



**DEVELOPING DISCOVERY-BASED ASSESSMENT  
MODULE TO STIMULATE THE CRITICAL  
THINKING AND CREATIVITY OF THE STUDENTS'  
SPEAKING SKILL**

**The Case of Tenth Graders of SMA Sultan Agung 1 Semarang in the  
Academic Years of 2017/2018**

**A Thesis**

**Submitted in Partial Fulfillment of the Requirements for the Master Degree  
in English Education**

**by**

**Roni Wahyudi**

**0203516068**

**ENGLISH LANGUAGE EDUCATION  
PASCASARJANA  
UNIVERSITAS NEGERI SEMARANG  
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## APPROVAL

This thesis entitled “**Developing Discovery-Based Assessment Module to Stimulate The Critical Thinking and Creativity of The Students’ Speaking Performance**” by:

Name : Roni Wahyudi

SRN : 0203516068

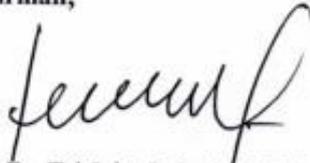
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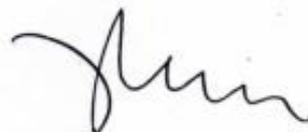
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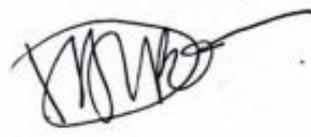
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NIP. 195312131983031002

**Second Examiner,**



Prof. Dr. Dwi Rukmini, M.Pd.  
NIP. 195104151976032001

**Third Examiner,**



Dr. Dwi Anggani Linggar Bharati, M.Pd  
NIP. 195901141989012001

## PERNYATAAN KEASLIAN

Dengan ini saya

Nama : Roni Wahyudi

Nim : 0203516068

program studi : Pendidikan Bahasa Inggris

menyatakan bahwa yang tertulis dalam tesis yang berjudul “Developing Discovery Learning Based Assessment Module to Stimulate the Critical Thinking and Creativity of the Students’ Speaking Performance” ini benar-benar karya saya sendiri, bukan jiplakan dari karya orang lain atau pengutipan dengan cara-cara yang tidak sesuai dengan etika keilmuan yang berlaku, baik sebagian atau seluruhnya. Pendapat atau temuan orang lain yang terdapat dalam tesis ini dikutip atau dirujuk berdasarkan kode etik ilmiah. Atas pernyataan ini saya **secara pribadi** siap menanggung resiko/sanksi hukum yang dijatuhkan apabila ditemukan adanya pelanggaran terhadap etika keilmuan dalam karya ini..

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Roni Wahyudi  
NIM. 0203516068

## **MOTTO AND DEDICATION**

Motto:

Teaching for critical thinking and creativity needs more than to discover the students need, indeed, the students need to discover the knowledge through a scientific process by themselves.

Dedication:

This thesis is dedicated to English Language Education, Pascasarjana, Universitas Negeri Semarang.

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## ABSTRACT

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*Keywords:* Discovery learning, speaking, assessment, critical thinking, creativity.

In the teaching and learning process, assessment is considered a critical component of curriculum design to determine whether the goals of education have been achieved. In fact, many teachers have difficulties to design a suitable assessment instrument align with the teaching and learning objectives as the consequence of the emergence of the revised 2013 curriculum which requires the teacher to develop the students' critical thinking and creativity. This study intended to analyse the realization of speaking assessment in order to stimulate the students' critical thinking and creativity in English Teaching and learning, explain the development of discovery-based speaking assessment module to stimulate the students' critical thinking and creativity, and explain the effectiveness of discovery-based speaking assessment module to stimulate the students' critical thinking and creativity.

Research and Development (RnD) approach was employed with the students of X IPA 3 of SMA Islam Sultan Agung Semarang in the academic year of 2017/2018 as the subjects. This study used quantitative and qualitative data through a test, and the questionnaire, interview, observation checklist, as the instrument in collecting the data. The teacher collaborated with the researcher in developing the discovery-based speaking assessment module. Then, the module was revised based on the experts' recommendations before doing field testing. In the main field test, the students' scores on speaking skill were improved from 56.33 to 76.17, on the critical thinking skill was improved from 56.4 to 76.8, and on creativity, the skill was improved from 56.2 to 76.1. Moreover, when the teacher did a paired sample test, the result showed that the score of Sig. (2 tailed) value (0.00) is lower than 0.05 of those students' scores. These results showed that improvements in the students' scores were significant after they were taught using discovery-based speaking assessments module. To conclude, the significant improvements indicated that discovery-based speaking assessments module were effective to improve the students' critical thinking and creativity.

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# **CHAPTER I**

## **INTRODUCTION**

In this following part, the writer presents the background of the study, the reasons for choosing the topic, the research problems, the objectives of the study, the significances of the study, the scope of the study, and the definition of key terminologies.

### **1.1 Background of the Study**

In teaching and learning process, Assessment is considered as a critical component of curriculum design to determine whether the goals of education have been achieved. As Brown (2004, p.16) stated that assessment, as an inextricable part of the teaching-learning process, are necessary components of a successful curriculum. Accordingly, the teacher must have a sophisticated understanding of assessment literacy to help them in creating and implementing the assessment properly. Thus, the teacher can help the learners to achieve the learning objective and guide them in performing the specifics skills.

Brindley (2001, p.138) argued that assessment which is a variety of ways of collecting information on a learners' language ability or achievement, can be used for various purposes: (1) selection: e.g. to measure learners language proficiency when taking tertiary study; (2) certification: e.g. to give official statement of people language ability for employment purposes; (3) accountability: e.g. to provide educational funding authorities with evidence that intended learning outcomes have

been achieved and to justify expenditure; (4) diagnosis: e.g. to recognize learners' strengths and weaknesses; (5) instructional decision-making: e.g. to decide what material to present next or what to revise; and (6) motivation: e.g. to encourage learners to study harder. Therefore, teachers can explore better ways of supporting students' learning and regulating their teaching strategies through assessment. Indeed, it also can help students to know the areas that they need to improve in attaining the desired learning outcomes.

Accordingly, the teacher must acquire a more sophisticated understanding of assessment literacy to diagnose the individual needs of students. The lack of this exposure might lead the teacher to ignore the importance of assessment to improve instructions and the level of students' achievement. Moreover, teachers might find it difficult to design and implement an assessment to meet the teaching objectives based on the curriculum being implemented. In addition, teachers should also adjust themselves to a curriculum change as it is common in the educational setting. This condition has currently occurred to Indonesian teachers as the consequence of the emergence of the revised 2013 curriculum. The teacher should implement authentic assessment that involves high order thinking skills. Yet, Ahmad (2014) stated that the teachers had difficulties in designing the lesson plan because they have limited procedural knowledge and skills in designing the appropriate lesson plans. Additionally, he explained that the teachers also have a problem in developing the competence achievement indicators that matched the SKL, KI, and KD, not to mention their consideration of learners' characteristics in designing the lesson plans. The teachers' difficulties were caused by their lack of comprehensive

understanding of Curriculum 2013, including the implementation of assessment, such as planning, conducting and reporting the result of students' achievements (Retnawati, Hadi, & Nugraha, 2016).

In the 2013 Curriculum, one of the suggested teaching approaches promoting high order thinking skill is discovery learning. The implementation of this approach should align with the assessment instruments used to assess the students' achievements. In assessing the students, the teacher should design and use the assessment properly to help the learner achieve the learning objective and guide them in performing the specific skills. Unfortunately, some teachers might not have proficient knowledge on how to develop a good assessment that corresponded to the approach being used. As Aliningsih and Sofwan (2015) found in their study that the teachers were mainly complaining about the problems in applying authentic assessment in the 2013 curriculum such as insufficient time, large numbers of students, exhausting and time-consuming activities, and also complicated administration. To complicate the matter, the teachers even did not assess their students appropriately based on the assessment principles. In some cases, they did not utilize proper instruments like question-answer, scoring rubrics, criteria, rating scale, checklist, etc. Similarly, Rukmini and Saputri (2017) found that the teacher had difficulties to implement the authentic assessment properly such as in designing the authentic assessment, implementing the authentic assessment and in scoring students' products as well as in giving students feedback.

Based on the explanation above, the researcher conducted a research and development study to develop the discovery learning based assessment that can

stimulate the critical thinking and creativity of senior high school students speaking performance. The result of this study hopefully can give sufficient information about discovery learning and the proper speaking assessment as required in the 2013 curriculum. Further, the researcher encouraged English teacher to develop their own assessment appropriately, especially in assessing their students' speaking performance.

## **1.2 Reasons for Choosing the Topic**

The reasons for the researcher to study this topic are among others, that the teacher should design and implement the assessment appropriately because it is a critical component in the educational setting which affects the teaching and learning process. In fact, many teachers still have difficulties to design a suitable assessment instrument to align with the teaching and learning objectives. Thus, based on the issues above, the writer collaborated with the English teacher to develop a discovery-based assessment to stimulate critical thinking and creativity of the students in their speaking performance which covers specific goals. Based on the explanation above, this study conducted under the title of "Developing Discovery-based Speaking Assessment Model to Stimulate the Critical Thinking and Creativity at Tenth Grades of SMA Islam Sultan Agung Semarang" with some reasons as follows:

1. The requirement of the revised 2013 Curriculum to use authentic teaching method as well as authentic assessments.

2. The English teachers' difficulties dealing with the implementation of an authentic assessment to stimulate the critical thinking and creativity of the students' speaking performance.
3. The requirement of the national goal in the 2013 curriculum for the students to perform high order thinking skill.
4. Discovery learning as a constructivist approach promoting critical thinking and creativity.

### **1.3 Research Problems**

The research problems of this study are:

1. How is the factual condition of the teacher's assessment to stimulate the critical thinking and creativity of SMA Students?
2. How is the development of discovery-based speaking assessment module to stimulate the students' critical thinking?
3. How is the development of discovery-based speaking assessment module to stimulate the students' critical thinking?
4. How effective is the problem-solving based assessment module can stimulate the students' critical thinking and creativity?

### **1.4 Objectives of the Study**

Based on the formulation of the issues raised in this study, the research objectives obtained as follows:

1. To analyze the factual condition of the teacher's assessment that has been used by the English teacher to assess the students' speaking skill.

2. To develop the discovery-based speaking assessment module that will be used to stimulate the students' critical thinking.
3. To develop the discovery-based speaking assessment module that will be used to stimulate the students' creative thinking.
4. To evaluate the effectiveness of discovery-based speaking assessment module that has been developed to stimulate the students' critical thinking and creativity.

### **1.5 Significance of the Study**

The significance of the study are as follows:

1. The findings in analyzing the factual condition of assessment that has been used by the English teacher to assess the students' speaking skill would contribute to the theoretical aspect towards the implementation of 2013 curriculum in English learning. Practically, it can help the teacher to reflects their current assessments practices, whether it has matched to the curriculum requirements. Pedagogically, it stimulates the English teacher to implement a proper assessment to stimulate the students' critical thinking and creativity by involving higher-order thinking skill as one of the 2013 curriculum requirements.
2. The result of developing discovery-based speaking assessment module was useful for the teachers or readers as it gives a clear example of discovery-based speaking assessment module that is usually used by the English teacher. While pedagogically, Pedagogically, it encourages the

English teacher in developing a discovery-based speaking assessment module to stimulate the students' critical thinking and creativity. Further, the teacher can use it as a reference when they are arranging a discovery-based speaking assessment module to stimulate the students' critical thinking and creativity. Practically, this study can be used as guidance for English teacher and reader in developing discovery-based speaking assessment module to stimulate students' critical thinking and creativity.

3. Theoretically, the result of evaluating the effectiveness of discovery-based speaking assessment module that has been developed was expected to give the insight on the result of the effectiveness of discovery-based speaking assessment module to stimulate the students' critical thinking and creativity. pedagogically, the result of this study can be used as a guide by the English teachers in designing good and correct assessment according to the requirement Of 2013 curriculum, especially in designing discovery-based speaking assessment module to stimulate the critical thinking and creativity of the students' speaking skill.

## **1.6 Scope of the Study**

This study focused on the issues related to the development of discovery-based assessments module to stimulate critical thinking and creativity of the students' speaking performance. The object of the study is the tenth grades of SMA Islam Sultan Agung Semarang.

## **1.7 Definitions of Key Terminologies**

The definitions of key terms are important to recognize the key points of the study so that the same comprehension of the writer and the readers can be attained. It helps the readers to trace the availability of the thesis. In this study, they refer to the following explanation, such as;

### **1.7.1. Discovery Learning**

McComas (2014) stated that discovery learning (Teaching) is a type of inquiry-based, constructivist teaching which involve the students to investigate problems given by the teacher or selected from personal interests to look at examples and phenomena in the natural world, reach personal conclusions, and construct a personal understanding of the process.

Hassard (2005) stated that discovery learning use science activities designed to help the students in assimilating new concepts and principles through the activities of observing, measuring, inferring, predicting, and classifying. Moreover, Joolingen (1998), claimed that discovery learning is a type of learning which requires students to construct their own knowledge through the experiment in the process inferring rules based on the experiment results; thus, the main concept of discovery learning is the students to constructing the knowledge. So, discovery learning is a way of learning in which students find the knowledge by themselves.

### **1.7.2. Higher order thinking skills (HOTS)**

Brookhart (2010) stated that higher-order thinking definition consists of three categories: (1) higher-order thinking in terms of transfer, (2) in terms of critical thinking, and (3) in terms of problem solving. King, Goodson, and Rohani (2016)

stated that when individuals encounter unfamiliar problems, uncertainties, questions, or dilemmas, their higher-order thinking skills which include critical, logical, reflective, metacognitive, and creative thinking are activated. Then, Othman and Kassim (2017) defined Higher order thinking skills (HOTS) as “a skill that requires organizing thoughts based on the ability to describe, interpret, create, reflect and correlate with the current situation.”

### 1.7.3. Critical thinking

Critical Thinking refers to the ways that individuals reflect on and participate in the world through the organized evaluation of evidence and argumentation to decide what to believe or do (Ennis, 1985, pp. 45). Sarigoz (2012) defined critical thinking as the intellectual thinking skills such as reasoning, analyzing, problem-solving, reading comprehension, scientific thinking, creative thinking, judgment and deciding accurately of the individual.

### 1.7.4. Speaking Assessment

Assessment is an ongoing process including a much wider domain such as assessing the students' performances, students' responses on a question, students' comment, etc. that can be done by self, teacher, or other students (Brown, 2004, p. 4). Whereas more specifically, Alderson and Bachman (2004) said that speaking assessment is direct judgments about a range of aspects of what is being said, as it is being said which means that the assessment might be determined not only based on particular features of speech (e.g. pronunciation, fluency, accuracy) the interlocutor notice to at any point in time, but also other factors such

as the language level, gender, and status of the interlocutor, his or her relationship to the candidate and the personal characteristics of the interlocutor and candidate.

### **1.8 Outline of the Research Report**

The writing of this thesis begins with the introduction in Chapter I. In this chapter, it is described in detail regarding the background of the study, reason for choosing the topic, research problems, objectives of the study, significances of the study, scope of the study, definition of key terminologies and outline of the report.

Regarding the Review of Related Literatur is presented in Chapter II. There are three main things presented in this chapter. These three things are (1) about reviews of previous studies, (2) theoretical review, (3) and theoretical framework. The first part discusses the works related to the development of the assessments that have been carried out by the previous researchers. Meanwhile in the second part discusses the theories that become the basis of this study; (a) problem-based learning, (b) problem-solving based assessment, (c) critical thinking and creativity, (d) and writing skill. Furthermore, the last part discusses the theoretical framework of the study.

The next research methodology is presented in chapter III. This chapter describes the research design in the form of Research and Development which is divided into three main stages; (1) define and design stage, (2) development stage, (3) and final stage. Each of these stages is divided more detail into (a) Procedures of the study, (b) Subject of the study, (c) Instrument and Technique of collecting the data, (d) Technique of data analysis, (e) and triangulation.

The answers to research problems are presented in Chapter IV which contains the results of the research, which are clarified into three according to the stages of the research. In this chapter, the writer presented and discussed the findings of the research and interpretation of the data on the developing of problem-solving based assessment model to stimulate the critical thinking and creativity of the students' writing skill.

Finally, to end the writing of this thesis, various kinds of conclusions and suggestions are presented in chapter V which also concludes the report of the results of this research.

## **CHAPTER II**

### **REVIEWS OF RELATED LITERATURE**

In this chapter, the writer explained the review of related literature which consists of reviews of previous studies, theoretical review, and theoretical framework.

#### **2.1 Reviews of Previous Studies**

This part discusses some of the previous studies that concern the development of the assessment model to stimulate the critical thinking and creativity of the students' speaking performance.

The first study is about the implementation of an authentic assessment to measure students' English productive skills based on 2013 Curriculum by Rukmini and Saputri (2017). The result of the study revealed that it was not conducted properly in the stages of designing the authentic assessment, implementing the authentic assessment and in scoring students' products as well as in giving students feedback. Similarly, A study by Zaim, (2017) found that the English teachers were not fully ready to implement the scientific approach in their instructions, especially in the assessment process (Wijayanti, 2015). Further, Retnawati, Hadi and Nugraha (2016) also found that the teachers had not fully understood the assessment system. They also had difficulties in developing the instrument of attitude, implementing the authentic assessment, formulating the indicators, designing the assessment rubric for the skills, gathering the scores from multiple measurement techniques,

and finding feasible application for describing the students' learning achievements (see also Ashraf & Zolfaghari, 2018; Maba, 2017; Aliningsih & Sofwan 2015; Darsih, 2014; Ahmad, 2014). So it is important for the teacher to have adequate assessment literacy that matches the curriculum requirements. By seeing these previous study, I hope that my research will give English teachers some enlightenment and contribution to solve the problem.

The second study is about discovery learning. Several researchers have proven that discovery learning method is effective to improve the students' achievement score (Ramdhani, Usodo & Subanti, 2017; see also Astra, Nasbey & Muharramah, 2015; Balim, 2009; Masril, 2018; Parno, 2015; Supliyadi, 2017; Wijayanti, 2017). Discovery learning also can enhance the performance of EFL learners speaking ability, writing ability, reading ability, listening ability (Ahour and Mostafee, 2009; Annisa, Nappu & Natsir, 2018; Hanafi, 2016; Mushtoza, 2016; Rahmi & Ratmida, 2014; Sofeny, 2017). Further, Discovery learning is effective to improve the students' HOTS, critical thinking and creativity (Gholamian, 2013; Pardede & Suyanti, 2016; Kistian, Armanto & Sudrajat, 2017; Kitot, Ahmad & Seman, 2010; Martaida, Bukit & Ginting, 2017; Nuryakin & Riandi, 2017; Wartono, Hudha & Batlolona, 2018). Finally, Discovery learning can increase learners' motivation (Eskandari & Soleimani, 2016; Feriyanti, 2014). Although these previous study proved the effectiveness of discovery learning approach on students' learning achievements, students' English skill, students' critical thinking and creativity, and also students motivation, it didn't involve the use of assessment in conducting discovery learning instructions.

The third study is about high order thinking skill. Various researcher have found that in their investigation study found that purposely teaching with high order thinking would enhance the students' critical thinking, speaking skill and it also can increase the students motivation (Barnet & Francis, 2012; Bastos & Ramos, 2017; Barak & Dori, 2009; Ganapathy & Kaur, 2014; Miri, David and Uri, 2007; Mustapa, 2014; Raiyn, 2016; Ramadhana, Rozimela & Fitrawati, 2018; Ramdiah, Abidinsyah & Mayasari, 2018; Rubin & Rajakaruna, 2015; Setyarini, 2018; Widana, 2017). Moreover, in another study, it is argued that the teacher also needs guidance or HOT module to facilitate their teaching easily in the classroom (Fitriani, Suryana& Ghullam, 2018; Hassan et al, 2017; Ganapathy et al, 2017; Saïdo et al, 2015, Othman & Kassim, 2017). So the implementation of HOTS to students need careful and extensive preparation, appropriate plan, training, and sufficient supports (among others) from the education community, as the role of a teacher is crucial (Azis et al, 2017; Abdullah et al, 2017, ).

The fourth study is about critical thinking and creativity. A study by Dwee et al (2016) revealed that even though the teachers aware that their students lack critical thinking skills, they do not really emphasize these skills and prefer to focus on the subject matter because of having insufficient knowledge on how to integrate critical thinking skills into the courses. Based on the finding, they suggest that the teacher should have an opportunity to join relevant teacher training courses on how to embed critical thinking skills in ESP classrooms or to freely share their teaching practices through available platforms. Thus, teacher instructional competence is

important in integrating critical thinking skills into their teaching (Leon-abao, 2014; Slameto, 2017).

In critical thinking instruction, explicit instruction combined with practice is required such as the use of task, critical reading strategies, and question, brainstorming, infusion approach, CTL experimental method, flipped classroom, group discussion, scientific-based approach, and problem-based learning model. (Aizikovitsh-udi & Amit, 2011; Anazifa & Djukri, 2017; Cojocariu & Butnaru, 2014; Fatimah, 2017; Hairida & Hadi, 2017; Heijltjes, Van Gog & Paas, 2014; Istikomah, Basori & Budiyanto, 2017; Kawuryan, Hastuti & Supartinah, 2018; Maslakhatin, 2017; Mulyono, 2018; Nurnia et al, 2018; Nursofah, Komala, & Rusdi, 2018; Pratiwi, Rahayu & Fajaroh, 2016; Rahman & Samanhudi, 2010; Shehab & Nusbaum, 2015; Usmeldi, Amini & Trisna, 2017; Wei, 2018; Yusria & Budiarta, 2018; Zhou, Huang & Tian, 2013). Further, the use of media can also be so beneficial such as card sort; textbook, digital storytelling; module. (Hairida, 2016; Ilimi & Rachmadiarti, 2017; Kharismawan, Haryani & Nuswowati, 2018; Khusniati et al, 2017; Ming et al, 2014).

Another study about critical thinking and creativity is by Sarigoz (2012) who conducted a study to measure the senior high school students' critical thinking from 4 different schools (see also Guntara & Pamungkas, 2017; Hursen, Kaplan & Özdal, 2014; Saadati, Tarmizi & Bayat, 2010; Sosu, 2012; White et al, 2011; Widyastuti, 2018; Yan piaw, 2010). The result of his study yield that there was a variation of critical thinking among the students. Based on his finding, he suggests that the students should take continued critical thinking lesson from primary school to

senior high school. He also highlights the importance of both teacher, parents, and people around the students could participate in helping the students or people around them building critical thinking skills to make decisions accurately. In order to assess the students' critical thinking, it is beneficial to use multi-response format measurements as stated by Ku (2009) that using multiple choice and open-ended measurement format can assess individuals' spontaneous application of thinking skills by showing the ability to recognize a correct response. All these previous studies give the researcher some enlightenment on how to build critical thinking measurement unit to use in my study.

From the discussion of previous studies above, it can be concluded that the assessment model that should be implemented by the teacher in the teaching and learning process can influence the students' learning outcomes. Therefore, the study on the development of the assessment model is very important to be employed. Thus, in this study, the researcher tried to conduct the research about the realization of assessment used by the teacher and develop discovery learning based assessment model to stimulate the critical thinking and creativity of the students' speaking performance.

## **2.2 Reviews of Theoretical Studies**

In this part, the researcher presents some reviews of theoretical studies related to the discovery learning, speaking performance, and critical thinking and creativity.

### **2.2.1 Discovery Learning**

The notion of discovery learning which firstly introduced by Brunner in 1960 emerged from the cognitive approach by Piaget. Discovery learning enables students to learn more effectively by constructing their own knowledge (Balım, 2009; Mayer, 2004). Gholamian (2013) stated that in this method, teachers do not directly teach the subjects, instead, they facilitate the students to find and discover themselves. Ramdhani, Usodo, and Subanti (2017) argued that principally, in discovery learning, the teacher delivers the material not in the final form, as it will encourage the students to find the needed information on its own, then they combined it with their already exist knowledge to achieve final understanding. So, it can be concluded that discovery learning strategy is an active learning strategy in which the facts or the contents of the topic are not given by the teacher at the beginning of the lesson directly, but the learners must discover it through observing and experimenting activities as the rules of discovery learning (Rahmi & Ratmida, 2014)

Through these act like scientific activities, Ahour and Mostafee (2009) said that learners become autonomous learner which contribute to the development of their cognitive skills such as connecting, generalizing, and hypothesizing. Further, Kistian, Armanto, and Sudrajat (2017) argue that Using discovery method is one way of teaching that involves the students in the process of mental activity through the exchange of opinions, with discussions, seminars, self-reading, and self-test. Besides that, Kitot, Ahmad and Seman, (2010) assumed that Discovery learning is an inquiry process found in exploratorion which involves the question of what is

found and how an answer is obtained. Moreover, Balim (2009) suggested that the discovery learning method necessitates the students' commenting on the concepts, information, and incidents by discussing and asking questions and reaching the information themselves, in other words, they discover and find the solution through practice. So, Discovery learning is more student center method where the teacher acts as a mentor and facilitator who direct the students in building their own knowledge by giving the problems to be solved through scientific steps (Kistian, Armanto & Sudrajat, 2017). Gholamian (2013), In addition, to trust the growth and capabilities of learners, teachers do not act as a source of information. The main targets of the discovery learning model are: maximum student engagement in teaching and learning activities and develop self-belief about what is found during the learning process (Martaida, Bukit & Ginting, 2017).

There are 5 fundamental principles of discovery learning explained by Hour and Mostafee (2009) as follows: First, students are active because they actively absorb new knowledge through hands-on activities to find the solution to problems. Second, discovery learning focuses on the process, how the content is learned. This method occupies students a deeper level of understanding since the learning focus is to understand what is being learned through the process of analyzing and interpreting information, rather than correct answer as a result of memorization. Third, Discovery learning does not stress getting the right answer. The focus is on learning and just as much learning can be done through failure as success. Fourth, the feedback is important as a competition formula when students

are encouraged to discuss their ideas to deepen their understanding. Lastly, discovery learning offers deeper learning opportunities.

Based on the definition and the principles explained above, the implementation of discovery learning might offer some benefit. Wijayanti (2017) argued that the strength of discovery learning are: deepens learner's prior knowledge and understanding, develops students into autonomous learners, promotes lifelong learning skills, engage the students as active learner, develops metacognitive skills (including some higher level cognitive strategies), improve students motivation through the experiment and discover activity; fosters curiosity, opportunity to analyse what happened, and to record a successful discovery, personalizes the learning experience, develops problem solving and creative skills.

More specifically, Martaida, Bukit, and Ginting (2017) stated that discovery models can promote students' critical thinking and their cognitive abilities. They explain the reasons as follow: firstly, discovery learning activities benefit the students because their gain knowledge is not obtained from the way of memorization but through research activities or scientific work involving different stages of observation, formulating questions, creating hypotheses, collecting data and making a conclusion. Secondly, In making a conclusion, students are trained to think logically because they should provide a logical argument to support their conclusion. This capability can help students to improve conceptual understanding which will improve student learning outcomes through a correct understanding of concepts. Thirdly, the students are trained to have a systematic way of thinking because they following the patterns of scientific methods to gain knowledge.

Despite of its advantages, Wijayanti (2017) also explain it's weaknesses such as: the students might have cognitive overload; without a framework, the learner will confuse; Students might deal with misconceptions ("knowing less after instruction") because teachers may fail to detect situations needing strong remediation or scaffolding for the weakness students tendency for being passive, hiding their incapability to solve the problem; In addition, to solve a complex problems, students need many schemas, otherwise the learner is stuck if they don't have sufficient information needed in their long term memory; is not easy to implement discovery learning, since the learners need to possess a number of cognitive skills and be intrinsically motivated to learn.

In conclusion, to achieve effective teaching and learning through discovery approach, students need teachers' assistant through their guidance that providing valuable instructional methods, various scaffolding such as powerful cognitive tools, assignment, and also meaningful feedback in every step of the scientific process.

### **2.2.2 High order Thinking**

Hassan, Rosli & Zakaria (2016) stated that there is stronger awareness about the importance of higher-order thinking skills triggered by the changes in education at the international level so the students must be equipped with the knowledge and skills requires in solving their daily life problem. As a result, Many education systems have integrated high order thinking in their teaching to enhance the students critical thinking as a preparation to deal with the requirement of the 21st-

century workforce (Azis et al, 2017). Othman & Kassim (2017) defined Higher order thinking skills (HOTS) as “a skill that requires organizing thoughts based on the ability to describe, interpret, create, reflect and correlate with the current situation”.

Smith and Darvas (2017) argued that the importance of HOTS incorporation in the teaching process is its ability to encourage students autonomy which led them to think critically (Barnet & Francis, 2012; Miri, David & Uri, 2007). indeed, as a major component of creative and critical thinking pedagogy, HOTS can help students develop more innovative ideas, ideal perspectives, and imaginative insights. Further, the development of students HOTS occurs as a result of a continuous practice that involves tasks to stimulates the thinking skills in analyzing information to determine the problem, evaluating the problem and creating new workable solutions (Chinedu and Kamin, 2015, Hassan et al, 2017).

HOTS should be an essential aspect of the teaching and learning process because one of the major goals of teaching is to ensure that students can think and solve problems critically (Chinedu and Kamin (2015). However, Hassan et al (2017) showed that the teacher is low motivated to implement HOTS in their teaching due to the lack of knowledge on how to integrate it. Moreover, Azis et al (2017) stated that promoting HOTS among students requires careful and extensive preparation, appropriate plans, training and resources and sufficient supports (among others) from various quarters of the education community, and the roles of teachers are particularly crucial. Thus Hassan, Rosli, and Zakaria (2016) stated that teachers play important roles in ensuring the implementation of the program to be

a success because, in the classroom, teachers as the agents of change need to understand (Azis et al, 2017), practice and apply HOTS (Barak and Dori, 2009) in order to teach the skills effectively.

Chinedu and Kamin (2015) propose some of the strategies that could be used in enhancing HOT in the classroom such as: take the mystery away and teach the concept of concepts, Teach concept of concepts, Name and categorize concepts, Move from concrete to abstract and back, Teach inference and connect concepts, Teach question-answer relationships, Include brainstorming activities in the lessons, Use teaching techniques that provokes higher thinking levels, Emphasize feedback generation for students. Moreover, they also recommendations in designing and teaching for the development of higher order thinking skills: Design lessons should be taught building on the five basic foundations (conceptual, technical, aesthetics, constructional and marketing range) of creative design decisions as students insights are broadened and opened when they are taught to think in relation to these five areas; Teach students to keep track of their thinking, engaging in a purposive and conscious evaluation of thinking is in itself a higher level of thinking. As students will be able to critically engage in analysis, evaluating and creating something new and insightful when they do so; Use instructional teaching methods such as problem-based learning to involve students in higher order thinking, take students in brainstorming activities to teach them idea and solution generation.

Hassan et al (2017) said that the items of HOTS should contain analyzing, evaluating and creating to assess students cognitive skills. The elements can also be

cognitive skills in new situations to resolve daily life problems. Hence, HOTS items assess the ability of students to apply knowledge, skills, and values in making of reasoning and reflection for problem-solving, decision making, innovative and able to create something. This makes them proficient to apply and use knowledge in new situations, analyze and deliver ideas to components, to understand the relationship between components and can make judgments and decisions based on specific criteria. Furthermore, students can also generate or think of new ideas and new ways by using the information. To promote the students to think out of their normal thinking box, the teacher can use questions as a tool.

Therefore, teachers need to have a reference that is adequate and sufficient to build knowledge and insight into the HOTS assessment. According to Widana (2017), HOTS assessment has the following characteristics: measuring the high-level thinking skills (analyzing, evaluating and creating), based on contextual issues (typically in the form of cases), and are not routine (not familiar). He also suggests the procedure to create HOTS assessment through a) analyze the KD that can be created problems HOTS, b) arrange gratings matter, c) write down the items on the card matter, d) determining the answer key (the form of multiple choice questions) or compose rubric / scoring guidelines (shape about the description), e) conduct a qualitative analysis, and f) perform quantitative analysis.

HOTS assessment benefits the students since it will increase the motivation of learners for the assessment HOTS can connect the subject matter in the classroom with real-world contexts so that learning is felt more meaningful; 2) improve learning outcomes for the assessment HOTS can train the way learners think

creatively and critically, not just being able to memorize or understand any factual knowledge and concepts; and 3) improving the competitiveness of learners both at national and international level, because through work experience HOTS assessment of learners will have the ability to think critically and creatively better. (Widana, 2017)

### **2.2.3 Critical Thinking and Creativity**

A change in the learning process occurs as a result of the paradigm shift in the education (Fatimah, 2015), from a teacher center which focuses on what to teach into the teaching of how to think, indeed, how to be a critical thinker (Aizikovitsh-Udi & Amit, 2011). As Sarigoz (2012) argued that educators aimed to facilitated the individuals to comprehend critical thinking at all points and to decide accurately by thinking critically when dealing with a problem to avoid mistake and to approach the matters critically, rationally and scientifically.

In all aspects of educational studies, creative and critical thinking are both crucial for students (Piaw,2010). In spite of being an educational choice, critical thinking (CT) becomes an inseparable part of education (Zhou, Huang & Tian, 2013). To acquire these competency, students need more than just read a textbook, they should learn to enhance skills in judging information, evaluating alternative evidence and arguing with solid evidence which is both vital for students to perform well in school and also a requirement in future workplaces, social and interpersonal contexts involving careful and independent decision making (Ku, 2009). For this capability is indispensable in life, thinking skills and creativity are competencies

that must be trained to the students. (Fatimah, 2015), through learning activities in schools (Anazifa & Djukri, 2017) and 'critical thinking' lesson that is applicable beginning in primary school, lasting until high school (Sarigoz, 2012). This requirement is in accordance with the characteristic of learning in 2013 Curriculum that is student-centered and developing students' critical thinking (Hairida & Hadi, 2017).

The critical thinking definition has been explained by many experts. Firstly, Scriven & Paul (2007) defined critical thinking as the systematic process of mental activity which actively and skilfully in conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated through observation, experience, reflection, reasoning, or communication, as a reference to belief and action. Secondly, Critical thinking as the intellectual thinking skills such as reasoning, analyzing, problem-solving, reading comprehension, scientific thinking, creative thinking, judgment and deciding accurately of the individual (Sarigoz, 2012). Thirdly, Bassham, et al (2011) suggests that critical thinking skills as requirements of cognitive skills to effectively identify, analyze, evaluate arguments or claims what is true, locate and resolve subjective allegations, formulate and present the right reason and support the logical conclusion, as well as make decisions about what is to believe and what will be done. (Hairida, 2016). Fourthly, Critical thinking is a more complex form of thinking activity in analyzing more specific ideas, differentiating, choosing, identifying, assessing, and developing them in a more perfect direction as a process and an ability to make rational decisions (Usmeldi, Amini & Trisna, 2017). Lastly, Dwee et al (2016)

concluded that critical thinking as a skill to help learners in achieving better understanding through think actively about their own learning process and discover how to solve problems by evaluating different perspectives which could help learners in learning more effectively.

Critical thinking is a learned skill that requires instruction and practice in which Education instructors can enhance students' critical thinking skills by (1) Making students active in the learning process using instructional strategies (2) focusing learning on process rather than on the content, and (3) using intellectual challenge assessment techniques (Snyder and Snyder, 2008). Further, The strongest effect of instruction occurs when participants received quite explicit instruction regarding unbiased responding, however, the weakest and insignificant results received when participants only had to indicate what they should do to avoid bias (Heijltjes, Van Gog & Paas, 2014). Ilmi & Rachmadiarti (2017) stated that critical thinking competence can be achieved when people have knowledge about the material being learned through scientific literacy as people can use their knowledge and information to understand, communicate and apply what they know, so they have high attitude and sensitivity to themselves and their environment in making decisions.

Teaching students to become critical thinkers has not been a simple task for the difficulties are multifold (Ku, 2009). Dwee et al (2016) argue that when language lecturers/teachers create a thinking classroom, they faced multi-layered challenge which cannot be solved by simply teaching students how to think critically, indeed it would be very helpful to enhance other aspects such as improving students'

language proficiency, reducing language anxiety and guiding students in expressing their thoughts clearly and confidently using the target language. So, as Dwee et al (2016) claimed that Teachers' instructional competence is very important to develop the students' comprehension and critical thinking ability by creating environments in which everyone has a chance to learn. In this case, the teacher can influence the students critical thinking ability by using varied materials and meaningful learning activities which basically include the art of questioning (Leon-Abao, 2014).

Moreover, Gregory et al (2013) proposed eight guidelines to encourage creativity in the classroom setting as the following: (1) provide a wealth information in specific content areas to the students and make sure the students maintain the information, (2) Give the students open-ended questions that allow students to suggest several ideas and varied solutions. (3) promote idea generation by asking questions to have multiple responses or providing problems that give students opportunities to think of alternative ways to solve problems. (4) ask the student to think about implications and implementation to each potential solution that a student suggests. (5) Include group work opportunities when presenting multi-part problems, (6) give students a novel relationship and have them generate items that, when related, exemplify that relationship; (7) provide students with two or more unrelated ideas and ask them to find a novel relationship; (8) include external mediators in certain group work situations.

#### 2.2.4 Speaking Assessment

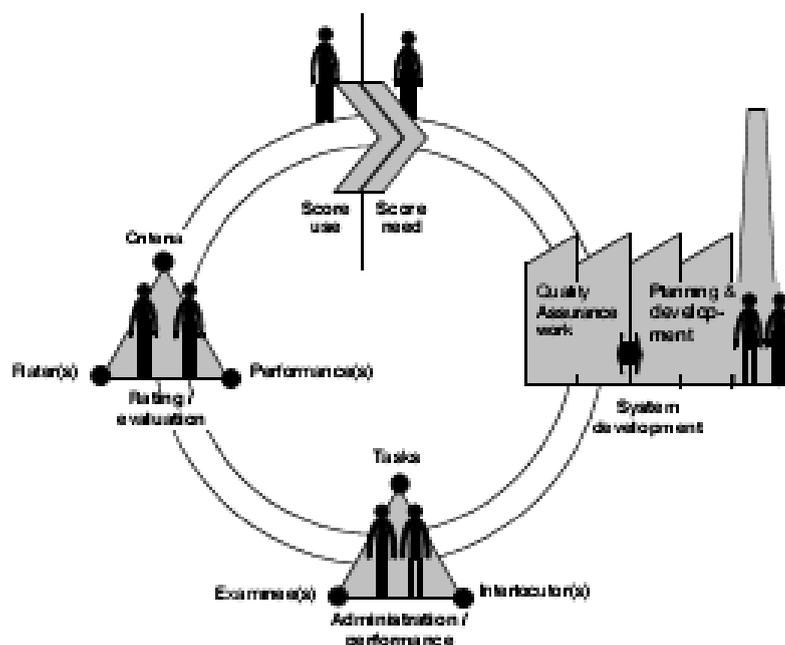
Jannah and Hartono (2018) stated that the goal of teaching speaking is to improve the students' communicative skill in interacting with others because to acquire a language, the learners do not only learn how to compose and comprehend correct sentences as isolated linguistic units of random occurrence, instead they learn to use sentences appropriately to achieve a communicative purpose. Kayi (2006) offered several activities in teaching to promote speaking such as discussions, role play, simulations, information gap, brainstorming, storytelling, interviews, story completion, reporting, playing cards, picture narrating, picture describing, find the difference.

Furthermore, in teaching speaking, Kayi gave the following suggestions: (a) providing a rich environment that contains collaborative work, authentic materials, and tasks, and shared knowledge, (b) involving each student in every speaking activity; (c) increasing student speaking time; (d) giving positive response to the students work; (e) asking questions that prompt students to speak more; (f) Providing written feedback like; (g) not correcting students' pronunciation mistakes too often; (g) Involving speaking activities outside the class; (h) moving around to check the students work; (i) exposing the students to the vocabulary they need in speaking activities; (j) diagnosing the students problems

Luoma (2004) argue that speaking skills as an important part of the curriculum in language teaching and important object of assessment as well. In the 2013 curriculum, the teachers are required to use authentic assessment. Rukmini and Saputri (2017) suggested that in the implementation of the authentic

assessment, the teacher had to consider two things: (a) teacher's ability to design an authentic assessment and learning objectives which suitable for the students, (b) providing the scoring instrument. Thus, speaking skill is one of the objects of assessment in the 2013 curriculum to measure the students' performance by using authentic assessment.

Suwandi dan Taufiqulloh (2009) mentioned some steps in assessing speaking including the step of identifying the purposes of speaking assessment, planning speaking assessment and designing speaking test rubrics. Further, they also propose some activities that can be used in speaking assessment such as interview, Picture Cued-Tasks, Paraphrasing, Role Play, Games, Oral Presentation and Debates. Whereas Luoma (2004) proposes the cycle of assessing speaking to teachers and researchers who are interested in reflecting on their speaking assessment practices and developing them further. She explained that in speaking assessment, the given tasks guide the examinees' talk which outlines the content and general format of the talk to be assessed and they also provide the context for it. Since the focus of speaking assessments is on the student's ability to interpret and convey meanings for authentic purpose in an interactive context, it is required that the teachers use assessment tasks which can simulate authentic situation to a classroom setting (Rukmini and Saputri, 2017).



**Figure 1** the activity cycle of assessing speaking by Luoma (2004)

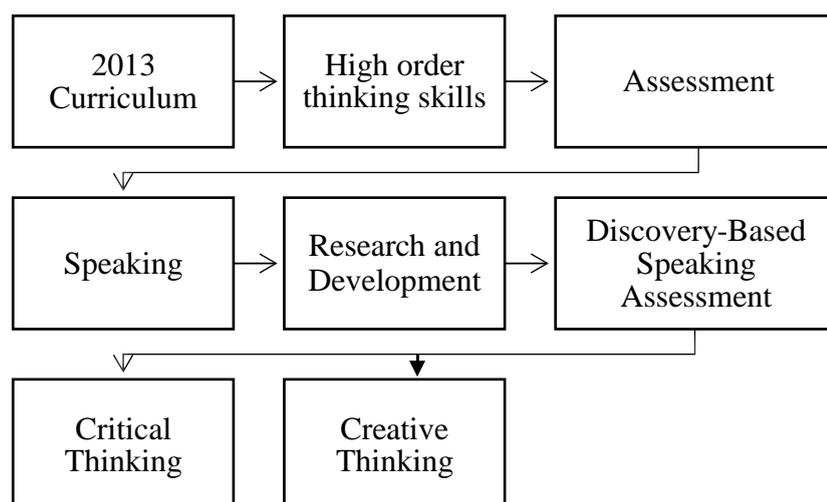
To sum up, assessing speaking requires complex and carefully planning procedure involving many stages that cover analysis of many variables such as need analysis, task designs, speaking scale to achieve the valid and reliable speaking assessment. As Rahmawati & Ertin, 2014 recommended that teachers should develop their speaking assessment which is appropriate and contextual.

### 2.2.5 Theoretical Framework

The implementation of the 2013 curriculum in Indonesia is followed by changes in the assessment standards. The teachers shift into a new paradigm from using traditional assessment system into an authentic assessment standard based on the demands of the newest curriculum requirements. Assessment in the 2013 curriculum involves high order thinking skills aspects in its instruments. Indeed, these objectives can be achieved through the use of discovery learning assessment

models. This model should give some appropriate task for the students to practice finding the required knowledge they need to deal with the real-world context, which at the same time can stimulate their critical and creative thinking.

The use of discovery learning based assessment models needs careful planning and sufficient knowledge from the teachers. However, preliminary research indicated that many teachers have insufficient knowledge to implement authentic assessments properly. This lack of knowledge leads them to confinement of involving high order thinking skill aspect to promote students' critical and creative thinking. These obstacles lead the researcher to conduct a study focussing on the development of discovery learning based assessments module to stimulate the students' critical thinking and creativity. These assessments module involve the use of high order thinking task. In this case, the researcher applied these assessments module to measure the students' speaking skill which requires the students to perform the various task given.



**Figure 2 Theoretical Framework**

## **CHAPTER V**

### **CONCLUSION AND SUGGESTION**

By referring to the findings of the study, the writer provides conclusions and suggestions as follows.

#### **5.1 Conclusion**

The purpose of this study was to develop the discovery based assessment module to stimulate the students' critical thinking and creativity in speaking skill. After conducting the research and getting the result, here the researcher summarized some of the following conclusions.

Firstly, discovery based assessment module to stimulate the students' critical thinking and creativity was developed based on the results of the preliminary research. The results of the preliminary research concluded that the English teacher had insufficient knowledge of how to implement the discovery learning teaching method although, in his teaching document, the researcher found that he already used the scientific approach. Consequently, he got difficulty in designing the rubric assessment for assessing the students' speaking skill.

Secondly, based on the results of the preliminary research above, the researcher tried to meet the needs of the teacher and students by developing the discovery based assessment module to stimulate the students' critical thinking and creativity especially in speaking skill. In this case, the researcher helped the teacher in developing the discovery based speaking assessment module.

Thirdly, after the discovery based speaking assessment module was developed, it would be validated by the expert judgment. The validators came from a different level of education, the one was a lecturer, and another was a senior teacher and a former Ketua MGMP. They were Prof. Dr. Suwandi, M. Pd (Senior Lecturer at UPGRIS) and Farida Fahmalatif, S. Pd., M. Pd (Senior Teacher at SMK N 1 Jambu). Based on the results of the validation showed that the discovery based speaking assessment that has been developed was worthy to be used to stimulate the students' critical thinking and creativity.

The fourth, after the developed product was validated, then it was tested to determine its effectiveness. The results of the test showed that the discovery based speaking assessment had a positive effect on the students' critical thinking and creativity. It can be proven from the students' mean score in pre-test and post-test. The results of the statistical tests showed a significance value lower than the significance level  $\alpha = 0.05$ , so it could be concluded that the developing discovery based speaking assessment module was effective to stimulate the students' critical thinking and creativity especially in speaking skill.

## **5.2 Suggestion**

Based on the conclusion, the researcher would like to offer some suggestions to be considered by English teachers and the next researchers.

1. For an English teacher:

Considering to the research findings, the teacher especially English teacher can use this discovery learning-based speaking assessment and the most

important that the teacher should develop their own assessment to stimulate students' critical thinking and creativity as one objective in the 2013 curriculum.

2. For the next researcher

The other researchers can use this thesis as one of their references in conducting their further research on developing discovery learning-based speaking assessment for other genres or at other educational levels.

## References

- Abdullah, A. H., Mokhtar, M., Halim, N. D., Ali, D. F., Tahir, L.M., & Kohar, U. H. (2017). Mathematics Teachers' Level of Knowledge and Practice on the Implementation of Higher-Order Thinking Skills (HOTS). *Eurasia Journal of Mathematics Science and Technology Education* 13 (1), 3-17.
- Ahmad, D. (2014). Understanding the 2013 Curriculum of English Teaching through the Teachers and Policymakers Perspectives. *International Journal of Enhanced Research in Educational Development*. 2 (4), 6-15.
- Ahour, T., & Mostafae, L., (2015). The Impact of Form-Focused Discovery Approach on EFL Learners' Speaking Ability. *Modern Journal of Language Teaching Methods*. 5 (1), 10-19.
- Aizikovitsh-Udi, E., & Miriam Amit, M. (2011). Developing the Skills of Critical and Creative Thinking by Probability Teaching. *Procedia Social and Behavioral Sciences*. 15, 1087-1091.
- Aliningsih, F. & Sofwan, A. (2015). English Teachers' Perceptions and Practices of Authentic Assessment. *Language Circle: Journal of Language and Literature*. 10 (1), 19-27.
- Anazifa, R. D., & Djukri (2017). Discovery Learning-Based Learning And Discovery-based Learning: Are They Effective To Improve Student's Thinking Skills?. *Indonesian Journal of Science Education*. 6 (2), 346-355.
- Annisa, N. I., Nappu, S., & Natsir, R. Y. (2018). The Use of Discovery Method to Improve Students' Writing on Descriptive Text at the 10th Grade of SMAN 1 Sungguminasa. *Jurnal Keguruan dan Ilmu Pendidikan*, 5(1), 52-60.
- Ary, D. (2010). *Introduction to Research in Education*. Wadsworth: Cengage Learning.
- Ashraf, H., & Zolfaghari, S. (2018). EFL Teachers' Assessment Literacy and Their Reflective Teaching. *International Journal of Instruction*, 11 (1), 425-436.
- Astra, I. M., Nasbey, H., & Muharramah, N. D. (Astra, I. M., Nasbey, H., Muharramah, N. D., (2015).). Development of Student Worksheet by Using Discovery Learning Approach for Senior High School Student. *TARBIYA: Journal of Education in Muslim Society*, 2(1), 91-96.
- Aziz, A. A., Ismail, F., Ibrahim, N. M., Samat, N.A., & Azian (2017). Investigating the Implementation of Higher Order Thinking Skills in

- Malaysian Classrooms: Insights from L2 Teaching Practices. *Sains Humanika*. 9 (4-2), 65-73.
- Balim, A., G. (2009). The Effects of Discovery Learning on Students' Success and Inquiry Learning Skills. *Eurasian Journal of Educational Research*. 35, 1-20.
- Barak, M., & Dori, Y. J. (2009). Enhancing Higher Order Thinking Skills among Inservice Science Teachers via Embedded Assessment. *Journal of Science Teacher Education*. 20 (5), 459-474.
- Barnett, J. E., & Francis, A.L. (2012). Using higher order thinking questions to foster critical thinking: a classroom study. *Educational Psychology*. 32 (2), 201-211.
- Bassham, G., Irwin, W., Nardone, H., & Wallace, J. (2011). *Critical Thinking: A Student's Introduction*. New York; McGraw-Hill.
- Bastos, A., & Ramos, M. A. S. (2017). Higher-Order Thinking in Foreign Language Learning. *Advances in Social Sciences Research Journal*, 4(5) 90-118.
- Borg, W., & Gall, M. (1983). *Educational Research: An Introduction*. London: Longman Inc.
- Brindley, G. (2001). *Assessment*. In Carter, & Nunan, D. (Eds). (2001). *The Cambridge guide to teaching English to speakers of other languages* (pp. 137-143). Cambridge: Cambridge University Press.
- Brown, H. D. (2004). *Language Assessment: Principles and Classroom Practices*. New York: Pearson Education, Inc.
- Chinedu, C.C. & Kamin, Y. , Olabiyi O. S (2015). Strategies For Improving Higher Order Thinking Skills In Teaching And Learning Of Design And Technology Education. *Journal of Technical Education and Training*. 7 (2), 35-43.
- Cohen, L., Manion, L., & Morrison, K. (2007). *Research Methods in Education*. New York: Routledge.
- Cojocariu, V.M., Butnaru, C.E. (2013) Asking questions - critical thinking tools. *Procedia - Social and Behavioral Sciences*. 128, 22-28.
- Darsih, E. (2014). Indonesian EFL teachers' perception on the implementation of the 2013 English curriculum. *English Review: Journal of English Education*, 2 (2), 192-199.

- De Leon-Abao, E. (2014) Teachers' Instructional Competence in Students' Comprehension Skills and Critical Thinking Ability. *Open Journal of Social Sciences*. 2, 334-339.
- Dwee, C. Y., Anthony, E. M., Salleh, B. M., Kamarulzaman, R., & Kadir, Z. A. (2016). Creating Thinking Classrooms Perceptions and Teaching Practices of ESP Practitioners. *Procedia - Social and Behavioral Sciences*. 232, 631-639.
- Eskandari, M., Soleimani, H., (2016). The Effect of Collaborative Discovery Learning Using MOODLE on the Learning of Conditional Sentences by Iranian EFL Learners. *Theory and Practice in Language Studies*. 6 (1) , 153-163.
- Fakhrudin, A., Yuliasri, I., & Bharati, D. A. (2013). The Effect of Jigsaw and Pair Switch Partner Present on The High and Low Motivated Students' Vocabulary Mastery. *English Education Journal*, 3(2), 52-59.
- Fatimah, S. (2015). Devoting To Enhance The Critical Thinking Skill And The Creativity Of Students In Seventh Grade Through Pbl Model With Jas Approachment. *Indonesian Journal of Science Education*. 4 (2), 149-157.
- Fatmawati, B. (2016). The Analysis of Students' Creative Thinking Ability Using Mind Map In Biotechnology Course.. *Indonesian Journal of Science Education*, 5(2), 216-221.
- Feriyanti, D. (2014). Discovery Learning as a Method to Teach Descriptive Text in Building Students' Character: A Case of Seventh Grade Students of SMP N 3 Ulujami. *Eternal*, 5(2), 58-69.
- Fitriani, D., Suryana, Y., & Ghullam. (2018). Pengembangan Instrumen Tes Higher-Order Thinking Skill Pada Pembelajaran Tematik Berbasis Outdoor Learning Di Sekolah Dasar Kelas IV. *Indonesian Journal of Primary Education*, 2(1), 87-96.
- Ganapathy, M., Kaur, S. (2014). ESL Students' Perceptions of the use of Higher Order Thinking Skills in English Language Writing. *Advances in Language and Literary Studies*. 5 (5), 80-87.
- Ganapathy, M., Singh, M.K., Kaur, S., & Kit, L. W. (2017). Promoting Higher Order Thinking Skills via Teaching Practices. *The Southeast Asian Journal of English Language Studies*. 23 (1), 75-85
- Gholamian, A. (2013). Studying the Effect of Guided Discovery Learning on Reinforcing the Creative Thinking of Sixth Grade Girl Students in Qom during 2012-2013 Academic Year. *Journal of Applied Science and Agriculture*. 8 (5), 576-584.

- Gregory, E., Hardiman, M., Yarmolinskaya, J., Rinne, L., Limb, C. (2013). Building creative thinking in the classroom: From research to Practice. *International Journal of Education and Research*. 62, 43-50.
- Guntara, Y., & Pamungkas, H.N. (2017). The Development of Peka-Based Thinking Activity Worksheet to Measure the Students' Thinking Skill. *Unnes Science Education Journal*. 6 (1), 1508-1513.
- Hairida (2016). The Effectiveness Using Inquiry-Based Natural Science Module With Authentic Assessment To Improve The Critical Thinking And Inquiry Skills Of Junior High School Students. *Indonesian Journal of Science Education*. 5 (2), 209-215.
- Hairida, Lukman Hadi (2017). Improving Student's Critical Thinking Skills Through Sets Vision Learning. *Unnes Science Education Journal*. 6 (2), 1561-1566.
- Hanafi. (2016). The Effect of Discovery Learning Method Application on Increasing Students' Listening Outcome and Social Attitude. *Dinamika Ilmu*, 16(2), 291- 306.
- Hassan, M.N., Mustapha, R., Yusuff, N.A.N., Mansor, R. (2017). Development of Higher Order Thinking Skills Module in Science Primary School: Needs Analysis. *International Journal of Academic Research in Business and Social Sciences*. 7 (2), 624-628.
- Hassan, S. R., Rosli, R., & Zakaria, E. (2016). The Use of i-Think Map and Questioning to Promote Higher-Order Thinking Skills in Mathematics. *Creative Education*. 7, 1069-1078.
- Heijltjes, A., Van Gog, T., & Paas, F. (2014). Improving Students' Critical Thinking: Empirical Support for Explicit Instructions Combined with Practice. *Applied Cognitive Psychology*. 28 (4), 518-530.
- Huba, M. E. & Freed, J. E. (2000). *Learner-centered assessment on college campuses: Shifting the focus from teaching to learning*. Boston, MA: Allyn & Bacon.
- Hürsen, Ç., Kaplan, A., & Özdal, H. (2014). Assessment of Creative Thinking Studies In Terms of Content Analysis. *Procedia - Social and Behavioral Sciences*. 143, 1177-1185.
- Illi, A. E. W., & Rachmadiarti, F., (2017) Ecology Textbook Based on Science, Technology, Environment, Society-Literacy (Stesl) Strategy to Train Students' Critical Thinking Skills. *BioEdu*. 6 (3), 368-373.

- Istikomah, Basori, & Budiyanto, C. W. (2017). The Influences of Problem-Based Learning Model with Fishbone Diagram to Student's Critical Thinking Ability. *Indonesian Journal of Informatics Education*, 1(2), 83–91.
- Jannah, W., & Hartono, R. (2018). Students' Speaking Assessment Used by English Teachers Based on the 2013 Curriculum. *English Education Journal*, 8(03), 359–369.
- Joolingen, W. V. (1999). Cognitive tools for discovery learning. *International Journal of Artificial Intelligence in Education*, 10, 385-397.
- Kawuryan, S. P., Hastuti, W. S., & Supartinah. (2018). Pengaruh Model Pembelajaran Tematik Berbasis Permainan Tradisional Dan Scientific Approach Terhadap Kemampuan Berpikir Kreatif. *Cakrawala Pendidikan*, 71- 84.
- Kayi, H. (2006). Teaching Speaking: Activities to Promote Speaking in a Second Language. *The Internet TESL Journal*, 12(11). Retrieved from: [http://iteslj.org/Articles/Kayi-Teaching\\_Speaking.html](http://iteslj.org/Articles/Kayi-Teaching_Speaking.html)
- Kharismawan, B., Haryani, S., & Nuswowati, M. (2018). Application of A Pbl-Based Modules to Increase Critical Thinking Skills and Independence Learning. *Journal of Innovative Science Education*, 7(1), 78-86.
- Khusniati, M., Hasasiyah, S. H., Parmin, & Kurniyawan, D., (2017). The Effectiveness of Heat Transfer Practicum with Card Sort Media to Students' Critical Thinking Ability. *Unnes Science Education Journal*. 6 (2), 1638-1644.
- Kistian, A., Armanto, D., & Sudrajat, A. (2017). The Effect of Discovery Learning Method on The Math Learning of The V Sdn 18 Students of Banda Aceh, Indonesia. *British Journal of Education*. 5 (11), 1-11.
- Kitot, A. K. A., Ahmad, A. R., & Seman, A. A. (2010). The Effectiveness of Inquiry Teaching in Enhancing Students Critical Thinking. *Procedia Social and Behavioral Sciences*. 7(C), 264-273.
- Ku, K. Y. L. (2009). Assessing Students' Critical Thinking Performance\_Urging For Measurements Using Multi-Response Format. *Thinking Skills and Creativity*. 4, 70-76.
- Luoma, S. (2004). *Assessing Second Language Speaking*. Cambridge: Cambridge University Press.
- Lutfi, A. A., Sutopo, D., & Rukmini, D. (2018). The Effectiveness of Simulation and Role-Play in Teaching Speaking for Students with Different Levels of Motivation. *English Education Journal*, 8(4), 489 – 498.

- Maba, W. (2017). Teachers' Perception of the Implementation of the Assessment Process in 2013 Curriculum. *International Journal of Social Sciences and Humanities*. 1 (2), 1-9.
- Martaida, T., Bukit, N., & Ginting, E.V. (2017). The Effect of Discovery Learning Model on Student's Critical Thinking and Cognitive Ability in Junior High School. *IOSR Journal of Research & Method in Education*. 7 (6), 01-08.
- Maslakhatin. (2017). Critical Reading Strategies to Foster Students' Critical Thinking. *Jurnal Buana Pendidikan*, 99-110.
- Masril, Hidayati, & Darvina, Y. (2018). Penerapan Discovery Learning Berbantuan Virtual Laboratory Untuk Meningkatkan Kompetensi Fisika Siswa SMA. *Jurnal Penelitian Pendidikan IPA*, 5(1), 18-26.
- Mayer, R. E. (2004). Should there be a three-strikes rule against pure discovery learning?. *American Psychologist*. 59, 14-19.
- Ming, T. S., Sim, L. Y., Mahmud, N., Kee, N. L., Zabidi, N. A., & Ismail, K., ( 2014 ). Enhancing 21st-century learning skills via digital storytelling: Voices of Malaysian teachers and undergraduates. *Procedia - Social and Behavioral Sciences*. 118, 489-494.
- Miri, B., David, B. M., & Uri, Z., (2007) Purposely Teaching for the Promotion of Higher-order Thinking Skills. A Case of Critical Thinking. *Research in Science Education*. 37 (4), 353-369.
- Mulyono, Y. (2018). Improving Creativity of The Future Physics Teachers Through General Biology Learning Based on CTL With Experimental Method. *Indonesian Journal of Science and Education*, 2(1), 62-68
- Mulyono, Y. (2018). Improving Creativity of The Future Physics Teachers Through General Biology Learning Based on CTL With Experimental Method. *Indonesian Journal of Science and Education*, 2(1), 62-68.
- Mushtoz, D. A. (2016). Discovery Learning in Teaching Report Writing for Junior High School Students Based on 2013 Curriculum. *Indonesian Journal of English Teaching*, 5(1), 55-77.
- Mustapa, K. (2014). The Effects of Learning Strategies on Higher Order Thinking Skills. *Jurnal Pendidikan Humaniora*, 2(4), 348-357.
- Nurnia, Ahiri, J., Muharam, L. O., & Alberth. (2018). Students' Critical Thinking Under Three Models of Teaching. *Indonesian Journal of Educational Review*, 5(1), 107-115.

- Nursofah, Komala, R., & Rusdi. (2018). The Effect of Research-Based Learning Model and Creative Thinking Ability on Students Learning Outcomes. *Indonesian Journal of Science and Education*, 2(2), 168-173.
- Nuryakin & Riandi (2017). Improving Middle School Students' Critical Thinking Skills Through Reading Infusion-Loaded Discovery Learning Model in the Science Instruction. *Journal of Physics: Conference Series*. 812 (1), 01-06.
- Othman, M. S. B., & Kassim, A. Y. B., (2017) Teaching Practice of Islamic Education Teachers Based on Higher Order Thinking Skills (HOTS) in Primary School in Malaysia. *International Journal of Academic Research in Business and Social Sciences*. 7 (3), 401-415.
- Pardede, E., & Suyanti, R. D. (2016). Efek Model Pembelajaran Guided Discovery Berbasis Kolaborasi Dengan MediaFlash Terhadap Keterampilan Proses Sains Dan Hasil Belajar Kognitif Tinggi Fisika Siswa SMA. *Jurnal Pendidikan Fisika*, 5(1), 12-17.
- Parno. (2015). Efek Pembelajaran Penemuan Terbimbing dalam Peningkatan Penguasaan Mahasiswa terhadap Konsep Dasar Gaya dan Gerak. *Indonesian Journal of Applied Physics*, 5(2), 1-9.
- Piaw, C.Y. (2010). Building a test to assess creative and critical thinking simultaneously. *Procedia Social and Behavioral Sciences*. 2, 551-559.
- Pratiwi, Y. N., Rahayu, S., & Fajaroh, F., (2016) Socioscientific Issues (Ssi) In Reaction Rates Topic And Its Effect On The Critical Thinking Skills Of High School Students. *Indonesian Journal of Science Education*. 5 (2), 164-170.
- Rahman, M. H. (2017). Using Discovery Learning to Encourage Creative Thinking. *International Journal of Social Sciences & Educational Studies*. 4 (2), 98-103.
- Rahman, S. T., & Samanhudi, U. (2010). Designing an EFL Speaking Class with a View to Critical Thinking Development. *Asian EFL Journal*. 10, 35-39.
- Rahmawati, Y., & Ertin. (2014). Developing Assessment for Speaking. *Indonesian Journal of English Education*, 1(2), 199- 209.
- Rahmi, Y., & Ratmanida (2014). The Use of Discovery Learning Strategy in Teaching Reading Report Texts To Senior High School Students. *Journal of English Language Teaching*. 3 (1), 179-188.

- Raiyn, J. (2016). The Role of Visual Learning in Improving Students' High-Order Thinking Skills. *Journal of Education and Practice*, 7 (24), 115-121.
- Ramadhana, N. A., Rozimela, Y., & Fitrawati. (2018). High Order Thinking Skills-Based Questions in The Test Items Developed by Senior High School English Teachers of Padang. *Journal of English Language Teaching*, 7(4), 720-731.
- Rambe, J. A., Sinaga, B., Yusnadi. (2018). The Development of Learning Devices Based on Discovery Learning to Improve Mathematical Creative Thinking Ability of Students Class V at SD Negeri 060827 Medan Amplas. *Journal of Education and Practice*, 9 (9), 72-79.
- Ramdhani, M.R., Usodo, B., & Subanti, S. (2017). Discovery Learning with Scientific Approach to Geometry. *Journal of Physics: Conf. Series*, 895 (1).
- Ramdiah, S., Abidinsyah, H., & Mayasari, R. (2018). Problem-Based Learning: Generates Higher-Order Thinking Skills of Tenth Graders in Ecosystem Concept. *Indonesian Journal of Biology Education*, 4(1), 29-34.
- Retnawati, H., Hadi, S., & Nugraha, A. C., (2016). Vocational High School Teachers' Difficulties in Implementing the Assessment in Curriculum 2013 in Yogyakarta Province of Indonesia. *International Journal of Instruction*, 9 (1), 33-48.
- Rubin, J., & Rajakaruna, M. (2015). Teaching and Assessing Higher Order Thinking in the Mathematics Classroom with Clickers. *International Society of Educational Research, Mathematics Education*, 10 (1), 37-51.
- Rukmini, D., & Saputri, L. A. (2017). The Authentic Assessment to Measure Students' English Productive Skills Based on 2013 Curriculum. *Indonesian Journal of Applied Linguistics*, 7(2), 263-273.
- Saadati, F., Tarmizi, R. A., & Bayat, S. (2010). Assessing Critical Thinking of Postgraduate Students. *Procedia Social and Behavioral Sciences*, 8, 543-548.
- Sahyoni, & Zaim, M. (2017). Authentic Assessment of Speaking Skill for Grade I Junior High School. *Komposisi: Jurnal Pendidikan Bahasa, Sastra, Dan Seni*, 15-26.
- Saido, G. M., Siraj, S., Nordin, A. B., & Al Amedy, O. S. (2015). Higher order thinking skills among secondary students in science learning. *The Malaysian Online Journal of Educational Science*, 3 (3), 13 –20.

- Sarigoz, O. (2012). Assessment Of The High School Students Critical Thinking Skills. *Procedia - Social and Behavioral Sciences*. 46, 5315 – 5319.
- Scriven, M. & Paul, R. (2007). *Defining critical thinking*. The Critical Thinking Community: Foundation for Critical Thinking. Retrieved from [http://www.criticalthinking.org/aboutCT/define\\_critical\\_thinking.cfm](http://www.criticalthinking.org/aboutCT/define_critical_thinking.cfm)
- Setyarini, S., Muslim, A. B., Rukmini, D., Yuliasri, I., & Mujiyanto, Y. (2018). Thinking Critically While Storytelling: Improving Children's Hots And English Oral Competence. *Indonesian Journal of Applied Linguistics*, 8(1), 189-197.
- Shehab, H. M., & Nussbaum, E. M. (2015). Cognitive Load Of Critical Thinking Strategies. *Learning and Instruction*. 35, 51-61.
- Slameto. (2017). Critical Thinking and Its Affecting Factors. *Jurnal Penelitian Humaniora*, 18(2), 1-11.
- Smith, V. D., & Darvas, J. W. (2017). Encouraging Student Autonomy Through Higher Order Thinking Skills. *Journal of Instructional Research*. 6, 29-34.
- Snyder, L. G., & Snyder, M. J. (2008). Teaching critical thinking and problem-solving skills. *Delta Pi Epsilon Journal*. 50 (2), 90–99.
- Sofeny, D (2017). The Effectiveness of Discovery Learning in Improving English Writing Skill of Extroverted and Introverted Students. *Journal Penelitian Humaniora*. 18 (1), 41-46
- Sosu, E.M. (2012). and psychometric validation of a Critical Thinking Disposition Scale. *Thinking Skills and Creativity*. 9, 107-119.
- Sugiyono. (2015). *Metode Penelitian Kuantitatif Kualitatif dan R&D*. Bandung: Alfabeta.
- Supliyadi, Baedhoni, M. I., & Wiyanto. (2017). Penerapan Model Guided Discovery Learning Berorientasi Pendidikan Karakter Untuk Meningkatkan Hasil Belajar Siswa Kelas Xi SMA Negeri 1 Semarang Tahun Pelajaran 2017/2018. *Jurnal Profesi Keguruan*, 205-212.
- Suwandi, & Taufiqulloh. (2009). Designing speaking test. *Eksplanasi*, 4(8), 183–191.
- Usmeldi, Amini, R., S. Trisna. (2017). The Development of Research-Based Learning Model sets to Improve Critical Thinking Of Students. *Indonesian Journal of Science Education*. 6 (2), 318-325.

- Wartono, Takaria, J., Batlolona, J. R., Grusche, S., Hudha, M. N., & Jayanti, Y. M. (2018). Inquiry-Discovery Empowering High Order Thinking Skills and Scientific Literacy on Substance Pressure Topic. *Jurnal Ilmiah Pendidikan Fisika Al-Biruni*, 7(2), 139-151.
- Wartono, W., Hudha, M. N., & Batlolona, J. R. (2017). How Are The Physics Critical Thinking Skills of The Students Taught by Using Inquiry-Discovery Through Empirical and Theoretical Overview?. *Eurasia Journal of Mathematics, Science and Technology Education*. 14 (2), 691-697.
- Wati, A., Bharati, D. A., & Hartono, R. (2014). The Scientific Approach in Teaching Speaking For Various Texts (The Case of Three Teacher Candidates of Wiralodra University Indramayu in The Academic Year 2013/2014). *English Education Journal*, 4(2), 145-150.
- Wei, Y. (2018). Cultivating Critical Thinking Ability in BTI In China. *Indonesian EFL Journal*, 4(2), 90-98.
- White, B., Stains, M., Escriu-Sune, M., Medaglia, E., Rostamjad, L., Chinn, C., & Sevian, H. (2011). A Novel Instrument for Assessing Students' Critical Thinking Abilities. *Journal of College Science Teaching*. 40 (5), 102-107.
- Widana, I. W. (2017). Higher Order Thinking Skills Assessment (HOTS). *Journal of Indonesian Students Assessment and Evaluation*. 3 (1), 32-44.
- Widyastuti, S. (2018). Fostering Critical Thinking Skills Through Argumentative Writing. *Cakrawala Pendidikan*, 182-189.
- Wijayanti, M. S. R. (2017). The Application of Guided Inquiry Learning Model Assisted with Constructivistic Worksheet to Improve the Learning Results of Xi Grade Students in Sma Negeri 13 Semarang. *Unnes Science Education Journal*. 6 (2), 1540-1544.
- Wijayanti, Y. R., (2015). An Evaluation Model of Discovery-based Learner Assessment in Curriculum 2013. *Indonesian Journal of English Language Studies*. 1 (2), 207-219.
- Yusria, & Budiarta, E. (2018). Brainstorming Sebagai Metode Meningkatkan Kemampuan Berpikir Kritis Siswa. *Indonesian Journal of Educational Research*, 3(2), 46-50.
- Zaim, M. (2017). Implementing Scientific Approach to Teach English at Senior High School in Indonesia. *Asian Social Science*. 13 (2), 33-40.

Zhou, Q., Huang, Q., & Tian, H. (2013). Developing Students' Critical Thinking Skills by Task-Based Learning in Chemistry Experiment Teaching. *Creative Education*. 4 (12A) 40-45.