

## ANALYSIS OF THE INDONESIA MATHEMATICS TEACHERS' ABILITY IN APPLYING AUTHENTIC ASSESSMENT

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**Abstract:** The 2013 curriculum implies the use of authentic assessment that emphasizes on the assessment of students' readiness aspects, processes and students' learning outcomes as a whole. The integration of the assessment of the three components will demonstrate the students' capacity, style, and learning achievement. It is important for mathematics teachers to have the ability to conduct assessments of learning and to utilize the results of those assessments for the purposes of mathematics learning. This study aims to: (1) analyze the profile of the ability of the mathematics teachers in carrying out the authentic assessment, (2) find out the profile of the mathematics teachers' ability to apply authentic assessment results, and (3) know the constraints of the mathematics teachers in developing the authentic assessment. This research uses a quantitative descriptive method involving junior high school teachers in Yogyakarta Indonesia. Data were collected using questionnaires and triangulated with documentation and Focus Group Discussion (FGD). The results show that the ability of the junior high school teachers in Yogyakarta in applying and using the results of authentic assessment was relatively good. The teachers used authentic assessment information to design remedial and enrichment programs. This study also reveals that the teachers still experienced difficulties in developing authentic assessment instruments. Student learning assessment plays an essential role in teaching and learning mathematics. However, limited studies have been conducted to investigate mathematics teachers understanding about how they develop and assess their students, particularly how well mathematics teachers applying authentic assessment. This study was conducted in Yogyakarta Indonesia by applying a purposive sampling technique was applied in this study. The data and triangulated to assess the validity and reliability of the data. Additionally, t

**Keywords:** *authentic assessment, teachers' ability, mathematics teachers, Curriculum 2013*

## ANALISIS KEMAMPUAN GURU MATEMATIKA DI INDONESIA DALAM MENERAPKAN PENILAIAN OTENTIK

**Abstrak:** Kurikulum 2013 mengisyaratkan penggunaan penilaian otentik yang menekankan penilaian pada aspek kesiapan, proses, dan hasil belajar siswa secara utuh. Keterpaduan penilaian ketiga komponen tersebut akan menggambarkan kapasitas, gaya, dan perolehan belajar siswa. Penting bagi guru matematika untuk memiliki kemampuan menyelenggarakan penilaian terhadap pembelajaran serta memanfaatkan hasil penilaian tersebut untuk kepentingan pembelajaran matematika. Penelitian ini bertujuan untuk: (1) menganalisis profil kemampuan guru matematika dalam melaksanakan penilaian otentik, (2) profil kemampuan guru matematika dalam menerapkan hasil penilaian autentik, dan (3) mengetahui hambatan-hambatan dari guru matematika dalam mengembangkan penilaian otentik. Penelitian menggunakan metode deskriptif kuantitatif yang melibatkan guru matematika SMP di Yogyakarta Indonesia. Data dikumpulkan dengan menggunakan kuesioner dan dilakukan triangulasi dengan dokumentasi dan *Focus Group Discussion*. Hasil penelitian menunjukkan bahwa kemampuan guru SMP di Yogyakarta untuk menerapkan dan menggunakan hasil penilaian otentik relatif baik. Guru telah menggunakan informasi hasil penilaian otentik untuk mendesain program remedial dan pengayaan. Studi ini juga mengungkapkan bahwa para guru juga masih mengalami kendala dalam mengembangkan instrumen penilaian otentik.

**Kata Kunci:** *penilaian otentik, kemampuan guru, guru matematika, Kurikulum 2013*

## INTRODUCTION

Good mathematics learning is supported by various essential components in its implementation. One of them is the availability of quality mathematics teachers. The Indonesian government has undertaken various ways to improve the quality of education by improving the quality of teachers (Sumintono & Subekti, 2014).

The success of mathematics learning cannot be separated from teacher role as the main controller of the learning process, for example how the mathematics teachers conduct an assessment of mathematics learning. It is essential as its results can be used as an indicator of successful mathematics learning. It allows students to demonstrate their competence during the learning process (Resnick, 1993). Therefore, assessment ability should be one of the competencies of the mathematics teachers which should be possessed.

Heaney (1994) stated that assessment is mandatory in elementary and secondary level to any degree in any core subjects, such as English, math, and science. Heaney also argued that one of the main objectives of the assessment is to find out what children understand, know and do by observing or monitoring periodically their work so that teachers can make fair, accurate and balanced judgments of every child's progress in each group of a particular academic year.

Curriculum changes generally also have implications for the paradigm shift in various aspects of learning. One of the changes can occur in the role of assessment that must be in line with curriculum change (Holme et al., 2010). The implementation of the 2013 curriculum in the education system in Indonesia has also brought changes to the assessment system in mathematics learning, such as the implementation of competency-based assessments, criterion-referenced tests, authentic assessment, and portfolio.

The 2013 curriculum advocates the implementation of the authentic assessment emphasizing on assessing students' readiness aspects, processes and student learning outcomes as a whole. The integration of the assessment of those three components will demonstrate students' ability, style, and learning achievement. In addition, an integrated assessment will clearly demonstrate the impact of mathematical

instructional and nurturant effect of mathematics learning on student learning achievement. Authentic assessment results can be used by teachers to plan improvement, enrichment or coaching and counseling programs aimed at improving mathematics learning to comply with predetermined educational assessment standards.

Socialization and professional training activities to strengthen the implementation of the Curriculum 2013 have been implemented by the Indonesian government and various teacher training institutions. Those programs are expected to improve teachers' understanding and prepare the ability of the mathematics teachers to implement the curriculum. Such training is important given that teachers' lack of understanding of paradigm shifts is often an obstacle to the implementation of the new curriculum (Cheung & Wong, 2012). Various studies reveal that teachers do not have a relatively good understanding and skills in applying the authentic assessments, such as about how to develop an approach to carry out the authentic assessment to continue developing learning (Charoenchai, Phuseorn & Phengsawat, 2015).

Several studies have been conducted in the areas of mathematics teaching. Retnawati (2015) conducted a descriptive study to explore the obstacles encountered by mathematics teachers in conducting assessment through interviews. However, she did not analyze deeply what teachers did in the assessment activities of mathematics learning.

Mathematics teachers' abilities include planning, implementing and using assessment results. Unfortunately, there has been limited research that examines specifically about the assessment conducted by junior high school mathematics teachers in Yogyakarta Indonesia. This province was selected as it has been known to have a good reputation in education and was selected as one of the provinces in Indonesia as the sample of the implementation of the curriculum 2013 by the Ministry of National Education. Therefore, research to assess the assessment ability of mathematics teachers needs to be undertaken to evaluate evaluation model development the curriculum 2013 implementation.

Based on the background of the study, three research questions were addressed: (1) What is the profile of the ability of junior high school mathematics teachers in Yogyakarta to implement the authentic assessment? (2) What is the profile of junior high school mathematics teachers' ability in Yogyakarta to use the authentic assessment results? (3) What are the obstacles of junior high school mathematics teachers in Yogyakarta to develop authentic assessment?

### **Assessment in the Curriculum 2013**

Curriculum is the main foundation in an education system. The Law on National Education System No. 20 of 2003 states that the curriculum is a set of plans and arrangements concerning objectives, content and instructional materials and ways used as guidelines for the implementation of learning activities to achieve certain educational goals. The development of the school curriculum is a long process involving various parties, such as educators, education practitioners, schools and communities or stakeholders in Indonesia.

The curriculum is a system consisting of five interrelated components, namely objectives, content/resource, strategy, organization, and assessment. Neely & Tucker (2012) stated that in order to address the gaps, the curriculum must be redesigned to include applied skills, such as problem-solving, communication, and analytical skills. Custer et al., (2000) added that textbooks, exams, and the content of the teacher education program would change according to the mandated curriculum. Furthermore, Narayani, Gading, and Suartama (2015) stated that the learning process can be successful if it can create optimal learning outcomes, then the quality of a teacher in applying approaches to learning is needed in order to achieve optimal learning outcomes of learners.

Curriculum changes have occurred several times in Indonesia as an effort to achieve the goals of national education. At every school curriculum change, it is followed by changes to the characteristics of its components including in the assessment component. This difference is generally due to the approach used in the curriculum. The 2013 curriculum applies scientific approach so that of course it has different assessment criteria. This is in line with

Ine's opinion that the characteristic of learning in the Curriculum 2013 is a scientifically based approach to learning (Ine, 2015).

Learning activities contribute to students' intuitive understanding of mathematics. Therefore, good mathematics learning should be implemented. Efriana (2014) argued that in addition to making students more active in constructing their knowledge and skills, the scientific approach can also encourage the students to investigate further in order to discover the facts of a phenomenon or event.

Assessment is an activity to provide continuous and comprehensive information about the learning process and outcomes achieved by the students (Gronlund & Linn, 1985; Popham, 2011). Immegart (1994) stated that the focused or targeted assessments are in terms of standards, such as goals, objectives, and behaviors or in terms of normative assessments such as manifesting good attitudes, developing certain skills, and making student performance as desired.

The educational assessment standards for the 2013 curriculum are stated in the Indonesian Government Regulation No.66 Year 2013. Education assessment standards are the criteria of the mechanisms, procedures, and instruments of student learning outcomes. The assessment approach used in the Curriculum 2013 is the criterion reference based assessment. It applies minimum mastery criteria (KKM) to assess learning outcomes. The KKM is a minimum learning completeness criterion determined by the educational unit taking into account the characteristics of basic competencies to be achieved, and characteristics of students.

The Indonesian Government Regulation No.66 Year 2013 states that the assessment of student learning outcomes in secondary education is based on six principles, namely: objective, integrated, economical, transparent, accountable, and educative. This is in line with Bullens (2002) who stated that correct assessment is needed to guide the curriculum process. The objective principle emphasizes that the assessment should be standards-based. It should be as objective as possible in order to describe the actual situation in achieving competence and achievement of learning objectives. Assessment objectives and targets should be formulated clearly before learning to reach all aspects of the assessment.

Sani (2016) stated that teachers can do reflection and evaluation on the quality of learning that has been done through the assessment activities. The assessment is done before, during and after the learning takes place. It must be efficient and effective in planning, execution, and reporting. It must be transparent meeting the assessment procedure, assessment criteria, and the basis of decision making can be accessed by all parties. In other words, the assessment should be open, so that all interested parties to the results of the assessment can obtain clear and correct information regarding the assessment of learning that has been implemented. It is also accountable which means that assessments can be held accountable to internal school and external parties for technical aspects, procedures, and results. Finally, it must also be educative by relating to the nature of judgment in educating and motivating students and teachers. According to Gao & Grisham-Brown (2011), an assessment-based curriculum can be used for accountability under conditions of assessment whose objectivity is ensured by checking for reliability and consistency.

Assessment of learning at secondary education level is carried out by educators, educational unit, government or independent institutions. Berg (2007) stated that the assessment is used to inform expectations and to set the recommended goals, assessment objectives related to future learning. The assessment activities are conducted by the education unit in the form of school exams, while the Government performs an assessment in the form of national examinations. Kearney & Perkins, 2014 stated that traditional forms of focus are judgments on scientific principles, seeking to be objective and seen to be separated from learning and built on uniformity and fairness.

Educational assessment standards mandate teachers to use various techniques in conducting assessments. Assessments of attitude are conducted through observation, self-assessment, peer assessment, and journal with assessment instrument in the form of assessment rubric. Knowledge domain assessments are conducted through written, oral, and assignment tests. Assessments of student skills are conducted through performance appraisal using practice tests, project appraisals, and

portfolio assessments. This is consistent with Craig & Mc Cormick's (2002) statement that using techniques such as observation checklists, journals, portfolios, and graphic organizers will help teachers assess the true learning and knowledge gained.

Evaluation activities conducted by teachers should be planned. Planning aims to make the assessment synergized with the objectives of learning to be achieved, the content of teaching materials provided and learning strategies applied. The Decree of the Ministry of Education Number 66 of 2013 states that there are five steps that must be taken in planning and executing the assessment. The five steps are successively arranging the grid, developing the instrument, carrying out the values, processing the values, and reporting and utilizing the assessment results.

### **Authentic Assessment in Mathematics Learning**

Authentic Assessment in mathematics learning is an assessment that asks students to use the same competencies, or a combination of the knowledge, skills, and attitudes they need for application in specific situations in professional life (Gulikers, Bastiaens & Kirschner, 2004). It can also be referred to as an alternative assessment. Stiggins (1994) defined it as an examination of the ability to demonstrate competencies and special skills to apply skills and knowledge that have been mastered.

The authentic assessment is a measurement method requiring students to demonstrate important knowledge and skills by performing real-life tasks or close estimates. It emphasizes on efforts to help students learn. Bosco & Ferns (2014) stated that authentic learning tasks are fundamental steps of program specificity and serve as an important criterion for attracting students. It involves real experience, including personal judgment and reflection, measured as performance and skills and takes place in an integrated and sustainable manner. Moon, et al (2005) stated that authentic assessment can also enhance teaching and learning in secondary schools by integrating complex nature of learning. Keyser & Howell (2008) adds that the assessment should be analyzed to determine the presence or degree of authenticity for results of learning to be aligned with goals.

The types and forms of assessment used in the various authentic assessments depend on the type of competence, the learning outcome indicators, the learning materials and the purpose of the assessment itself. This type of assessment can be used in the authentic assessment, such as performance assessment, project assessment, product assessment, portfolio assessment, and observation. This is in line with Gao & Brown (2011) stating that the authentic assessment includes methods such as work sampling, anecdotal notes, portfolios, checklists, assessment scales, and teacher-designed classroom observations. Assessment techniques in mathematics learning are as follows.

It is conducted by observing the activities of students in doing something. This assessment is suitable for assessing competency achievement that requires students to perform tasks/movements or psychomotor domains, such as presentations, using mathematical tools and using software to solve math problems. The instrument used can be a rating scale and assessment rubric as a guide in making observations. According to Kinay & Bagceci (2016) authentic assessment is also represented as a performance appraisal, an appropriate assessment, an alternative assessment, or a direct assessment, contains techniques such as written text, portfolios, checklists, teacher observations, and group projects.

It is conducted to assess student tasks that must be completed within a certain timeframe and include some competencies. Assigned tasks can be an investigation of a process or event that starts with planning activities, collecting data, organizing, processing data and presenting the results of the investigation. The project assessment function includes pedagogical and meaningful assessments for students, giving students opportunities to express their competence in a whole, more efficient manner and produce economically valuable products as well as generate competence control values that can be accounted for.

It is a kind of continuous assessment based on a collection of information that shows the development of special abilities on the psychomotor aspects of students in a certain period. There are six principles that must be considered in carrying out portfolio assessment.

The six principles include; the authenticity of students' work, trust in judgment between teacher and student, mutual ownership of work between teacher and student, conformity between student's work with competency achievement indicator, including process assessment and learning result and integrated into learning. Buyarski & Landis (2014) added that a portfolio designed for assessment purposes allows for the measurement of student learning against established standards while a personal portfolio allows learners to define and narrate their learning as they see it. Wicks & Lumpe (2015) stated that students use portfolios for their learning process and demonstrate the product or the nature of this learning.

Buyarski & Landis (2014) suggested that portfolio assessment is not only used to see what students learn but also how students learn. It can also play a role in assessing the effectiveness of learning and curriculum. In addition, it supports affective and cognitive development of students as a learning portfolio. It can also be used for various purposes including in class and extracurricular program. Bullens (2002) states that portfolios designed for assessment purposes allow for the measurement of student learning against established standards. Appropriate assessment is needed to guide the curriculum process. Assessment should not only measure learning, but it also promotes it. Engel et al., (2003) state that with the existence of authentic tasks, students have an understanding of what to expect, and teachers see judgment as a useful tool for improving instruction.

### **Mathematics Teachers' Assessment Capability**

According to the Indonesia Government Regulation No. 19 of 2005 on the National Education Standards article 28, educators or teachers are learning agents that must have four types of competence, namely pedagogic competence, professional competence, personality competence and social competence. Pedagogic competence is a skill with respect to the understanding of students and educational and dialogical learning managers. This competence includes the ability of understanding to students, design, and implementation of learning, evaluation of learning outcomes, and self-development of students to actualize various

potentials. Custer et al., (2000) stated that increased education requires changes in some components of the education system including curriculum, textbooks, teacher preparation, and professional development.

The ability of the mathematics teacher in the assessment of learning is one aspect of the pedagogic competence that the teacher must master. The Indonesian Government Regulation No. 16 year 2007 outlines the competence and sub-competence of teachers in the assessment of the ability to organize process assessments and learning outcomes and the ability to utilize the assessment results for the purposes of learning. There are seven sub-capabilities that mathematics teachers must master in relation to the assessment. First, it is an understanding of the principle of process assessment and learning outcomes according to the characteristics of mathematics subjects. Second, it is the ability to determine the process and learning outcomes that are important to assess. Third, it is the ability to determine process assessment procedures and learning outcomes. Fourth, it is the ability to develop process assessment instruments and learning outcomes. Fifth, it is the ability to administer process assessments and learning outcomes on an ongoing basis using various instruments. Sixth, it is the ability to analyze the results of process assessment and learning outcomes for various purposes. Seventh, the ability to evaluate the process and learning outcomes.

The ability to use assessment results consists of four sub-capabilities. First, it is the ability to use the assessment information to determine learning completeness. Second, it is the ability to use assessment results to design remedial and enrichment programs. Third, it is the ability to communicate the results of the assessment to stakeholders. Fourth, it is the ability to use the results of the assessment of learning to improve the quality of learning. Barber, King & Buchanan (2015) stated that, in order to create authentic learning and assessment tools, teachers need to learn how to design their tasks. Noor & Yusoff (2016) added that teachers can introduce themselves or peer-assessment as another option to assess children with simple observations or questionnaires that can be designed and utilized to help assess. Moon et al. (2005) also argued that teachers and students

involved in the classroom where authentic assessment is conducted are asked to reflect on their experiences by using or appraising.

## **METHOD**

### **Population and Sample**

This research used a mixed method. The population of this research was junior high school Mathematics teachers in Yogyakarta Indonesia. A purposive sampling technique was applied by involving 41 experienced teachers with teaching service more than 1 year. Most of the respondents' ages (46%) ranged from 36-50 years and most of them (58.5%) had taught mathematics for more than 10 years. Based on the level of education, almost all of the respondents met the minimum academic requirement of undergraduate degree (S1). Additionally, there were 14.6% of the teachers holding master degree (S2).

### **Data Collection Techniques**

Data were conducted by distributing questionnaires, collecting documents and conducting Focus Group Discussion (FGD). The questionnaires were used to explore aspects of the implementation and utilization of assessment result by the Mathematics teachers. It consisted of 3 parts, namely: identity and general information, understanding, and experience of teachers in carrying out the authentic assessment and the utilization of teacher assessment results.

Details of the questionnaire are as follows: *First*, scales to assess the ability of junior high school mathematics teachers in carrying out the authentic assessment. *Second*, scales to assess the ability of junior mathematics teachers in using the results of the assessment of learning. *Third*, the questionnaire is used to explore obstacles faced by junior high school teachers in Yogyakarta in applying the authentic assessment.

To ensure the research instruments were valid and reliable, the researcher tested the instruments by conducting a preliminary study involving a small group of mathematics teachers. Triangulation processes were undertaken to ensure the validity and reliability of the data analysis following steps suggested by Miles and Hubberman (1994).

**Table 1. Research Instrument**

Variables	Indicators	Number of Items
1. The ability of mathematics teachers in carrying out the authentic assessment	understanding of the concepts of authentic assessment	4
	the ability to decide which aspects of learning are important to assess	3
	the ability to develop assessment instruments	3
	the ability to administer the assessment documents	1
	the ability to analyze the assessment results	3
2. The ability of mathematics teachers in using the results of the assessment of learning	ability to use assessment information to design remedial and enrichment programs	1
	analyzing learning outcomes, developing a remedial program based on the result of the assessment, and developing a program based on the learning achievement	2
	ability to use assessment information to improve the quality of learning	1
3. The obstacles faced by mathematics teachers	Open questionnaire	

**Table 2. Teachers' Ability to Apply *Authentic Assessment***

No.	Indicator	Poor	Fair	Good
1	Understanding about the <i>authentic assessment</i>	12 29.27%	17 41.46%	12 29.27%
2	Ability to determine important aspects for evaluation	12 29.27%	10 24.39%	19 46.34%
3	Ability to determine evaluation procedures	7 17.07%	16 39.03%	18 43.90%
4	Ability to develop evaluation instruments	7 17.07%	16 39.03%	18 43.90%
5	Ability to manage evaluation	1 2.44%	30 73.17%	10 24.39%
6	Ability to analyze evaluation results	33 80.49%	6 14.63%	2 4.88%

### Data Analysis Techniques

Data obtained from questionnaires were analyzed using descriptive statistics. The results of the analysis were categorized into *very poor*, *poor*, *fair*, *good*, and *very good* by implementing the criteria proposed by Widoyoko (2009). The procedure of the descriptive analysis is as follows.

- Scoring*, changing the value in qualitative terms to quantitative.
- Calculate the average score* for each aspect of the instrument,
- Determine the criteria of category for each research variable.

## FINDINGS AND DISCUSSION

### Findings

#### Profile of Ability to Carry Out an Authentic Assessment

Table 2 shows the results of the analysis of the mathematics teachers' ability to apply authentic assessment. From this table, it can be

seen that the indicator to manage evaluation has the highest score indicating the mathematics teachers performed well in managing evaluation using authentic assessment. On the other hand, the ability to analyze evaluation results has the lowest score indicating that the mathematics teachers did not perform well in using the results of the evaluation.

#### Teachers' Profile In Using Authentic Assessment Results

From Table 3, it can be seen that the teachers demonstrate poor indicator in the aspect of *using the assessment results to determine the learning mastery* (27 respondents or 65%). On the other hand, they demonstrate good ability for the aspect of *using the assessment results to design remedial and enrichment programs*. Furthermore, in general, the mathematics teachers' ability in *using the assessment results to improve the quality of learning* can be considered fair.

**Table 3. Teachers' Competence in Applying *Authentic Assessment***

No.	Competence Aspect	Poor	Fair	Good
1.	Using the assessment information to determine the learning mastery	27 65.85%	12 29.27%	2 4.88%
2.	Using the assessment information to design remedial and enrichment programs	1 2.44%	16 39.02%	24 58.54%
3.	Using the assessment information to improve the quality of learning	0 0.00%	23 56.10%	18 43.90%

**Table 4. Obstacles to Developing *Authentic Assessment***

No.	Aspect of Ability	Percentage
1	Understanding the concept of <i>authentic assessment</i>	2 5.56%
2	Ability to determine important aspects learning to be evaluated	8 22.22%
3	Ability to determine evaluation procedures	7 19.44%
4	Ability to develop evaluation instruments	9 25.00%
5	Ability to manage the evaluation	3 8.33%
6	Ability to analyze evaluation results	7 19.44%

### Obstacles to developing authentic assessment

Table 4 shows the number of the respondents who experienced obstacles in applying the authentic assessment.

Table 4 shows that a total of nine teachers (25.00%) often had an obstacle in the aspect of the *ability to develop evaluation instruments*. Secondly, the teachers had a problem in the aspect of the *ability to determine important aspects learning to be evaluated* (8 respondents or 22.22%). It shows that only two teachers who experience problems in the aspect of *understanding about the concept of authentic assessment* and three teachers who experience problems in the aspect of the *ability to manage evaluation*. In general, it can be interpreted that mathematics teachers experienced obstacles in developing the authentic assessment.

### Discussion

The implementation of the authentic assessment has strong relevance to the scientific approach to learning in accordance with the demands of the Curriculum 2013. This is relevant as it is able to describe the improvement of student learning outcomes. It can also be developed by the teachers alone, the teachers

on the team, or the teachers in collaboration with the students. Student involvement in planning assessments plays an important role in the authentic assessment. The important role is based on the assumption that students can perform better learning activities when they initially know how students will be assessed. Carter (2013) stated that the core of authentic assessment involves students with real life.

In general, the ability of junior mathematics teachers in Yogyakarta in implementing the authentic assessment is categorized relatively fair. It suggests that the teachers still need additional knowledge about authentic assessment. Gao & Grisham-Brown, (2011) argued that one of the advantages of using the authentic assessment can improve the relationship between teachers and students. Authentic assessments, often called performance-based assessments, engage students in real-world tasks and scenario-based problem solving more than traditional measures such as multiple-choice and pencil-and-paper tests. The practical issues of using the authentic measure can be addressed by providing in-depth training to teachers and increasing teachers' familiarity with their student. The assessment should be conducted in a naturalistic environment, reflecting functional skills, and



linked to the curriculum and individual goal development.

Authentic assessment should include an assessment of attitudes, skills, and knowledge. Nurgiyantoro (2011) stated that assessment techniques in the authentic assessment include direct measurement of students' skills, assessment of tasks related to performance, and process analysis used to generate student responses to the attainment of attitudes, skills, and knowledge. Therefore, to increase the quality of the teachers' ability in using authentic assessment, there is a need to undertake a professional development program such as training and workshop involving those three aspects.

The results showed the teacher's ability to develop assessment instruments was also good enough. The development of assessment instruments includes the preparation of tests, the compilation of non-assessment instruments, and the way in which instruments are developed. The average ability of teachers in administering incoming assessments in sufficient categories. This means that the junior high school mathematics teacher in Yogyakarta has not been very good at documenting the assessment that has been done. Though the assessment results are also important for the evaluation of learning materials that have been implemented. While the ability of teachers in analyzing the assessment results are still not good. This can be caused by teachers who only take the value only without evaluating or following up on the assessment results. Though evaluation is very important for the improvement of further learning. And so?

Once a teacher has determined which content standards they want to assess they must define what student mastery is, and what it looks like when it occurs. After the teacher has developed and administered an authentic assessment the results are submitted to interpretation. In terms of the use of the authentic assessment by junior high school teachers in Yogyakarta, in general, it can be considered to be fair. It can be interpreted that the teachers need to optimize to the use of the results of the assessment to be a powerful tool in developing student learning. For example, the results of the assessment can be used as an evaluation material in the learning, whether there are still students who have not understood

on certain materials. Therefore, the teachers can give special guidance to the student. Koyan (2011) stated that the benefits of the assessment are for giving feedback, diagnosing learning difficulties, and determining rate or graduation increase. The authentic assessment can also enhance teaching and learning in secondary schools by integrating complex nature of learning (Moon, et al., 2005). The types of assessments can provide quantifiable information about student learning, as well as inform the instructional process.

Finally, this study reveals that the implementation of the authentic assessment does not always run smoothly as teachers might experience problems. Developing the assessment instruments such as rubric and how to analyze the results of the assessment with rubrics are often complained by teachers. The role of the assessment rubric according to Montgomery's (2008) is that assessment results are made to integrate assessment with instruction and open collaborative approaches between students and teachers in teaching and learning process. It also supports the assessment of student progress and serves as a tool for interaction between students, teachers, and parents. Furthermore, the results of the assessment rubric can be written in the student portfolio to find out the extent of student progress in the learning process.

The main and most important reason why teachers implement changes in the assessment is to get an overview of the level of achievement of the curriculum objectives, the success of the learning method, and the accuracy of the self-assessment practice. Through this assessment practice, teachers can draw conclusions about what is needed in learning, progress in achieving the curriculum goals, and the effectiveness of the applied mathematics program. Therefore, the significance level of the assessment will depend on the alignment between the assessment method and the curriculum. If the assessment does not reflect the purpose, purpose, and content of the curriculum, then the information about what the students have already gained will be limited.

To overcome the obstacles experienced by teachers in developing the authentic assessment, the teachers need to have training on the authentic assessment. It can cover issues of preparation and analysis of the assessment rubric, preparation of the grid corresponding

to the assessment indicator, as well as the less complex assessment analysis so that the teachers can better understand the concept of authentic assessment well and appropriate assessment to students.

Thus, running well-developed professional training programs focusing on the weaknesses of the ability of the teachers in using authentic assessment might be one of the effective ways to improve the quality of the mathematics teachers. how do you assure the reader with this suggestion?

## CONCLUSION

The ability of the junior high school teachers in Yogyakarta Indonesia to implement authentic assessment and the use of the results of the authentic assessment results can be generally categorized relatively fair. This study also revealed which obstacles mostly experienced by the mathematics teachers when implementing the authentic assessment. Therefore, this research recommends the Indonesian government provide professional development programs for junior high school mathematics teachers in developing the authentic assessment so that they can learn how to develop good authentic assessment which in turn leads the success of the implementation of the Curriculum 2013.

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