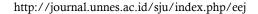# Developing Discovery-Based Reading Assessment to Stimulate Students' Critical Thinking and Creativity in English Learning

Yenni Desnia Waluyo✉

Universitas Negeri Semarang, Indonesia

Article Info	Abstract
	Education in Indonesia needs the activities to build students' thinking skill and creativity. Therefore, this study is conducted to develop discovery-based-reading assessment to stimulate the students' critical thinking and creativity in English learning. This study uses research and development (R & D) at X IPS 2 of SMA N 15 Semarang. The data are gathered through interview, questionnaire, and observation which are aimed to know the existing of the implementation of HOT discovery learning assessment. Meanwhile, the data from pre-test and post-test are gotten by answering questions to measure the students' learning achievement. During the implementation of assessment, the teacher provides some problems and then the students mobilize their whole thinking and skill to solve the problems. The results indicate that the implementation of discovery-based-reading assessment successfully stimulate the students' critical thinking and creativity in English learning. Further, the results also show the students' scores improvement of pre-test and post-test where the reading skill is 67.00 to 88.38. Moreover, the students participate in the process of teaching and learning actively. They are able to work in a group discussion to solve the problems and answer the queestions correctly. Finally, their cognitive ability can be acute. In conclusion, the HOT discovery- based-reading assessment is applicable to stimulate the students' critical thinking and creativity in English learning.

ᵈCorrespondence Address:
Kampus Pascasarjana Unnes, Jl. Kelud Utara III Semarang 5023, Indonesia
E-mail: desniayenni@gmail.com

INTRODUCTION

Education is one of the key vehicles for the intellectual and professional development of our people and plays an increasingly important role in supporting a stronger and more globally competitive Indonesia. However, education in Indonesia still has several problems related to quality and access as well as the even distribution of well-trained teachers. Nowadays, teaching is crucial activity to build attitude of children. They learn many things in school which will influence their future. Teaching is not only teaching, but also the teacher has to assign them character building, spiritual, and creativity. Therefore, it needs the good skills to be teacher because they are required to equip the students.

Innovation in education still held in every year to improve quality of learning activity. Improvement of learning quality purposed to solve all problems that faced, include English learning problems. One of innovation in education that had been done by government is evaluation of curriculum.

In 2013, Indonesian government decide new curriculum named 2013 curriculum for elementary and secondary school. Implementation of that curriculum can be seen in learning process in the classroom. Learning process of schools held in interactive, inspiring, interesting, challenging, and motivated students to be active and give opportunities for their innovation, creativity, independence through their talent, interest, physically and psychology . Paradigm that used in learning process is constructivism. So that learning models that used in learning process based on constructivism paradigm.

Implementation of 2013 curriculum still has many problems. Most of teachers in Indonesia have difficulties in implementation 2013 curriculum. The big problem that face is the lack of teacher understanding about the new curriculum. On the other hand, learning quality in the classroom effects in improvement of student's thinking skill. Teacher as a designer must provide learning atmosphere that can be support improvement of students' thinking skill. Ideally, all students are provided high-quality instruction that offer the opportunity to learn the knowledge and skill. In constructivist class, a teacher does not teach how to answer the questions, but presented problem and encouraging students to find out their strategy in solve the problems.

According to Vygotsky (1978), learning material should be used as a tool to train student's thinking skill, not as a purpose. Beside that, learning not only as rehearsing information and formulas/equation, but also how to use that information and knowledge to sharp the thinking skill. The learning environment should encourage students to engage in higher-order thinking activities. Teachers need to move away from an over- emphasis on content mastery and adopt pedagogies that enable the development of thinking processes. To foster student's higher-level thinking, teachers must possess not only in-depth subject matter knowledge in the field they are specializing in, but also good pedagogical knowledge on how to develop student's higher-order thinking – both in the context of the subject matter they are dealing with and as a general skill. Pedagogical knowledge include learning models based on the purpose in curriculum.

One of learning activity that recommended in implementation of 2013 curriculum is high order thinking. It includes critical, reflective, logical, metacognitive, and creative thinking. higher-order thinking, known as high order thinking skills (HOTS), is a concept of education reform based on learning taxonomies (such as Bloom's taxonomy). Meanwhile, discovery learning is a teaching strategy in which students are given a problem situation, for which they find an answer by making a hypothesis, testing a hypothesis, recording and analyzing their results, and coming up with a conclusion. The idea is that some types of learning require more cognitive processing than others, but also have more generalized benefits. King in his Study said that "Higher order thinking skills include critical, logical, reflective, metacognitive, and creative

thinking." Student's activities can help them to build their thinking skills and problem solving. Effort to encourage student's higher-order thinking skill that have positive effect in increasing motivation and achievement. In short, in learning process it can help students to construct their knowledge and find out the concept through problem solving process.

Education in Indonesia needs the excellent activities to build their creativity. Nowadays, they are asked to be able to compete and create something new in global era. However, in other side, the system and methods that are applied in this country did not support. Therefore, we need the changes to face the challenges in global era. In the globalization era that is filled by challenges and competitions are super tight, everyone is demanded not only have a high level of education, but also required to have a special capability, commonly called skill.

Moreover, several previous studies have become the background on this study. There were many researchers that conducted research concerning with assessment. There were 17 studies which have relation to assessment in education. Hariono (2017), Ivone (2005), Madya (2002) and Rini (2012) had the analysis about fullfillment of assessment in education. It draws on the literature reviews in this field and is also based on personal reflections and experiences of the writer. Those have similarity that the article critically highlights the teaching of English vocabulary in Indonesian schools and universities. It has difference in dealing with curriculum, teaching techniques, instructional media, and vocabulary assessment. In evaluation, fullfillment of assessment in education should be developed to equip their knowledge in requirements curriculum nowadays. In addition, Mambu (2015), Fang (2017), Isnawati (2017), and Munadlir (2015) thought that character education assessment rubrics are developed from the cases reported here, in light of: the Indonesian government's guidelines for assessing character education, critical ELT; and Celce-Murcia's model of communicative

competence. Those have similarity that assessment rubrics are tool to measure the object. However, it has difference like the rubric that they have used is different. So, whatever rubric that they used, it has to be accurate and suitable for topic. Differently, Riagustrianingsih (2015), Sumekto (2015), Zaida (2015), and Khunaivi (2015) described the factors considered in grading decision making are achievement factors in the forms of scores from formal and informal assessment and non achievement factors involving students' effort and behavior, curriculum and school policy. Those have similarity that they used formal assessment to equip students. However, it has difference like kind of assessment that they used is different. So, whatever kind assessment that they used, it has to be suitable for topic. In addition, Mussawy (2009), Lundin (2007), Tamara (2015), Syafei (2010) and Nakamura (2017) had another perspective about realization assessment in education. Those have similarity that it investigates and considers how students and teachers realize school science activities. Students' questions and accounts of their experiences as they become part of an established science content form the focus of this work. Its purpose is to provide an understanding of how two agendas –one, based on students' participation and the other, based on the already established science content – are orchestrated so that both are accounted for. However, it has difference like the activities that they used is different. So, whatever activities that they used, it has to be suitable for topic and students can enjoy the class.

Another study was also conducted concerning with discovery learning. There were 8 studies which have relation for this topic. Makoolati (2012), Khabibah (2017), Sofeny (2017), Jokiranta (2014), Yuliana (2017), Brown (2006), Singravelu (2012), Febriana (2017), Cohen (2008) and Prawerti (2014) had conducted the research in relation to effectiveness of discovery learning in Education. Not only English which is using it, but also in nursing program, science skill also using discovery learning to measure the effectiveness.

Those have similarity that it was using quantitative approach and using statistical analysis. They assumed that discovery learning is effective learning method to increase their critical thinking and creativity..

Another previous studies related to discovery learning is In'am and Hajar (2017). They stated that discovery learning in scientific approach was good to improve the ability of the students in learning geometry. They said that teachers should create lesson that is appropriate to the situation, condition and delivered material. To reach the objectives of learning, teacher needed to prepare his learning activity carefully and appropriately.

Regarding to In'am and Hajar (2017), there is suggestion for the next researcher that they should check first the materials that will be given to the learners so that the result will be good. Besides, there should be any improvement done to keep the quality of the developing discovery-based reading assessment.

Taking into consideration the research gap discussed earlier, the writer did research that focused on the development of the assessments. This research is to develop discovery-based reading assessment to stimulate students' critical thinking and creativity. The writer developed assessments that were able to stimulate students' creativity and critical thinking. The assessments are the form of discovery-based reading assessment.

METHODS

In this study, she uses the research and development. It means that it will use qualitative and quantitative approach. R and D is combination of descriptive, evaluation, and experiment study. There are many instructional design models in developing products. The researcher applies the process of this design stated Borg and Gall (2003) asserts seven stages of developing the product. They are as follows: (1) research and information collecting, (2) need analysis, (3) preliminary product/ plan, (4) product design, (5) validating by the experts, (6) main product revision, (7)

field test, (8) operational product revision, (9) final product, (10) the effectiveness.

The researcher did analysis and determined what material was going to develop. Having got some information from preliminary observation and did their needs analysis, the researcher planned and developed the intended product also she design the form. Afterward, English teacher and experts validated the product in order to know product's feasibility. Furthermore, the researcher did revision based experts' suggestions. Then, she did trying out the product. Next, she did second revision before going to final product. Lastly, she measured the effectiveness of discovery-based reading assessment to stimulate students' creativity and critical thinking by conducting the quasi experimental approach.

RESULTS AND DISCUSSIONS

In this part, the researcher presents the results of the implementation of developing discovery-based reading assessments to stimulate students' critical thinking and creativity.

Development of Discovery-Based Reading Assessment in English Learning

After the writer do planning and designing fulfillment discovery-based reading assessment, she started to develop it. She has to revise the form, after that she has to do trying out before it is applied. And then, after the writer do trying out the form, she also has to revise it. Below are the explanation of it.

There were three steps of revisions that had been done by the expert. The researcher also made three times of revisions based on the experts' suggestions, ideas, critics, and judgements. The revisions dealt with the content of students' book.

The following suggestions were given by the expert in the first revision with regard to lesson plan, the writer should revise lesson plan. She had to mention how much time needed in each teaching learning process, there were too many basic competences in each lesson

plan, so the writer must delete some of them, the writer should explore and mention many indicators in each lesson plan, the writer should revise the learning goal which related with standard and basic competence, the instructions in each activity should be clear enough, the writer should divide the lesson plan into 4 meetings. Each meeting had one lesson plan.

In addition, with regard to research instruments, the writer should change the list of questions for interviewing the English teacher into more detail interview questions.

Finally, in students assessment, the followings suggestions are the instruction must be clear and assessment should fix it to be more relevance with standard of competence and basic competence..

These were the teacher's suggestions on students' assessment. They are the writer should correct some misspelled words, some activities were needed to be recognized to keep the students in a positive learning atmosphere, and student and teacher's books were needed an attractive cover.

After getting the validation form returned by the expert and teacher, the writer revised her product.There were four meetings to develop discovery-based reading assessment. The first meeting was held on 1st april 2018. The writer did pretest to know how far the knowledge of the students about the material. After getting the data from the pre-test, the teacher explained the listening model to students. In this activity, the standard competence is to understand a very simple instructions in the school context, while basic competence is to respond a very simple instruction verbally. The students showed their enthusiasm in teaching learning activity because in explaining the material she used discovery learning relating the topic.

After that, the writer did second revisions based on the trying out. It was on April 18th, 2018. The writer analyzed and revised the form and there were improvement based on the considerations of the writer.

Application of Discovery-Based Reading Assessment in English Learning

The next is application of discovery-based reading assessment. It was presented after being validated by revised experts and teacher based on judgements and suggestions from them. The product were the ability to think critical and creativity. It based on requirements of 2013 curriculum and also requirements of MEA nowadays.

In the last part of developing discovery-based-assessment, the writer used media in order to generate the final product. The final product by using discovery-based-assessment was students could improve their critical thinking and creativity by doing activities of finding implicit meaning of the text.

Effectiveness Discovery-Based Reading Assessment in English Learning

The writer also involved quasi experimental to measure the effectiveness discovery-based reading assessment. It is simple form of research design. There was one group of learners observed. The writer did not hold control group because it had been held by teacher.

In this research, the result of score of students in post-test were better than in pre-test. The analysis provided the writer about information of the effectiveness discovery-based reading assessment by comparing pre-test and post-test within the class. The average of pre-test is 67 and post-test IS 88.38.

Based on the result above, the writer found there were more different result between pre-test and post-test. The writer could see improvement of students' achievement.

There were three steps of revisions that had been done by the expert. The researcher also made two times of revisions based on the experts' suggestions, ideas, critics, and judgements. The goals of expert judgments were to determine the relevance of the assessments toward the material, exercise, curriculum, and the need of the students and teacher. In'am and Hajar (2017) stated that to reach the objectives

of learning, teacher needed to prepare their learning activity carefully and appropriately. They said that teachers had to create lesson that was appropriate to the situation, condition and delivered material. After getting the validation form returned by the expert and teacher, the writer revised her product. The revision dealth with assessment and teaching strategy. The writer will revise points which is not suitable for students because assessment here is crucial element in education to equip stuents' achievement. Having revised the product after conducting trying out, the writer starts to repair the lakness of the form. The writer also added some pictures and videos to illustrate the text. These pictures and videos were expected to lead learners comprehend the text. As we know that students of senior high school like to learn by involving interesting and colorful media because they have emotional intelligence.

The next is application of discovery-based reading assessment. It was presented after being validated by revised experts and teacher based on judgements and suggestions from them. The product were the ability to think critical and ceativity. It based on requirements of 2013 curriculum and also requirements of MEA nowadays. Zaida and Sofwan (2015) said that "Critical thinking is logical thinking based on inference and giving reflective judgments." Furthermore, it focuses on evaluating incidents, issuing judgments and giving justifications for what individuals believe or are absolutely sure of. In this study, the writer wants the students to have critical thinking based on requirements of 2013 curriculum.

In the last stage, the writer measures the effectiveness of discovery-based reading assessment. The writer wants to know how well discovery-based reading assessment for tenth grade students. This study uses a quasi – experimental design. To know the significance, researcher used average. When result of post-test is bigger than (>) the pre-test, it means that it is significant. After researcher analyzed, it could be concluded that there was a significance difference between pre-test and post-test so the developed discovery-based reading assessment

was effective and it could be used as reading assessment in the process of teaching and learning in the class. The critical thinking of the students was seen through their ability to synthesize ideas, evaluate ideas, and draw the conclusion. The creativity of the students was seen through their ability to synthesize ideas, use different point of views, generate and select alternative. The result also showed that students were interested in doing the activities during the treatment. The activities could help the students to be creative and critical in English text. The results of critical thinking and creativity of the reading, students were line with Goreyshi, & Noohi (2013), they found that creativity and critical thinking could be improved. Related to discovery learning, Bajah, & Asim (2002) also found that discovery learning was more effective than conventional learning and it improved the ability of student. In conclusion, developing discovery based writing assessments was effective to stimulate students' creativity and critical thinking.

CONCLUSIONS AND SUGGESTIONS

This study focuses on developing discovery based writing assessments to stimulate students' critical thinking and creativity. The result indicated that the English lesson was given 2 hours a week as a local content. In learning English, the tenth grade of SMA N 15 Semarang needed interesting assessment to equip their achievement. The result of questionnaire showed that students had some difficulties in learning English. Most of students were passive in teaching learning process. Some of them felt bored and did not pay attention because the material which presented by teacher was less attractive.

Teacher-centered learning was also dominantly applied in classroom activity. It was proven that all activities were handled by teacher. To give assessment, the teacher usually used traditional assessment. Sometimes it made her students got bored.

The writer noted some important point that students need an interesting assessment because of requirements of 2013 curriculum and MEA nowadays. The teacher also had difficulty in developing teaching materials for her classes because she had so many classes to be handled. The teacher had no idea to teach english using other interactive assessment, because she was too busy to teach many classes.

The use of discovery-based reading assessment gives some positive influences for the students in the teaching and learning process. Based on the result of observations, questionnaire, pre-test, post-test, the writer assumed that dicovery-based reading assessment can be applied to improve the critical thinking and creativity in tenth gradeof SMA N 15 Semarang. Moreover, the test of effectiveness in quasi experimental design reported that there was significant improvement from the result of pre-test to post-test. It means that all the result of collected data agrees that discovery-based reading assessment can be implemented for improving the learners' competence in learning English.

Discovery-based reading assessment had been tried out was giving the significant progress. The assessment also increased the motivation of the students in learning english,and helped the students to catch the material easier. Beside that, the assessment helped the teacher to teach creatively. It was proven by the result of study showed the significan

Based on the data analysis in Chapter IV and the conclusion above, the writer would like to present some suggestions. They are for the students of Semarang State University who will conduct the next research related to the developing discovery-based reading assessment, they should check first the materials that will be given to the learners so that the result will be good. Besides, there should be any improvement done to keep the quality of the developing discovery-based reading assessment.

Secondly, for all English teachers, developing discovery-based reading assessment is a kind of alternative technique that can be used in teaching learning process and also can be used to all grades. Therefore, it will be better for the teachers to know how to manage the schema activation strategy, make a good discovery-based reading assessment to answer the students' need, and do any evaluations which are useful to improve the discovery-based reading assessment quality.

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