

# AN ANALYSIS OF THE HIGHER ORDER THINKING SKILLS (HOTS) IN THE NATIONAL EXAMINATION OF ENGLISH SUBJECT AT JUNIOR HIGH SCHOOL LEVEL

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**Abstract:** This study was carried out to obtain empirical evidences on the distribution of the Higher Order Thinking Skills (further glossed by HOTS) based on the revised edition of Bloom's Taxonomy in the National Examination (further glossed by NE) of English subject and to observe the development of the NE based on HOTS at Junior High School level in academic year 2017-2018. This study mainly used library research and document analysis by identifying, analyzing, and categorizing the quality of National Examination questions into Bloom's taxonomy. Moreover, as sample the researchers employed two NE documents from academic year 2016-2017 and 2017-2018. The major findings of this study demonstrate that they were only 6 and 9 out of 50 questions or 12% and 18% from two respective National Examinations can be categorized into HOTS. Moreover, the writers also found that the HOTS classified into C4 or analysis ability. Meanwhile, the Lower Order Thinking Skills (further glossed by LOTS) can be found as many as 44 and 41 questions or 88% and 82% from respective each academic year. In conclusion, the writers conclude that the most questions of NE at Junior High School level can be categorized into LOTS. Besides, based on the data the improvement quality of questions was only 6% from two academic years.

**Keywords:** Higher Order Thinking Skills, National Examination, Taxonomy of Bloom, Lower Order Thinking Skills

## BACKGROUND

One of basic competencies that must be mastered by a teacher is being able to create and develop evaluation instrument to assess students' learning outcomes. Russell and Airasian (2012) explain that "evaluation is the process of making judgments about what is good or desirable" (p.11). The main purpose of this evaluation is to find out whether the subject matter taught in the class was right or not. Moreover, in Indonesia context, to assess effectiveness of learning processes, there is National Examination which be held by Ministry of Education and Culture of Republic of Indonesia. And the test can be classified as a standardized test because it has been tried out its level of difficulty, discrimination power, validity and reliability.

Brown (2004) points out that "a Standardized test is employed to measure the students' mastery on basic parts of the curriculum in general and the result functions as a portrait of our education quality" (p.67). One of the examples of a large-scale standardized test administered in Indonesia is the National Examination (glossed by NE) which held annually throughout the country to measure students' achievement at the end of a learning period in each level.

Since April 2018, the Ministry of Education and Culture of Republic of Indonesia released the new policy where the Higher Order Thinking Skills (glossed by HOTS) questions will be developed and tested in the NE. This policy obtained many pro and contra, and one of them was from students of Indonesia and education observers. To respond the problem above, the writers tried to analyze the quality of NE of English subject whether the questions have categorized into HOTS or LOTS.

In conclusion, the implementation of HOTS in the NE is one of effort to improve the quality of education in Indonesia in every level of education. By developing questions that refer to HOTS, hopefully can stimulate critical thinking of Indonesian students as well as literacy competency.

### Research Questions

Based on the background of the study, the writers propose two research question as follows:

1. How does the distribution of the HOTS in the NE of English at Junior High School level in academic year 2016-2017 and 2017-2018?
2. How is the development of the NE based on HOTS at Junior High School level for academic year 2017-2018?

### Objectives of the Study

Based on the research question above, so the objectives of the study can be described as follows:

1. To analyze the distribution of the HOTS in the NE of English at Junior High School level in academic year 2016-2017 and 2017-2018.
2. To observe the development of the NE based on HOTS at Junior High School level in academic year 2017-2018.

### Literature Review

Heong et al as cited by Merta et al (2017) say that “higher order thinking is using thinking widely to find new challenge. It requires someone to apply new information or prior knowledge and manipulate the information to reach possible answer in new situation” (p.6). The questions which examined in the NE are objective test in the form of multiple choices. This is in line with Russel and Peter (2012) which highlight that “. . . higher-order thinking skills can be measured by a multiple-choice item. It means the multiple choice also can used to asses in higher level of thinking” (p.146).

Based on the writers’ investigation, there are three previous studies which more or less have similar points with this study. They are: Firstly, Nur Pratiwi (2014) in her study which entitled Higher Order Thinking Skill in Reading Exercise (An Analysis of Reading Exercises in *Pathway to English* Textbook for the Eleventh Grade of Senior High School Students). This study found that the ratio of the higher order thinking skill to the lower order thinking skill looks far enough, 1:9,4. The distribution of the higher order thinking skill looks like: the analyze skill obtains the highest distribution by obtaining 15 out of 157 essay reading questions (7.7%) while the evaluate skill is in the second place by obtaining 3 out of 157 questions (1.9%) and the create skill obtains null distribution.

Secondly, in the study of Nur Rochmah Lailly and Asih Widi Wisudawati (2015) which entitled Analisis soal tipe Higher Order Thinking Skill (HOTS) Dalam Soal UN Kimia SMA Rayon B Tahun 2012/2013. In this study data were collected with a non-test techniques and Focus Group Discussion (FGD). The results showed that ability to think critically and creatively cannot be generated. In National Exam about the pictures/graphics/charts by 15%, table 15%, the symbol/formula/chemical equation of 47.5%, 22.5% sample, and a fragment case of 32.5%.

Thirdly, Desi Lestari Ningsih with the title: Analisis Soal Tipe Higher Order Thinking Skill (HOTS) Dalam Soal Ujian Nasional (UN) Biologi Sekolah Menengah Atas (SMA) Tahun Ajaran 2016/2017. the results showed that almost all of the question in national exam were HOTS type (92.5%). However, based on the previous studies above there is no single study who have been conducted to analyze the distribution HOTS in NE of English subject on Junior High School level in two academic years namely 2016/2017 and 2017/2018. In brief, the writers strongly believe that this study which entitle “An analysis of the higher order thinking skills (hots) in the national examination of English on junior high school level” is deserved to investigate comprehensively.

## Conceptual Framework

Higher Order Thinking Skills or HOTS is the highest level in the cognitive hierarchy in Bloom's taxonomy. HOTS is not only ability to remembering, understanding, and applying, but also capability to think critically to solve the problem in daily life and ability to creating something new or innovations. Nowadays, high-level thinking is a basic requirement for everyone to face globalization in order to be a winner in competitive era. If someone does not have high level thinking, s/he will be left behind and cannot survive. Principally, the implementation of HOTS in NE has purpose to stimulate high level thinking of Indonesian students in accordance to the goal of education that is developing abilities and forming character in order to educate national life as written in the mandated of constitution.

Gultom in Alhadza and Zulkifli (2017) states that "NE attempts to evaluate the quality of education nationally through establishing a national educational standard" (P.1-12). In line with Gultom, According to National Education Standard Department (Badan Standar Nasional Pendidikan, further glossed by BSNP) asserts that NE is an activity measurement of achievement of graduate competencies in certain subjects nationally by referring to Graduates' Competency Standards (BSNP:2017).

Furthermore, BSNP (2017) also reveals that some objectives and benefits of NE are as follows:

1. NE aims to measure achievement of graduate competencies in subjects certain nationally with reference to Graduates' Competency Standards;
2. NE as a sub-system assessment in the National Education Standards (Standar Nasional Pendidikan, further glossed by SNP) becomes one of the benchmarks for achieving SNP in the context of guarantee and quality improvement education.

Meanwhile the benefits of NE can be described as follows:

1. Mapping the quality of educational programs and or educational units;
2. Consideration of selection for the next level of education;
3. The basis of fostering and providing assistance to education units for equity and improving the quality of education;
4. For the regional governments can utilize the results of the national examination to carry out program planning fostering educational units in order to improve the quality of excellent graduates competitive, both at the local, national and global levels

In terms of HOTS, it can be classified into three categories on definition of the higher order thinking, (1) those that define higher-order thinking in terms of *transfer*, (2) those that define it in terms of *critical thinking*, and (3) those that define it in terms of *problem solving* (Brookhart, 2010:3). In the first category of HOTS, transfer means the teaching goal behind any of the cognitive taxonomies is equipping students to be able to do transfer. It means that the students to be able to relate their learning to other elements or prior knowledge. Secondly, critical thinking or being able to think, it means that students can apply wise judgement or produce a reasoned critique. This is in accordance to the goal of teaching which equipping students to be able to reason, reflect, and make sound decisions. Thirdly is problem solving, the goal of teaching is equipping students to be able to identify and solve problems in their academic work and in life. This includes solving problems that are set for them and solving new problems that they define themselves, creating something new as the solution. In this case, being able to think means students can solve problems and work creatively.

Basically, there are so many implications of HOTS for learning process Brookhart (2010) points out that "the higher order thinking not only improve students' thinking skills but also their overall performance" (p.8). Meanwhile, the chairman of BSNP, Bambang Suryadi (2018) also emphasizes that "the purpose of introducing the HOTS in the assessment is to encourage students to do high-level reasoning, so that they are not fixated on one pattern of answers generated from the memorization process, without knowing scientific concepts" (p.5). In short, the implication of the higher order thinking skill is important for better outcomes and improve how students' thinking in teaching and learning process.

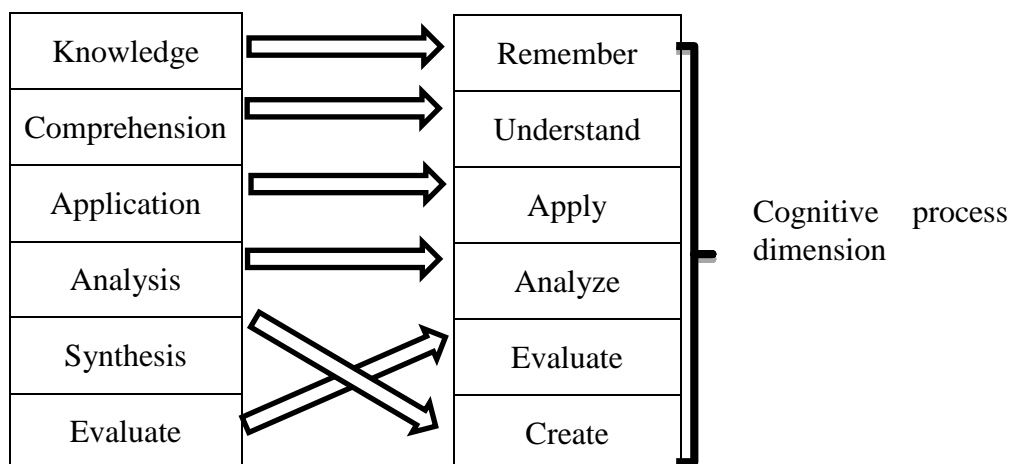
Furthermore, regarding to the position of HOTS in Bloom’s Taxonomy, from three domains, Russel and Peter (2012) state that “the most commonly taught and assessed educational objectives are those in cognitive domain” (p.68). The previous statement actually in line with the implementation of NE where only cognitive domains are assessed. The following table is the types of cognitive process that identified in Bloom’s taxonomy:

**Table 1**  
**The cognitive domain in Taxonomy of Bloom**

<b>Taxonomy Level</b>	<b>Related Verbs</b>	<b>General Description</b>
<b>1. Knowledge</b>	Remember, recall, identify, recognize	Memorizing facts
<b>2. Comprehension</b>	Translate, rephrase, restate, interpret, describe, explain	Explaining in one’s own words
<b>3. Application</b>	Apply, execute, solve, implement	Solving new problems
<b>4. Analysis</b>	Break down, categorize, distinguish, compare	Breaking into parts and identifying relationship
<b>5. Synthesis</b>	Integrate, organize, relate, combine, construct, design	Combining elements into a whole
<b>6. Evaluation</b>	Judge, assess, value, appraise	Judging quality or worth

(Source: Russell and Peter, 2012:69)

Moreover, Schraw et al as cited by Merta et al (2017) classifies “Bloom’s thinking skill into two categories that is LOTS which consists of knowledge, understanding and application and HOTS which consists of analysis, synthetic and evaluation (p.26-32)”. Moreover, In 2001, there was an update version of Bloom’s Taxonomy. “This revised taxonomy attempts to correct some of the problem with original taxonomy. The cognitive process dimension of the revised Bloom’s Taxonomy like the original version that has six hierarchy skills. They are from simplest to most complex: remember, understand, apply, analyze, evaluate, and create” (David R. Krathwohl, 2001:68). Furthermore, they interchange of the top two cognitive process categories, placing *Create* as the most complex category instead of *Evaluate* (David R. Krathwohl, 2001:68). It can be illustrated in the following Table:



**Table 2**  
**The Revised Bloom’s Taxonomy**

In addition, the detail description of keywords of each category can be seen in the table below:

**Table 3**  
**The Revised Bloom’s Taxonomy**

Category	Keywords
<b>remembering: can the student recall or remember the information?</b>	Mention the definition, imitate the pronunciation, state the structure, pronounce, repeat, state
<b>understanding: can the students explain the concept, principle, law or procedure?</b>	Classify, describe, explain the identification, placed, report, explain, translate, paraphrased.
<b>applying: can students apply their understanding in new situation?</b>	Choosing demonstrating, acting, using, illustrating, interpreting, arranging schedule, making sketch, solving problem, writing
<b>analyzing: can the students classify the sections based on their difference and similarity?</b>	Examining, comparing, contrasting, distinguish, doing discrimination, separating, test, doing experiment, asking
<b>evaluating: can students state either good or bad towards a phenomenon or certain object?</b>	Giving argumentation, defending, stating, choosing, giving support, giving assessment, doing evaluation
<b>creating: can students create a thing or opinion?</b>	Assemble, change, build, create, design, establish, formulate, write

(Source: Merta et al, 2017:17)

In short, according to the table above, the top three namely analyzing, evaluating, and creating include into HOTS. Meanwhile, remembering, understanding, and applying are considered as LOTS.

## METHOD

The writers used document analysis method to analyze the content of the NE questions of English subject. Donald Ary et al, (2010) explain that “content or document analysis is a research method applied to written or visual materials for the purpose of identifying specified characteristics of the material. The materials analyzed can be textbooks, newspapers, web pages, speeches, television programs, advertisements, musical compositions, or any of a host of other types of documents” (p.457).

In this study, the writers used two documents of NE of English subject because they were prepared well by Ministry of Education and Culture of Republic of Indonesia and they have already tried out its validity and reliability as well as level of difficulty and discrimination power before given in the NE. In other words, the two documents of National Examination of English subject were reasonable to be employed as sample of study because they had been examined and prepared well by authorized department.

### Research Instrument

There are two documents of NE of English subjects were used as research instrument that is English test from academic year 2016-2017 and 2017-2018. the following lines will be explained the description of two English tests:

- a) Package 1 was NE of English subject for Junior High School Level in academic years 2016-2017. This package has two items that is Package A and B and it consists of fifty multiple choices questions. In academic year 2016-2017, not every school were able to conduct National Examination by using CBT (Computer Based Test) or officially called UNBK (Ujian Nasional Berbasis Komputer). In fact, some schools in Banten Province still face many obstacles in providing supporting devices to conduct Computer-Based Test (CBT), so the local government decided to used Paper Based Test (PBT) where implemented manually.
- b) Similar to Package I, Package II has two items, namely Package A and B that consists of fifty multiple choice. However, due to few schools cannot carry out CBT so the test still carries out by adopting PBT.

### Data Analysis Technique

In this study, the writers made analysis table that help the writers in categorizing every question into the six cognitive domains of Bloom’s taxonomy. The aim of this table is to check the quality of every question itself whether it includes into HOTS or LOTS. In

analyzing the data, the writers also identify category of every question whether it belong to C1 (memorizing), C2 (comprehending), C3 (Implementing), C4 (analyzing), C5 (evaluating) or C6 (creating). Then, the writers count the total of every cognitive skills from the multiple-choice questions and compares it to every level to find out the exact amount of the distribution of the HOTS in the NE of English subject on the Junior High School level. Finally, the writer interprets the result of the data analysis by describing qualitatively.

## FINDINGS

National examination always held annually throughout the country from primary school to senior high school level. The writer chooses A package for each year because there are two packages from the national English examination, each package has 50 multiple choice questions. The A package in academic year 2016-2017 has code P-C-2016/2017, and A package in academic year 2017/2018 has code P-B-2017/2018.

In the implementation of NE in 2016-2017, not every schools applying CBT (Computer Based Test) or usually called as UNBK. UNBK is a system of carrying out national examination using computer as a media. Only some of school can apply it. Where the school has the media such as a computer, good internet connection, and using the 2013 curriculum as their learning system. Then, in the 2017-2018 academic year, all schools are required to apply the revised 2013 curriculum and using computer for examination or UNBK.

### Findings the Distribution of the Higher Order Thinking Skill in the National Examination of English on Junior High School Level 2016-2017 and 2017-2018 Academic Year

There are fifty questions of multiple choice in National Examination of English each year, those question are analyzed by using checklist table to find out the distribution of cognitive domain in every question. There are six cognitive domains in the revised of Bloom's taxonomy. Those six domains are divided into lower order thinking level (remember, understand, apply) and higher order thinking level (analyze, evaluate, create). Finally, the writer hopes can find how much percent higher order thinking in every year, and compare them.

Having read the two packages of NE of English subject in academic year 2016/2017 and 2017/2018, the writers analyzed every item of question and count the percentage distribution of HOTS. The table below will demonstrate the distribution of HOTS in two NE of English in academic year 2016/2017 and 2017/2018:

**Table 4:**  
**Distribution of HOTS in NE of English in Academic Year 2016/2017**

No.	Higher Order Thinking Level	Multiple Choice Questions	Total Score
1.	Analyzing	6	$6/50 \times 100\% = 12\%$
2.	Evaluating	0	$0/50 \times 100\% = 0\%$
3.	Creating	0	$0/50 \times 100\% = 0\%$
	<b>Total</b>	6	$6/50 \times 100\% = 12\%$

**Table 5:**  
**Distribution of HOTS in NE of English in Academic Year 2017/2018**

No.	Higher Order Thinking Level	Multiple Choice Questions	Total Score
1.	Analyzing	9	$9/50 \times 100\% = 18\%$
2.	Evaluating	0	$0/50 \times 100\% = 0\%$
3.	Creating	0	$0/50 \times 100\% = 0\%$

<b>Total</b>	9	$9/50 \times 100\% = 18\%$
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The tables above show that NE of English subject that held every year used multiple choice as its type of test, in academic year 2016/2017 there were 6 questions that can be categorized into analyzing skill or C4 and there was no one question that can be classified into evaluating and creating skill. Meanwhile, in academic year 2017/2018, there were 9 questions can be categorized into analyzing skill. In other words, the distribution of HOTS in NE of English in academic year 2016/2017 was only 12% and 18% in academic year 2017/2018. Then, if see thoroughly the tables, we can infer that there is no significant improvement of distribution HOTS in academic year 2017/2018 because it only increases 6%.

### **The Development and Comparison of the National Examination on Junior High School Level for 2017-2018 based on Higher Order Thinking Skill (HOTS)**

After seeing the result of the distribution of English national exam, it shows that there is a development among the 2016-2017 to the 2017-2018 academic year. Where there is an increase in the amount of higher order thinking question, although not significant, it was only increase 6%. But, the question in English examination was quite developed from the previous year. Because the writer wonders the development of higher order thinking in national examination in 2017, based on the statement of the ministry of education and culture on April 2018, before the national examination was held, states that the National Examination for Junior High School level also using HOTS. From its statement, the writer was also curious to analyze the national exam of English of the previous year. The following table shows the comparison of the question with higher order thinking skills in the 2016-2017 and the 2017-2018 academic years.

**Table 6**  
**The Comparison English National Exam with HOTS**  
**In The 2016-2017 And The 2017-2018 Academic Years**

No.	Academic Year	Total Score
1.	16-2017	12%
2.	17-2018	18%

Furthermore, the comparison between 2017 and 2018, the writer finds there was an increase in the number of questions using HOTS category. In the 2016-2017 academic year, the total of the question with HOTS was 12% and 18% for the 2017-2018 academic year, which all questions belong to analyze skill or C4. So, the national examination from 2017-2018 increase compared to the previous year.

## **DISCUSSION**

The findings show that all questions which categorized into HOTS only 12% and 18% in academic year 2016/2017 and 2017/2018. And the improvement of HOTS questions were only 6% from two academic years. Meanwhile, there was no question can be classified into evaluating and creating skill. It means most of questions from two academic years still can be classified into LOTS.

From 50 questions of multiple choices in each package, the higher order thinking level only gets 6 questions in the 2016-2017, and 9 questions in the 2017-2018 academic year. Thus, the writer thinks, between that skills is inequality number in multiple choice questions. The understanding skill or C2 obtains the highest distribution among the three skills in the LOTS. It happens because the questions of NE of English were dominated by texts and asked students to comprehend the text before they decide to select the best answer. The writers assume that the test makers were hard to make HOTS questions because the NE was created in form of multiple choice. So, in the following year, the NE questions can be improved by adding variety of questions in form of essay.

Furthermore, the analyze skill obtains 6 questions and 9 question for each year. Is the highest number among the three skills, although if it compared to the other six domains, it

is so far and still has small distribution. Besides, for evaluate skill and create skill which obtains null distribution. It was caused those skills are appropriate for essay test.

Finally, the researchers think that in the higher order thinking level, the highest distribution skill that is gotten by the analyzed skill if it is compared to the three cognitive domains of revised edition from Bloom's taxonomy. The most important thing that must be concern for the designers of the test and government is to add evaluate skill which obtains null distribution. The researcher suggest that the government should accommodate all skills in bloom taxonomy into the NE. So, the students can improve their critical thinking or their higher order thinking skill in the future.

## CONCLUSION

The results of this study indicate that the distribution of HOTS in the NE of English subject was lower than the distribution of LOTS. It reflects on the data which taken from two academic years namely 2016/2017 and 2017/2018 which demonstrate that the distribution of the HOTS were only 6 and 9 questions out of 50 questions in academic year 2016/2017 and 2017/2018 academic year, or equal into 12% and 18%. Meanwhile, the distribution of LOTS was 44 and 41 out of 50 questions or equal with 88% and 82% in each academic year. Besides, the writer founds that there was no significant improvement of HOTS from two academic years. Because it only increases 6% or equal with 3 questions.

In addition, the development and Comparison in the national examination from 2017-2018, The writer founds there was an increase in the amount of higher order thinking question, although not significant., it was only increase 6%. But, if we compared from the previous year, it was quite developed. Then, the development of the variation in the multiple-choice questions, almost has same form from the previous year.

Based on the results of this study, it can be concluded that LOTS was still dominant in NE of English subject on Junior High School Level. The findings also reveal that there is still much room for government to make Indonesian students to be critical thinkers. It must be accompanied by classroom exercises in all English skills which require students' HOTS. It is clear that those crucial principles necessary for constructing good test items are not met in English National Examination items in Indonesia.

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