessment. As for the results of the midterm and final semester assessments, 60% and 20% of the

total students, respectively, get grades below the KKM. This is used as a reference by the teacher to determine who must take part in the remedial and who follows the enrichment program.

Next, the teacher follows up on the results of the assessment by analyzing these results. The technique used by teachers is to reflect on the results of the assessment (usually from the daily assessment), namely by inviting students to sit together and explain which indicators have been mastered and which indicators need to be improved.

Researcher : "How do you do an analysis of the learning outcomes obtained?"

Teacher : "I always make daily asessments moments to do that. I usually share the results of the tests by calling the children one by one. I provide one chair in front of my desk and I explain it to students one by one whether the indicator was mastered or not ... "

Researcher : "What will the follow up look like, ma'am? Is there always remedial and enrichment? "

Teacher : "Usually it depends on conditions, first seen whether the lack is very far or not. If it's not a little bit I usually give assignments. Sometimes I also give the same problem with the test and then students rework it or even just do the wrong thing. But it will also be taught because they really don't understand. For good students, enrichment is only given more difficult but less supervised questions because at the same time it is also remedial, so it is more focused on the remedial. In addition, the time factor too. Often remedial and enrichment is not done for each chapter because there is not enough time. "

It can be seen that the teacher analyzes manually by reflecting with students, namely seeing the achievement of competency indicators, but the teacher has not made a diagnosis of student difficulties, especially for students with grades below the KKM. The method used by the teacher for the remedial program is the assignment technique (new questions or questions that have been tested) for students whose grades are not much different from KKM and / or providing guidance for students whose grades are far from KKM, both individually and in groups. This determination is sometimes adjusted to the availability of time, often the technique used is assignment. The enrichment technique is only done with the assignment of all enrichment participants in the form of giving non-routine questions. Not yet seen the efforts of teachers to make strategies that are different from ordinary learning strategies (not remedial and enrichment).

In terms of time, remedial and enrichment is carried out conditionally (inconsistently for each daily assessment event) due to several constraints, such as time availability. Usually teachers do these

programs after the results of the daily assessment (PH) and final semester assessment (PAS). After midterm assessment (PTS), the teacher does not do remedial and enrichment.

Found several problems faced by teachers related to remedial implementation and enrichment. First, the KKM bias. KKM should be used as a reference for determining student completeness which determines whether students need to be followed up with remedial or enrichment. This is a problem for teachers regarding value accountability due to the dilemma felt by the teacher on the policy of the school that all student final grades (final semester scores) are at least the same as KKM, whereas in reality some students' mathematics scores are still below KKM and some are even far away under the KKM. This has an impact on the teacher in determining the instruments for the test, especially the daily assessment (PH). The strategy undertaken by the teacher is to make questions that are relatively easy for daily assessment in the hope of completing the final grade.

Second, remedial implementation and enrichment are considered to be less effective because at the same time and place teachers must carry out remedial and enrichment. Teachers' attention is more focused on students who take remedial, so students who follow enrichment tend to study independently but are less guided.

DISCUSSION

Based on the results of the study, the teacher has implemented remedial and enrichment programs, ranging from student determination, analysis of learning outcomes, and actions or treatments. The determination of students is closely related to the KKM determination. According to the Ministry of Education and Culture (2017) there are at least three aspects that need to be considered in determining KKM, namely the characteristics of students (intake), characteristics of subjects (complexity of material / competence), and the condition of the education unit (carrying capacity) in the process of achieving competence. In establishing the KKM, the education unit should involve the principal, educators, and other education personnel. The KKM bias problem found seems to be overcome if in the process of determining the KKM following the established standards.

The steps of implementing remedial and enrichment based on research results are usually done by the teacher by analyzing the learning outcomes, then the remedial technique is determined based on the results (grades) obtained, while the enrichment technique is always with the assignment technique. This is not yet fully in accordance with the standards contained in the 2013 curriculum, particularly in remedial implementation. Teachers should diagnose the difficulty step before determining treatment. This result is in line with similar research by Qibtiyah et al

(2017) which obtained the results that the implementation of remedial teacher has done with varied techniques but the teacher did not make a diagnostic step. Somewhat different from other studies by Larasati et al (2016) who obtained the results that the teacher has made a diagnosis, but has not made a prognosis (designing learning). In fact, the first step in an effective remedial implementation procedure according to Masbur (2012) is re-examining cases, namely diagnosing cases of learning difficulties. Re-examining cases with their problems is the most fundamental stage in remedial teaching because it is the foundation of the next steps.

Step diagnosis is indeed not easy to do. This step requires a considerable amount of time and competence from the teacher. Hsieh Research (2013) establishes a personalized remedial learning system to assist learners in remedial learning after an online assessment. The proposed system adopted the fuzzy logic theory to construct an appropriate learning path based on the learners' misconceptions found in a preceding quiz. With the concepts of each course constructed in a learning path, the proposed system will select the most suitable remedial materials for a learner in terms of learner preferences to facilitate more efficient remedial learning. Programs like this seem to help facilitate the work of teachers in diagnosing student difficulties.

In determining remedial techniques, the teacher applies a strategy that is not different from ordinary learning (not remedial and enrichment), namely by assigning and / or providing guidance (individual or group). In fact, the methods or techniques used by educators in remedial learning can vary according to the nature, type, and background of learning difficulties experienced by students (Kemendikbud, 2017). Based on previous research, in the implementation of remedial, Mabrur (2012) said that there is a need for a recommendation stage, which is to arrange an implementation of a remedial teaching program in the form of an individualized education program. In line with the research of Saputra and Suhito (2015) which implemented an adaptive remedial teaching strategy where the remedial technique was determined for each individual based on the results of the diagnosis difficulties test using the achievement indicator competency approach also based on the nature of students' learning difficulties.

The enrichment technique used by the teacher is not varied, namely only by assigning in the classroom in the form of giving non-routine questions. Enrichment techniques can be done by teachers by group learning or independent learning (Kemendikbud, 2017). To be more effective, it can also be carried out outside the classroom, such as in a library, or outside class hours through assignment of certain projects. This seems to be an

alternative solution to the ineffectiveness of remedial implementation and enrichment if done in one time and one place (class).

Other techniques can be combined between enrichment and remedial, namely the peer tutoring method. This technique has been researched by Izzati (2015) by making enrichment participants as tutors and remedial participants as tutee. The results show a significant positive effect on student mathematics learning outcomes. The implementation of remedial and enrichment programs through peer tutoring learning is expected to create a conducive learning atmosphere. Tutee feels more comfortable in learning because he feels more intimate and close and does not feel embarrassed or ashamed to ask his friends about subject matter or questions that are not yet understood. Tutors will gain new experience and knowledge by helping their peers in groups.

CONCLUSION

The teacher has implemented a remedial program for students who have not yet reached the KKM and enrichment programs for students who have already reached the KKM. In carrying out remedial, the teacher analyzes the learning outcomes, but has not yet diagnosed students' difficulties. The technique used is dominant assignment (giving new questions or questions that have been tested). In addition, sometimes it is simultaneously given tutoring both individually and in groups. The enrichment is done by the teacher only through assignments, in the form of giving non-routine questions. These programs are not carried out consistently for each assessment event (daily, midterm, end of semester) due to several constraints, including constraints on time availability. In addition, Besides that, the teacher applies same strategy as before (not in remedial and enrichment).

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