

## The Assessment Equipment of Learning Result Based on Marzano Digital Assessment on Explanatory Text in Senior High School

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### Abstract

This research was done because of the development of system education which demanded the teachers to monitor the learning progress of students when the learning process was ongoing through assessment activity. However, during this time, the teachers just focused based on the assessment of the learning process which got result by school grade or score. Then it was used as a decision for students' performance. Whereas, on the assessment of the learning process, the main role of teachers was improving the learning process through the information that got about the strength and weakness of learning that was done. From that information, the teachers could improve the learning program. For that, it needed the assessment equipment which would be able to assess every aspect that related to the students' learning process. In this research, the researchers developed the assessment equipment of learning results based on Marzano Taxonomy on explanatory text for senior school. Marzano Taxonomy was chosen and collaborated three systems such as, cognitive, meta-cognitive and self-system that acted with every domain of knowledge. Those were information, mental and physical procedures. The implementation of assessment used a digital concept that could reduce the teachers' responsibility when they processed the score. This concept could account the score automatically, so the assessment process would be effective and efficient. In this research, the researcher developed the assessment equipment. It was called Marzano Digital Assessment (MDA) on explanatory text for senior high school. By knowing the result of assessment development, the researcher gave the alternative in assessment equipment for explanatory text, which is good, effective and efficient.

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## INTRODUCTION

Assessment activity can be used by the teachers to prove students' ability in understanding the material standard that was given by the teacher in the teaching learning process. Assessment activity was to get authentication data which will show the standard of ability and success of students to reach the aims based on curriculum. The role of government in education ministry no. 26 2016 section 4 subsection 1, explains that the learning result by the teachers, aims to monitor and evaluate process, learning progress and improve the learning result of students' continuity. Based on that role, the teachers have tasks to find out how far the students' comprehension is during the learning process so that the teachers can establish the next steps in the learning activity based on the learning result gained by the students. Tague-Sutcliffe (1996), said "a systematic process of determining the extent to which instructional objectives are achieved by pupils". The assessment activity not only assesses an activity spontaneous and incidental, but also an activity to assess something was planned systematically and the purpose is clear. The teachers must dig potential students from the learning result that is done. So that students not only know, but also can demonstrate in real life (Bundsgaard & Hansen, 2011). Therefore, the teachers need to know the learning process of students through assessment activity in learning results.

Assessment in the 2013 curriculum has two functions that are applied in school. They are formative and summative functions. Two of them have different assessment purposes. Formative function aims to monitor the progress of students learning during the learning process is ongoing. Summative function aims to record the achievement of all students systematically. Implementation of summative function assessment is implemented by the education unit and government while the implementation of formative function assessment as the teachers' domain must be implemented to improve the learning process through information about the

strength and weakness of the learning which was done. Through that information, it can be done to improve and complete the learning program. The teachers need to know: Do the learning activity go on well or need knowledge adaptation? How is the way to arrange and use it? However, in the implementation, the teachers get difficulties to know the learning process of students during the learning activity.

The importance of assessment in the learning activity, during this time, is not supported by human resources in the arrangement and implementation of the learning result assessment. Assessment in the learning is not new for the teachers or implementer of education because arranging and implementing of assessment form a series of basic and function of the teachers (Subyantoro, 2014). However, the reality shows that plans and implementing an assessment are a serious problem for the teachers in the school. According to Mulyani (2008) recently, the teachers direct the students to questions in the national exam and deny the content of the curriculum that is not included in the national exam. In this case, it is a contradiction with the communicative competence that must belong to the students.

The needs of the assessment equipment which is able to integrate every factor widely and influence how the students think? Marzano (2013) argues the person has wider knowledge in an area, that person has higher ability to analyse a phenomenon in that area. The person that has limited knowledge, gets difficulty to analyse. Marzano develops a new taxonomy that forms the result of development from Bloom taxonomy which has been revised by Anderson & Anderson (2003) using the taxonomy is important so that the system of learning assessment is arranged. According to Nayef et al. (2013) using the taxonomy can be more effective in assessment activity and more efficient in implementation. So, the teachers in evaluating implementation, get valid data about the students' abilities. In the evaluating process, taxonomy Marzano has three systems and knowledge domains. The three systems are a self-system, meta-cognitive system and cognitive

system. While knowledge domains are information, mental and physic procedure. The implementation of that taxonomy in the learning result assessment forms integrated into three domains. they are cognitive, meta-cognitive and affective. Marzano's taxonomy can identify learning problems that become obstacles for students during learning (Prasetya et al., 2018). Taxonomy Marzano is more appropriate to answer about assessment challenges in Indonesian language lesson explanatory text in the 2013 curriculum that implements the authentic assessment.

The learning concepts recently are done and follow the expansion period. In this time, development technology cannot be avoided in every aspect of life. According to Syaifudin (2012), by supporting technology systems, information and communication, learning activity is not difficult, bored, causes a fuse and tiring. Using technology in the learning process can improve students' interest to do the learning activity well. According to Piaw (2012), by using assessment based on computer, it can be able to answer the problem so that the assessment is valid and gives good effect for performance and motivation to students. Integrate by using technology, in this research, the researchers are as assessors in learning by using assessment digital concepts.

This Assessment digital concept includes an integrated learning approach (blended learning) which mixes classical learning and learning based on technology. The implementation of digital assessment has special quality if it implements in learning activity. Probably, the learning process is more meaningful because the teachers get data from the result of processing data and it can reduce a human error. According to Feng et al. (2013), the teachers that form managerial using technology concepts have the benefit, such as can improve professionalism in implementation of assessment, the teachers get results more comprehend. On the other hand, the students also get benefits in the implementation of digital assessment. According to Göksu & Atici (2013), the implementation of assessment equipment

mobile helps the students because it can improve the effectiveness of the learning environment, improve the interaction and contribute to students' diligent in learning. According to Aeni et al. (2017) using digital concepts in learning can motivate students' interest. From the case above, it is clear which digital assessment uses information and communication technology as a tool with the purpose to improve the efficiency, effectiveness, transparency, accountability and comfort in learning. The object is learning service is better, more interesting, interactive and attractive.

Based on that condition, the researchers are interested to do research with the title "The Development of Equipment Assessment of Learning Results in Explanatory Text based on Marzano Taxonomy with Assessment Digital Concept in Senior High School". This research aims to develop an assessment equipment based on Marzano Taxonomy with Digital Assessment concept, so the assessment can be applied appropriately for the purpose of learning in the 2013 curriculum. That monitors the learning progress of students during the learning process is ongoing and it gives the assessment concept efficiency and effectiveness.

The research about assessment equipment is relevant with this research, that is Subyantoro (2014). In his research entitled "*Pengembangan Evaluasi Pembelajaran Bahasa Indonesia Berbasis Taksonomi Structure of Observed Learning Outcome*". The result of the research was an assessment equipment of learning efficiency and effectiveness. It caused the applying of assessment equipment appropriately to improve participation of students, because they felt comfort in assessment activity. It made the learning process more enjoyable and could be a technique teaching learning that is successful.

The research about taxonomy was done by Faruque (2015) entitled "The Taxonomy of Learning Teaching and Assessing: Current Practices at Polytechnic in Bangladesh and its Effect in Developing students' competence". from the result of the research, it said that learning in class only uses theory only in assessment activity. Many teachers thought it

was not important using assessments techniques to measure the students' abilities or practice. In the research, Faruque (2015) gave recommendations about the way to implement the good assessment by using taxonomy. The teachers not only knew the students' knowledge but also, it could know the students' abilities in developing competence, especially in practice activities.

The research about Digital assessment was done by Adinugroho et al. (2015) entitled "Review of Multi-platform Mobile Application Development Using WebView: Platform". From the research, it said the use of technology equipment in learning activity had strengths and weaknesses. Adinugroho et al. (2015) explained that, to the next research, must determine the weaknesses and improve the strengths in the using of mobile equipment recently which is used in learning activity. The weakness of implementation of mobile equipment was a problem in burden design of situs that caused many of the credits to be empty. If the credits were empty, it would make the user lose out and did not want to use it anymore. While the strengths of implementation of mobile equipment was the learning easier without seeing each other.

The research about explanatory text was ever done by Hakim (2018) entitled "Learning Writing explanatory Text Using Group Investigation Based on Learning Style," said the learning explanatory text demanded the students to explain a particular process that happened. The result of the research said that the explanatory text, the teachers got results appropriate to the expectation by the students' experience. It could be concluded that the good explanatory text was from students' experience. Because of it, it needs to identify the students' learning style in order to know the difficulties before continuing the material.

Based on the last research, it needs to do an evaluation to assess and measure the students' competence during the learning activity in explanatory text. For it, taxonomy Marzano can be applied in the assessment of learning result activity because it is not only focused on

assessing the students' cognitive, but also the process so that the learning activity can be reached. To support the assessment activity, the user of learning technology by using online concept assessment, it takes advantage of technology that can be an alternative to improve the effectiveness and efficiency in learning.

Because of the needs, it developed a prototype in assessment equipment for learning results in an explanatory text based on Marzano Taxonomy with Digital Assessment concept for senior high school. In the last steps, assessment equipment that has developed, is tested for validation and reliability prototype in assessment equipment of learning result in explanatory text based on Marzano Taxonomy with Digital Assessment concept for senior high school that the result was agreed with the standard test.

The assessment equipment based on Marzano Taxonomy can take advantage of students, the teachers and other researchers. For the students, by applying the assessment based on Marzano Taxonomy, it can make the learning process easier because the students get advantages in the assessment activity to know the effectiveness of learning strategy and know how far the students' comprehension about the material from the teachers. For the teachers, assessment equipment-based Marzano Taxonomy can give a solution to a teaching problem nowadays that has not been overcome, especially in authentic assessment for Indonesian language lesson. For other researchers, with the product of assessment equipment based on Marzano Taxonomy can enrich the knowledge about using technology which applied as assessment equipment so that it can be efficient and effective. With the research about development assessment equipment based on Marzano Taxonomy and digital assessment concept can be an inspiration to do the others development of assessment equipment.

## **METHODS**

This research is research and development which was developed by Gall et al. (1996). But the steps of this research modified with the

researchers' needs. The research and development stage in this research are (1) research and collecting data, (2) planning, (3) developing product of draft, (4) validation test the first product, (5) revision of validation test, (6) experiment field, and (7) completing the result of product from experiment field. The development was stopped until the result of the draft or product had reached the limitations scale without any test widely.

The source of analysis data that needs to the development assessment equipment of learning result in explanatory text for senior high school was the teacher who taught Indonesian language lesson of Eleventh grade from SMA Negeri 1 Ngawen Blora, SMA Negeri Tuntang Salatiga, SMA Negeri 1 Mertoyudan Magelang, and SMA Institut Indonesia Semarang. The source of validation data that needs to develop assessment equipment of learning result in explanatory text for senior school school was lecturer and the expert in education with different skills, such as unit of learning Indonesian language and unit of learning assessment. In addition, this research also took the data from Indonesian language lesson. Test of validation and reliability data in assessment equipment of learning result in explanatory text sourced from the students of SMA Al Azhar 16 Semarang. Selection of the sample in the school with purposive sampling technique.

The data which got from questionnaires analysed by grouping, selection and concluding the original data. The analysis data of expert assessment accumulated so; it showed the average score. Analysis data of effectiveness test by using manual assessment which is processed using validation, reliability, difficulties level and differences effort test with SPSS 21 version program.

## RESULTS AND DISCUSSION

The characteristics of development assessment equipment of learning result in explanatory text based on Marzano Taxonomy include three aspects are (1) cognitive aspect, (2) meta-cognitive, (3) self-system aspect, While the

development assessment equipment of learning result in explanatory text with Digital Assessment concept include implementation of assessment use digital assessment concept.

### **The Characteristics of Development Assessment Equipment of Learning Result in Explanatory Text Based on Marzano Taxonomy with Digital Assessment Product**

The needs assessment equipment of learning result in explanatory text based on Marzano Taxonomy with Digital Assessment concept accord to the perception of the teachers include (1) the kinds of instruments properly, (2) limitations of assessment, (3) the number of words, (4) the number of paragraphs, (5) the number of questions, (6) the percentage of difficulties questions level, (7) the distance of scoring, (8) duration, and (9) the implementation of assessment with Digital Assessment concept.

In the cognitive aspect, there are two kinds of questions. They are multi choices and essays. The characteristics of the needs in development assessment equipment for the teachers is multiple choices with the certain answer, the numbers of word in every question are 9 words, the numbers of paragraphs in reading text are 3 paragraphs, 20 questions are for multiple choices with medium difficulties level, it has 4 assessment scale, the duration for doing is a minute per question. For essay, it is kinds of instruments based on indicator to answer it, the numbers of word in every question are 9 words, the numbers of paragraphs on the reading text are 3 paragraphs, the numbers of question 4 - 6 ilare task with medium difficulties level, it has 4 assessment scale, duration to do is 5 minutes per question.

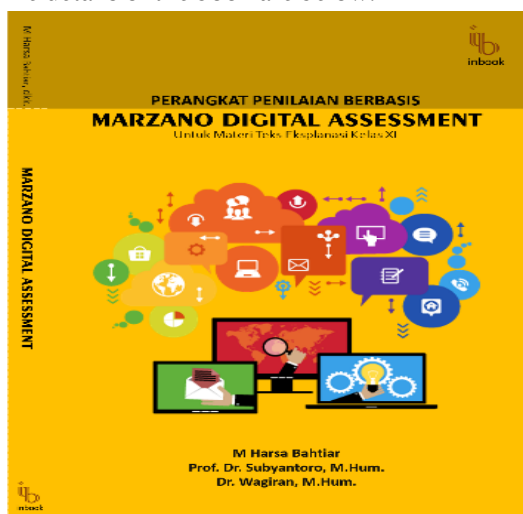
In the meta-cognitive aspect, the characteristics of the needs in development assessment equipment for the teachers are the kinds of instruments which are used; multiple choices form with Assessment scale are from 1 to 4 with the percentage of question equilibrate. The number of offers in every question is two sentences with the numbers of questions are 10. The duration to do is 2 minutes per question.

In the self-system aspect, the characteristics of the needs in development assessment equipment for the teachers are the kinds of instruments which are used multiple choices form with assessments scale are from 1 to 4 with the percentage questions equilibrate. The number of offers in every question is a sentence with the number of questions are 15. The duration to do is a minute per question.

The characteristics of development assessment equipment in the implementation of assessment aspect, the teachers need a classroom to do the implementation test. The test uses a mobile electronic tool or smartphone. The questions are gotten by QR code or barcode. The score will be known immediately by students after finishing the questions.

### Serving the Assessment Equipment of the Learning Result Based on Marzano Taxonomy with Digital Assessment Concept

Draft which is developed has been form the book of the development assessment equipment of learning result in explanatory text competence of knowledge based on 3.3 and 3.4 of basic competence in senior high school and the assessment attitude based on 1 and 2 of core competence. The basic competence is combined to Marzano Taxonomy and is implemented with digital assessment concept. The beginning parts consist of title page, publishing, acknowledgement and table of contents page. The details of the book are below.



**Image 1.** The cover design of development product

The content parts consist of introduction and the main parts is 4 chapters. The 1st chapter explains the rationale and the definitions of assessment equipment based on Marzano Taxonomy with Digital Assessment concept. The 2nd chapter tells about review of the related literature of assessment equipment based on Marzano Taxonomy with Digital Assessment concept. The 3rd chapter the explanation of assessment equipment based on Marzano Taxonomy with Digital Assessment concept. The 4th chapter is used to explain the implementation of assessment equipment based on Marzano Taxonomy with Digital Assessment concept in assessment activity of learning results. In the appendixes, the form of assessment is QR code. The assessment with digital assessment concept is below.



**Image 2.** The sheets of assessment with digital concept design

### The Acceptance of the Research Product of Development Assessment Equipment of Learning Result Based on Marzano Taxonomy with Digital Assessment Concept

The Assessment activity formed on parts of the learning system which aims to know the illustrations of the students' learning development, explains and interpret the result of measuring, describe the information about how far the students' result or the competence of

students' achievements (the ability series). The arranging of assessment equipment of learning results must be based on the assessment equipment principles. The arranging was arranged based on the escorts of assessment for senior high school that published by the Directorate General of Primary and Secondary Education of Minister Education and Culture (2015)

The assessment equipment formed important components for learning. In the arranging must based on assessment equipment Principle. Because of it, it needed to attend the assessment equipment well which could be used to identify the students' abilities properly so that it could improve the students' abilities in particular material. To know the effectiveness of assessment equipment, it needed to be examined by the students. The examination was done by using limitations scale. The examinations included validation tests, reliability, difficulties index, different effort. It can be concluded, the assessment equipment of learning results based on Marzano Taxonomy with Digital Assessment was effective to use in learning.

## CONCLUSION

The Assessment Equipment of learning result based on Marzano Taxonomy with Digital Assessment was developed by using the implementation of the development assessment equipment principles for senior high school by the Directorate General of Primary and Secondary Education of Minister Education and Culture (2015) that concluded shahih, objectives, fair, transparan, integrated, comprehensive and continuous, systematic, based on the criterion and accountable. The drafts which were developed form of the assessment equipment book contents the assessment equipment based on the 2013 curriculum that implement authentic assessment. It was an assessment that had two requirements of learning. They were performances and meaningful. It was expected by the implementation of the assessment equipment, the teachers could identify the

students' weakness and use the process during which the students accepted the information to measure the results of students' achievements as a basis for the teachers to establish the next steps in learning.

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