



**Investigating Students' Higher Order Thinking Skills (HOTS) in Writing Skill  
(A Case Study at the Eleventh Grade of a Senior High School in Banjar)**

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**Abstract**

This study deals with the students' Higher Order Thinking Skills (HOTS) in writing skill. This case study aimed at figuring out the students use and responses HOTS in writing. The subject of this study was 21 students at the eleventh grade of a Senior High School in Banjar. Two research instruments used were the essay written test and the questionnaire. To assess the research instruments, the writer combined and synchronized the results by using triangulation analysis as adapted from Fraenkel et al. (2012, p. 559). The findings showed that the students used HOTS in learning writing. The use of HOTS can also improve their writing without any treatment, and according to the students' responses, HOTS give some benefits in their writing.

Keywords: higher-order thinking skills (HOTS), the students, writing skill

**Introduction**

In response to the global challenges, there have been adjustments in the curriculum of education in Indonesia by taking into account the current global challenges. Implementation of the 2013 curriculum in the Indonesian education system is now beginning to update the direction of learning, one of them focusing on the development of high-order thinking skills (HOTS) (Ministry of Education and Culture, 2016, p. 39). In the curriculum of 2013, the assessment

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models adopt international standard assessment models that are expected to help students improve high-order thinking (High Order Thinking) (Wahyuni, 2018, p. 84). Moreover, early adaptation of HOTS development in Indonesian education system has demonstrated that HOTS is urgent and relevant to current global needs and challenges.

However, based on teacher's information, the students' English skills, especially at the eleventh grade of a Senior High School in Banjar, are still far from being expected particularly about critical thinking. One of the causal factors is that Indonesian students do not train much in solving contextual questions, demanding intellectual activity, argumentation and creativity in finishing it (Kusuma, Rosidin, Abdurrahman, & Suyatna, 2017, p. 27). Therefore, the teacher should improve students' critical thinking in writing skill.

One of the efforts that can be done by a teacher to improve students' critical thinking in writing skill is Higher Order Thinking Skills (HOTS). The term higher-order thinking skills (or strategies, or patterns) may also be used to delineate any cognitive activities that are beyond the stage of understanding and lower-level application according to Bloom's taxonomy (Zohar, 2004, p. 1). This study focused on students' Higher Order Thinking Skills (HOTS). The second research was conducted by Singh, Singh, Singh, Mostafa, & Mohtar, 2018, p. 86) revealed that "the HOTS module served as a guideline for the teachers in applying and integrating thinking skills in the process of teaching writing." By using it, the writer indicates that students can improve their writing skill. Thus, it is also necessary for the teacher to use HOTS because it helps, motivates, and makes them enjoy learning English, especially writing skill.

Not many studies have been conducted to examine the use of students' Higher Order Thinking Skills (HOTS) in writing skill. Singh et al. (2018) write a study about "A Review of Research on the Use of Higher Order Thinking Skills to Teach Writing." Furthermore, Wahyuni (2018) also writes a study about "Higher Order Thinking Skill Instrument Design of Student-Based on Bloom's Taxonomy." Also, Sulaiman, Muniyan, Madhvan, Hasan, and Rahim (2017) write a study about "The Implementation of Higher Order Thinking Skills in Teaching of Science: A Case Study in Malaysia."

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This study is different from the previous studies because it focuses on the use of students' Higher Order Thinking Skills (HOTS) in writing skill. Meanwhile, their studies focus on high order thinking skills in teaching writing, instrument design of student based on Bloom's taxonomy, and science. Besides, this study uses a case study, while their studies use document analysis, R & D (research and development), and qualitative case study. Therefore, the study is sought to find answers to the questions as follow:

1. Do the students use Higher Order Thinking Skills (HOTS) in writing?
2. What kinds of students' Higher Order Thinking Skills (HOTS) in students' writing will be evident?
3. What are the students' responses to their benefits of using Higher Order Thinking Skills (HOTS) in writing?

## **Theoretical Framework**

### ***Critical Thinking***

Critical thinking is the ability to gain and analyze information to justify the conclusion. Similarly, Moon (2008, p. 21) defines that "critical thinking is the analysis of a situation based on facts – evidence –also to be able to make a judgment or come to a conclusion, taking into account empathy, culture, and history." Also, it is the mental process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and evaluating information to reach an answer or conclusion (Edmonds, 2006, p. 6). Critical thinking is the mental process which needs the ability including conceptualizing, applying, analyzing, synthesizing, and evaluating information to make a judgment or come to a conclusion.

Furthermore, critical thinking also can be implemented to improve students' English skill and to recognize their strengths and weaknesses. In line with this, Judge, Jones, and McCreery (2009, p. 2) also comment that "critical thinking is the ability to think about your thinking in such a way as to recognize its strengths and weaknesses and, as a result and re-present the thinking in an improved form." Meanwhile, Dunn, Halonen, and Smith (2008, p. 50) define that "critical thinking is the use of those cognitive skills or strategies that increase the probability of a desirable outcome thinking that is purposeful, reasoned, and

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goal-directed." Mason (2008, p. 2) also defines that "critical thinking is constituted by particular skills, such as the ability to assess reasons properly, or to weigh relevant evidence, or to identify fallacious arguments." Critical thinking can be used to improve students' English skill, to recognize its strengths and weaknesses, to increase the probability of a desirable outcome, and to assess reasons properly.

### **Higher Order Thinking Skills (HOTS)**

To bring the variety into the classroom, many teachers use Higher Order Thinking Skills (HOTS) in EFL teaching. HOTS is defined as an incision among the three top levels of ability in the cognitive dimension (analyzing, evaluating, creating), and 3 levels of knowledge dimension (conceptual, procedural, metacognitive) (Retnawati *et al.* 2018, p. 216). Higher-Order Thinking Skills (HOTS) refers to the ability to apply knowledge, skills, and values in reasoning, reflection, problem-solving, decision making, innovating and creating something new. These approaches promote the use of higher-order thinking skills as well as cognitive development (Sulaiman *et al.* 2017, p. 1). HOTS is the ability of six developments including conceptual, procedural, metacognitive, analyzing, evaluating, and creating.

The development of higher-order thinking skills relies on their lower-level thinking skills thus making higher-order thinking skills grounded with lower-level thinking skills. To be able to think critically, prior knowledge of subject matter content is necessary (Singh *et al.* 2018, p. 87). The students can use higher-order thinking skills (HOTS) when they face unfamiliar problems, uncertainties, questions, or dilemmas.

Originating from Bloom's taxonomy of learning, HOTS is defined by three upper levels of cognitive skills in the learning hierarchy: analysis, synthesis, and evaluation (Ganapathy, Singh, Kaur, & Kit, 2017, p. 76). Analysis refers to the ability of learners to deconstruct the structure of knowledge and categorize them into their respective groups as well as identify the relationship among the components of the knowledge structure. For anything that is of original creation, it would be labeled under synthesis. This cognitive skill can be illustrated using the following verbs: assemble, design, formulate and develop.

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Besides that, the cognitive skill of evaluation requires learners to justify the value of a piece of information for its relevancy and consistency. Students never get to the point where they have the opportunity to engage in HOTS due to the traditional concept of learning being sequential and linear.

Educators consider higher-order thinking skills as high order thinking that occurs when the student obtains new knowledge and stores it in his memory, then this knowledge is correlated, organized, or evaluated to achieve a specific purpose. These skills have to include sub-skills, such as analysis, synthesis, and evaluation, which are the highest levels in Bloom's cognitive taxonomy (Abosalem, 2016, p. 2). HOTS are intellectual processes where students have to activate their minds in order to understand the hidden meaning from the information introduced to them, realize the relations among ideas, draw principles and rules, analyze and classify, generate and combine new ideas, evaluate and judge (Keshta & Seif, 2013, p. 51). HOTS focuses on developing students' abilities to be able to analyze effectively, evaluate by drawing inference from existing information and creating (synthesizing) something new (Chinedu & Kamin, 2015, p. 36). Higher-order thinking skills (HOTS) include sub-skills such as analysis, synthesis, and evaluation.

### ***The Taxonomy and the Framework of Higher Order Thinking Skills (HOTS)***

Bloom (1956), cited in Teemant, Hausman, and Kigamwa (2016, p. 3) published the seminal piece defining a taxonomy of higher-order thinking from low to higher levels: Know, comprehend, apply, analyze, synthesize, and evaluate. Higher-order thinking is organized around analyzing and constructing relationships and is contrasted with recall and comprehension tasks on the lower end of Bloom's taxonomy. Bloom's taxonomy is considered the basis for higher-order thinking. The thinking level of students in thinking there are six levels of remembering (C1), understanding (C2), applying (C3), analyzing (C4), evaluating (C5), and creating (C6). This level of thinking can occur in the dimensions of factual knowledge, conceptual knowledge, procedural knowledge, and metacognition knowledge. Levels of thinking on C1, C2, and C3 are low-order thinking, and thinking levels in C4, C5 and C6 are high-order

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thinking levels (Higher Order Thinking) (Wahyuni, 2018, p. 84). Higher-order thinking skills include critical, logical, reflective, metacognitive, and creative thinking (Singh, 2018, p. 87). There are six levels of cognitive skills including remembering, understanding, applying, analyzing, evaluating, and creating.

Bloom's taxonomy poses six cognitive skills through which thinking processes pass from the bottom to the top. Successively, they recall, comprehension, application which is called lower thinking skills (LOTS). These LOTS are mounted by other three skills which are called higher-order thinking skills known as (HOTS) represented in analysis, synthesis, and evaluation. Analysis refers to individuals' ability to break material into its smaller components. Synthesis represents assembling parts of the material to produce new forms. Evaluation, on the other hand, refers to individuals' ability to judge and take decisions (Keshta & Seif, 2013, p. 48). Cognitive skills are divided into two critical thinking skills which are lower thinking skills (LOTS) such as: recalling, comprehension, application and higher-order thinking (HOTS) such as analysis, synthesis, and evaluation.

### ***The Effects of Using Students' Higher Order Thinking Skills (HOTS) in Writing Skill***

Familiarizing students with HOTS activity is important to help them get ready for solving new issues, acclimatizing themselves in a new atmosphere, and making decisions about a particular problem (Retnawati et al. 2018, p. 216). Creative thinking skills and critical thinking skills are included in higher-order thinking skill (HOTS) (Retnawati et al. 2018, p. 216). Application of HOTS in pedagogy and assessment for example, through inquiry-based learning and high-level questioning in pedagogy and assessment, could promote HOTS among students and directly improve student achievement (Sulaiman et al. 2017, p. 1).

Higher-order thinking questions may encourage students to think deeply about the subject matter (Kusuma et al. 2017, p. 28). HOTS activities enable skilled students to seek knowledge in inductive and deductive reasoning to think of answering or identifying and exploring scientific examinations of existing facts (Wahyuni, 2018, p. 84). The use of higher-level questions which require the student to integrate and use different ideas levels ranging from simple to

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sophisticated ideas will improve students' learning which is considered as the process of acquiring knowledge or skills or attitudes towards subjects which consequently involves changes in behavior (Abosalem, 2016, p. 5). The use of Higher Order Thinking Skills (HOTS) encourages students to think deeply, to seek knowledge, and to improve their learning.

The result of the research conducted by Kusuma et al. (2017, p. 30) shows that "the instrument of HOTS which has been developed can help students in training their higher-order thinking ability as assessment for learning." The findings of the research conducted by Singh et al. 2018, p. 86) revealed that "the HOTS module served as a guideline for the teachers in applying and integrating thinking skills in the process of teaching writing." Besides, the students were positive about adopting the higher-order thinking skills techniques suggested by their teachers for improving their writing performance (Singh et al. 2018, p. 98). HOTS is a major component of creative and critical thinking, and creative thinking pedagogy can help students develop more innovative ideas, ideal perspectives and imaginative insights (Chinedu & Kamin, 2015, p. 36). The teacher can use Higher Order Thinking Skills (HOTS) to develop assessment for learning, to serve a guideline in applying thinking skills in teaching writing, to suggest the students for improving their writing performance, and to help them develop more innovative ideas, ideal perspectives, and imaginative insights.

### **Methodology**

Based on the research questions, the writer used a case study. This study used a purposeful sampling technique because it selected the respondents who understand the phenomenon investigated. Thus, the writer selected the students at class XI-MIPA 1 that consisted of 21 students (12 female students and 9 male students).

An essay written test and a questionnaire were used to obtain the data. The essay written test was conducted twice. The first essay written test was about analytical exposition text, while the second essay written test was about the narrative text. The questionnaire consisted of 6 items which were adapted from Bloom's Taxonomy Revision and edited by Kusuma (2017, p. 27). Assessing

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the students' essay, the writer used General Rubrics for Written Projects of Higher Order Thinking Skills (HOTS) which were adapted from Brookhart (2010, pp. 76-77). In calculating the questionnaire, the writer used percentage formula which was adapted from Fraenkel et al. (2012, p. 211). Then, the results of the essay written test and the questionnaire were triangulated and synchronized by using triangulation analysis which was adapted from Fraenkel et al. (2012, p. 559).

### **Findings and Discussion**

After collecting the data from the essay written test and the questionnaire, the writer analyzed each instrument that was described as follows:

#### ***The Possibilities of the Students Used Higher Order Thinking Skills (HOTS) in Writing***

The results of the essay written test showed that the students used Higher Order Thinking Skills (HOTS) in writing. They used HOTS in writing to improve the critical thinking skill that should be mastered by them in learning writing in the classroom. Furthermore, they needed critical thinking to improve their writing skill and to recognize their writing strengths and weaknesses. Similarly, Judge et al. (2009, p. 2) also comment that "critical thinking is the ability to think about your thinking in such a way as to recognize its strengths and weaknesses and, as a result and re-present the thinking in an improved form."

Specifically, writing with HOTS has six instructions including remembering, understanding, applying, analyzing, evaluating, and creating. The students' HOTS in this study were similar to the previous findings from Kusuma (2017, p. 27). The six instructions of Higher Order Thinking Skills (HOTS) used by the students were explained as follows.

In remembering, they identified or remembered the contents of the text including its definitions, linguistic features, and generic structures. In line with this, HOTS activities enable skilled students to seek knowledge in inductive and deductive reasoning to think of answering or identifying and exploring scientific examinations of existing facts (Wahyuni, 2018, p. 84). In understanding, they understood, described, and explained the contents of the text. Similarly,

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Behroozizad (2015, p. 112) defines that "writing skill is an essential index for learning. It is a means of transmitting information and communicating thoughts and feelings."

In applying, they applied their understanding of the contents of the text by making text similar to the text in groups. In line with this, the findings of the research conducted by Singh et al. 2018, p. 86) revealed that "the HOTS module served as a guideline for the teachers in applying and integrating thinking skills in the process of teaching writing." In analyzing, they analyzed the similarities and differences in the text with the text they have made. In line with this, Thornbury (2012, p. 211) also argues that "writing is a reflective activity that requires enough time to think about the specific topic and to analyze and classify any background knowledge."

In evaluating, they gave reasons or judgments about the strengths and weaknesses of the text they have made compared to the text. Likewise, application of HOTS in pedagogy and assessment for example, through inquiry-based learning and high-level questioning in pedagogy and assessment, could promote HOTS among students and directly improve student achievement (Sulaiman et al. 2017, p. 1). In creating, they re-edited and re-wrote the lack of text that they have made. Likewise, writing is regarded as a process of discovering and revising ideas (Abadikhah & Yasami, 2013, p. 113).

### ***The Kinds of the Students' Higher Order Thinking Skills (HOTS) in Writing that were Evident in Writing***

Based on the result of the analysis, it was found that the kinds of the students' HOTS were evidence that they improved their writing. It could be seen that most of them improved in the second test better than in the first test. They improved their writing after following the six instructions of HOTS including remembering, understanding, applying, analyzing, evaluating, and creating. As evidence, it was shown that the first group's level had improved from level two (2) in the first test to level three (3) in the second test. Besides that, it was shown that the second group's level had improved from level one (1) in the first test to level three (3) in the second test.

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Furthermore, it was shown that the third group's level had improved from level one (1) in the first test to level three (3) in the second test. Meanwhile, it was shown that the fourth group's level had improved from level one (1) in the first test to level two (2) in the second test. Also, it was shown that the fifth group's level had improved from level two (2) in the first test to level four (4) in the second test. Then, it was shown that the sixth group's level had improved from level two (2) in the first test to level three (3) in the second test. Lastly, it was shown that the seventh group's level had improved from level one (1) in the first test to level three (3) in the second test.

The students could gain better result after they got used to applying HOTS in learning writing. Therefore, the teacher was suggested to empower the students' Higher Order Thinking Skills (HOTS) in teaching writing to improve their writing skill.

### ***The Students' Responses to their Benefits of Using Higher Order Thinking Skills (HOTS) in Writing***

After analyzing the students' questionnaires' responses from the first to the sixth items, the writer also collected and described the percentages of every item. It was found that the students responded positively to their benefits of using Higher Order Thinking Skills (HOTS) in writing because of some reasons. Firstly, they responded to the use of students' HOTS in writing skill helped them in identifying or remembering the contents of the text including its definitions, linguistic features, and generic structures. Secondly, they responded the use of students' HOTS in writing skill helped them in understanding, describing, and explaining the contents of the text.

Thirdly, they responded to the use of students' HOTS in writing skill helped them in applying their understanding of the contents of the text by making text similar to the text. Fourthly, they responded the use of students' HOTS in writing skill helped them in analyzing the similarities and differences in the text with the text that has been made. Fifthly, they responded the use of students' HOTS in writing skill helped them in giving reasons or judgments about the strengths and weaknesses of the text that has been made compared to the text. Lastly, they responded use of students' HOTS in writing skill helped them in editing and rewriting the text that has been created.

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The findings of this study were in contrast with the findings of the previous study conducted by Singh et al. (2018). Their finding showed that despite having multiples of programs to help teachers to infuse higher-order thinking skills to teach writing, teachers were not prepared to teach higher-order thinking skills in their classrooms. However, the findings of this study showed that Higher Order Thinking Skills (HOTS) were used by the students in learning writing through six instructions including remembering, understanding, applying, analyzing, evaluating, and creating.

The different findings between this study and the previous study because this study focused on the use of students' Higher Order Thinking Skills (HOTS) in writing skill, while the previous study conducted by Singh et al. (2018) focused on high order thinking skills in teaching writing. Other differences, this study used the students' essay written test and questionnaire, while the previous study conducted by Singh et al. (2018) used the document analysis as a research instrument. Besides that, this study was conducted to the eleventh grade of a Senior High School in Banjar. Meanwhile, the previous study conducted by Singh et al. (2018) was conducted to ESL teachers in Sultan Idris Education University, Malaysia. Despite differences, this study and the previous study conducted by Singh et al. (2018) have also similarity. In similarity, both this study and the previous study conducted by Singh et al. (2018) emphasized on Higher Order Thinking Skills (HOTS).

Besides, the findings of this study were also in opposite with the findings of the previous study conducted by Wahyuni (2018). Her finding showed that the step of Higher Order Thinking Skills consisting of 10 steps including viewing potential problem, data collection, product design, design validation, design revision, product testing, product revision, trial usage, revision products, and mass production. However, the findings of this study showed that Higher Order Thinking Skills (HOTS) were used by the students in learning writing through six instructions including remembering, understanding, applying, analyzing, evaluating, and creating.

The different findings between this study and the previous study because this study focused on the use of students' Higher Order Thinking Skills (HOTS) in writing skill based on six instructions from Kusuma (2017, p. 27), while the previous study

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conducted by Wahyuni (2018) focused on instrument design of student based on Borg and Gall steps. Other differences, this study used the students' essay written test and questionnaire, while the previous study conducted by Wahyuni (2018) used the product design stage and validation as a research instrument. Besides that, this study was conducted to the eleventh grade of a Senior High School in Banjar. Meanwhile, the previous study conducted by Wahyuni (2018) was conducted to grade XI IPA SMA Pertiwi 1 Padang. Despite differences, this study and the previous study conducted by Sulaiman et al. (2017) have also similarity. In similarity, both this study and the previous study conducted by Sulaiman et al. (2017) emphasized on Higher Order Thinking Skills (HOTS).

Besides, the findings of this study were similar to the findings of the previous study conducted by Sulaiman et al. (2017). His finding showed that the teachers are aware and they are applying HOTS in their teaching. Likewise, the findings of this study also showed that Higher Order Thinking Skills (HOTS) were used by the students in learning writing through six instructions including remembering, understanding, applying, analyzing, evaluating, and creating.

However, this study focused on the use of students' Higher Order Thinking Skills (HOTS) in writing skill, while the previous study conducted by Sulaiman et al. (2017) focused on the perceptions of science teachers in the implementation higher-order thinking skills in teaching science. Other differences, this study used the students' essay written test and questionnaire, while the previous study conducted by Sulaiman et al. (2017) used the interviews only as a research instrument. Besides that, this study was conducted to the eleventh grade of a Senior High School in Banjar. Meanwhile, the previous study conducted by Sulaiman et al. (2017) was conducted to three science teachers in an International School in Kuala Lumpur, Malaysia.

### **Conclusions and suggestions**

It can be concluded that the students used Higher Order Thinking Skills (HOTS) in learning writing. Specifically, they used Higher Order Thinking Skills (HOTS) in writing through six instructions, namely remembering, understanding, applying, analyzing, evaluating, and creating. It can also be concluded that the kinds of the students' Higher Order Thinking Skills (HOTS) were evidence that they improved

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their writing without any treatment. It was seen that all groups got higher test level in the second test than in the first test in term of content, reasoning and evidence, and clarity of written expression. It can be also concluded that there were some benefits of using Higher Order Thinking Skills (HOTS) in writing according to the students' responses.

Based on the conclusions, the English teachers are expected to understand the steps and the benefits of empowering Higher Order Thinking Skills (HOTS) in teaching writing. Besides, the students are also expected to improve their writing skill and achievement by using Higher Order Thinking Skills (HOTS). Also, the results of the research are also expected to provide additional reference for those who want to conduct similar research.

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