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The Development Assessment Instruments of Higher Order Thinking Skills on Economic Subject

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Abstract

This research aims to develop Higher Order Thinking Skills (HOTS) based assessment instruments on economic subjects especially in Basic Competencies 3.4 price and inflation index. This study adopts the development model of Borg & Gall which is limited to five stages of development, namely, data collection, product design, product testing, product analysis and final product revision. This research was conducted on 33 students of Social Eleven One class at Senior High School 1 Cerme. This assessment instrument produces 15 multiple choice test and has been tested twice. This study shows the results that in the first and second trials the overall validity value of the problem is greater than r table which is 0.344 and the reliability value is 0.786 and 0.763. This shows that the assessment instrument is valid and reliable. While the test for the quantity of items consists level difficulty of the question, differentiating question and effectivity of distractor that meet the quality criteria of HOTS-based questions. Based on the results of the trial it was found that there were 7 students who were included in the "less" category. Overall, the average student has a high level of thinking ability that requires sufficient categories. So, the efforts to support the learning process continue to be needed which is useful for improving higher order thinking skills in students.

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INTRODUCTION

Quality education is essentially a capital for a country to improve the quality of its human resources. Quality education can be seen from the national education standards applied to the country. Based on the National Education Standards Agency, BSNP (2019) the national standard of education in Indonesia consists of eight aspects, namely:

"Graduate competency standards, content standards, process standards, education standards and education personnel, standards of facilities and infrastructure, management standards, educational funding standards, and educational assessment standards".

The demands of education standards that must be fulfilled, become a challenge of education in Indonesia.

According to the Program for International Student Assessment (PISA), Nadlir (2018) explain that Indonesia in 2015 was ranked 64th in the Organization for Economic Cooperation and Development (OECD) which has 72 countries. In this regard, the government continues to make evaluations in the field of education to improve the quality of education in Indonesia, namely by improving existing deficency. The deficency in the implementation of the curriculum, the government continues to review the curriculum that is suitable to be applied in Indonesia. For this reason, the 2013 curriculum is currently being implemented which aims to improve the quality of education in Indonesia. In the implementation of the 2013 curriculum, Widiyanto (2016) said that the Ministry of Education and Culture continues to make revisions to the curriculum and the last revision was carried out in 2018 which produced instruments to facilitate educators in assessing student performance. In the 2013 curriculum, the Ministry of Education and Culture also made improvements to content standards and assessment standards, both of them focused on Higher Order Thinking Skills (HOTS) (Astutik, 2016).

According to Newmann's statement cited by Abosalem (2016) higher order thinking skills can be defined as a challenge for students to interpret, analyze, or manipulate information. While (King, Goodson, & Rohani (2011) say higher order thinking skills are the ability to think that activated when students face unfamiliar problems, dilemmas over the answers to a question, in these situations students do not only use memorizing solutions but required to think critically and creatively in solving problems. Ngah, Ismail, Tasir, & Said (2017) say if higher order thinking skills are the ability to think high level in students that involve complex thought processes and thinking processes towards higher levels not just memorizing or simply repeating learning. The definition of higher order thinking skills is also delivered by Kusuma, et al. (2017, p. 26) which says that higher order thinking skills is understood as the ability of students to connect lessons to elements related to things that have been learned to be associated. As explained by Nursalam, et al. (2018, p. 2) higher order thinking skills is the ability to solve problems through the association of new knowledge and old knowledge by connecting a number of facts then being changed to become a new solution. Based on the expert's opinion, high-level thinking ability is the thinking ability of students who demand it to think critically and creatively in producing ideas or strategies to solve problems.

The following indicators of higher order thinking skills by (Krathwohl cites by Purbaningrum, 2017) consist of three levels thinking, they are analyze, evaluation and creation. The analyze is used to analyze various information that enters and arranges it into a simple pattern and be able to know and distinguish to formulate questions. While in the evaluation level, students able to give an assessment of something problems with appropriate criteria or standards, finding a hypothesis, able to do criticism, testin and can accept or can reject a question of existing criteria. In the last level's creation, students can creating generalizations on an idea against something, make an internal method design to solve the problem and

organizing each element or part to become a new and unprecedented structure.

Higher order thinking skills is an educational challenge in the 21st century. To improve the quality of education, especially in the 21st century, students need to develop high level thinking skills. Higher order thinking skills can be trained and developed through classroom learning. In Alison's opinion, higher order thinking skills can be learned by everyone, both children and adults, higher order thinking skills can still be developed (Thomas & Thorne, 2010 as cited by Widihastuti, 2014)). Meanwhile, according to Astutik (2016) learning to improve higher order thinking skills can be done by giving space to students through meaningful learning, namely contextual learning that can help students to build their knowledge based on their own experiences. But in this case, in the opinion of Lawson (1993); Schellens & Valcke (2005) to improve higher order thinking skills required collaboration of all subject teachers, namely they jointly improve higher order thinking skills for students. This collaboration can be cumulatively developed as students progress in learning in school (Benjamin, 2008).

According to Apandi (2018) teaching and learning activities in the 21st century skills are learning that required to give students the ability, which consists of 4C components, namely: (i) Communication, (ii) Collaboration, (iii) Critical thinking and problem solving , and (iv) Creative and innovative. Components of 4C are included in the category of higher order thinking skills. Meanwhile, Craig (2011) suggests in the 21st century students will deal with unusual problems, so they must be familiar with activities related to problem solving. In this case, problem solving can be solved through the ability to analyze, evaluate, and create, where the three components of the ability are included in the realm of higher order thinking skills. Therefore high level thinking skills are important things that must be possessed by students in the 21st century.

The importance of higher order thinking skills was also expressed by Heong, Yunos, Hasan, Othman, & Kiong (2011) in their opinion, students must be prepared to have higher order thinking skills to be able to work in the 21st century. Higher order thinking skills can also make students develop careers, have more achievement, have socal skills, self-control, be creative, responsible, work hard, and be able to solve problems by making the right decisions (Wang & Wang, 2014). In line with this, Conklin, (2012) also argues that, higher order thinking skills are important because, they can make students become achievers and make good contributions to society. In the same line, Widiawati, Joyoatmojo, & Sudiyanto (2018) also stated if the higher order thinking skills very important because it has many benefits, including the existence of a higher order thinking skills students are able to think reflective, creative, able to solve problems, think critically, able to develop careers, excel in learning, able to develop social skills, be responsible, have self control, work hard, able to make decisions and plans.

Based on these various opinions, higher order thinking skills are an important requirement for students, because through these abilities students are helped in dealing with various problems in daily life. However, based on the facts in the field obtained from the results of Kusaeri, Usadieda, Indayati, & Ifaizien (2018, p. 5) explain that students experience difficulties when solving complex problems consisting of various information. Difficulties experienced by these students, can be seen from the ability of students to answer the questions that level is higher order thinking skills. Based on the research conducted by Nisa & Wasis (2018, p. 205) they stated that the average ability of students in answering higher order thinking skills questions, especially in Senior High School 5 Surabaya was 60.3% at Senior High School 3 Surabaya 56.9% at Senior High School 1 Tuban amounting to 48.9 and Senior High School 1 Plumpang 37.8%. The difference in value is due to the way of thinking and learning strategies of students, as well as how to teach different educators.

In line with that, the research conducted

by Kurniati, Harimukti, & Jamil (2016, p. 145) mentions that of 30 students spread across several Jember, in junior high schools it was found that there were 18 students who were able to work on higher order thinking skills and 12 students still classified as lower order thinking skills. Low ability students are caused by students not understanding some of the material and its uses. According Kawuwung (2011) the low thinking ability of students can be caused by the learning strategies applied by educators emphasizing the understanding of concepts rather than the development of higher order thinking skills. Based on conclusions from some of the results of these studies, higher order thinking skills in students are still relatively low. Even though higher order thinking skills are very important for students. This is as explained by Istiyono, Mardapi, & Suparno (2014, p. 11) which cites the statement of Ramos, Dolipas & Villamor which states that students with higher order thinking abilities have a high understanding to solve a problem.

While based on a preliminary study conducted by researchers at Senior High School 1 Cerme the issue of higher order thinking skills was already available at the school, but the number of question for higher order thinking skills questions especially on economic subjects was still limited, so the students unfamiliar and found it difficult to work on the questions higher order thinking skills. Whereas as stated by Nugroho (2018) the issue of higher order thinking skills in 2018 was included in the national examinations, although the percentage was less than 15% but many students complained of difficulties to solve the questions.

Students have difficulty in working on higher order thinking skills questions because they are not used to working on higher order thinking skills based questions. While Anderson, et al. (2001, p. 67) say that the cognitive domains of remember, understand and apply are categorized as Lower Order Thinking Skills (LOTS) and the cognitive domains are analyze, evaluate and create categorized as higher order thinking skills (HOTS). In the classroom, students are accustomed to working on questions with cognitive domains of remember, understand and apply levels that are included in the cognitive domain of the level of lower order thinking skills. They have not applied higher order thinking skills in their learning. In this case, the teacher plays an important role in stimulating students' thinking by compiling questions that can improve higher order thinkng skills (Robert & Zody, 1989 as cite by Mas faizin). Even though in some schools, students have been accustomed to working in groups, according to Widiawati, Joyoatmojo, & Sudiyanto (2018) it will not have much effect on higher order thinking skills, if the problems solved in learning activities in the class do not have categories of activities that require students to do analysis, evaluation and creating activities.

Therefore, based on these problems researchers want to develop assessment instruments in the form of higher order thinking skills based questions in order to help educators improve their higher order thinking skills in students and help students understand and solve various problems with higher order thinking skills level questions. This study aims to produce higher order thinking skills based assessment instruments on economic subjects using the development model of Borg and Gall, to determine the feasibility of higher order thinking skills based assessment instruments on economic subjects and to analyze higher order thinking skills in students. This development research is expected to be used as input and contribution to the world of education, especially regarding the development of assessment instruments in the form of higher order thinking skills based questions.

METHODS

The type of research used in this study is Research and Development (R & D) methods. According Sugiono (2013, p. 407) R & D research method is a development research method used in producing a product and

testing the effectiveness of the product. This development research was adapted based on the development model of Borg & Gall which consisted of 10 steps of development. But in this study researchers only used 5 steps of development, namely data collection, product design, product testing, product analysis and final product revision. In this study an assessment instrument was developed in the form of questions based on higher order thinking skills on Social Eleven One class with economic subjects and used basic competencies 3.4 price index and inflation.

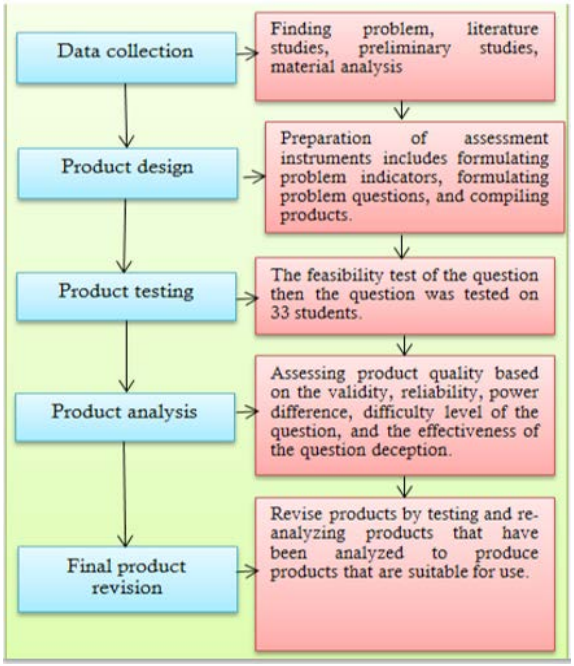

Figure 1. The flow of the research and development model was adopted from Borg & Gall

The flow of research and development of higher order thinking skills based assessment instruments in this study are:

First, Data collection. The first stage begins by examining the existing problems, namely the higher order thinking skills problem that is available in the school is still limited, so students tend to have difficulty when facing higher order thinking skills based questions. The next stage in this research is to collect all data relating to the development of higher order thinking skills based assessment instruments.

Second, Product Design. Planning for the development of higher order thinking skills based assessment instruments for economic subjects that will be used in this study, including formulating indicators of higher order thinking skills questions and formulating a grid for preparing higher order thinking skills questions. In this study the questions used in the form of multiple choice objective questions (multiple choice test) which aims to train students' abilities in solving higher order thinking skills based questions.

Third, Test the Product. At this stage, assessment instruments that have been made, then tested their feasibility by expert lecturers in the field of economics at Surabaya State University and economic teachers at Senior High School 1 Cerme. When the question has been validated by expert lecturers and economic teachers, all errors in making these questions are corrected based on suggestions and guidance from the validator. Then a product trial was carried out by giving questions to students of Eleven Social One class at Senior High School 1 Cerme, amounting to 33 students.

Fourth, Product Analysis. At this stage, analysis is used to determine the feasibility of the product being developed. Then the results of product trials were analyzed using validity, reliability, power difference questions, the level of difficulty of the questions, and the effectiveness of the question fraud using the SPSS and Microsoft Excel programs.

Fifth, Revised Final Products. Products that have been analyzed are then tested and reanalyzed to produce a product that is suitable for use. The instrument for collecting data uses unstructured interviews to find out the initial data in schools, expert review sheets by material experts and expert validation sheets by evaluation experts. While the data analysis technique uses expert review sheet analysis and analysis of item questions as expert validation data. in the analysis of the expert review sheet, the data were obtained from the results of the assessment of material experts, namely economic subject teachers of Senior

High School 1 Cerme in the form of suggestions and inputs which were then analyzed using qualitative descriptive methods. From the material expert advice, researchers can find out the deficency of the questions developed to be repaired again. While for analyzing the item questions as expert validation data consists of analyzing the item questions qualitatively which is seen based on the percentage of results from the Gutmann Scale with the calculated formula as follows:

Percentage = (Acquisition Score /Maximum Score) x 100%

(Riduwan, 2016, p. 17)

While the second analysis is to analyze item questions quantitatively, namely through the following test.

(1) Validity

According to Sugiono (2010, p. 137) an instrument is valid if the instrument can be used to measure what should be measured. In calculating the value of the validity of each item, the Microsoft excel program is used by looking at the calculated r value that is greater than the r value of the table in each item.

(2) Reliability

According to Sugiono (2010, p. 137) an instrument can reliable if the instrument can be used several times in measuring the same object to produce the same value or data. Calculation of reliability was carried out with the SPPS program by looking at the reliability values in each item displayed in the Cronbach's Alpha if deleted item.

(3) Level of Difficulty Questions

This calculation is used to find out how much degree of difficulty the question has been made. In determining the level of difficulty multiple choice questions are calculated through the index of difficulty in each item. In calculating the level of difficulty used Microsoft excel program with the following formula:

$P = (\sum B)/N$

(Arifin, 2009, p. 266)

Description:

P = difficulty level

$\sum B$ = number of students who answer

N = number of students

(4) Differentiating Question

Coefficient of each question is calculated using the Microsoft excel program with the following formula:

DP = ((WL-WH))/n

(Arifin, 2009, p. 273)

Description:

DP = differentiating question

WL = number of students wrong answer from under group

WH = number of students wrong answer from on group

n = 27 % x N

(5) Effectivity of Distractor

Effectivity of distractor can be seen through the pattern of answers chosen by students. To analyze the problem outliers, researchers used the Microsoft Excel program with the formula:

IP = P/((N-B)/(n-1)) x 100%

(Arifin, 2009, p. 279)

Description:

IP = distractor indeks

P = number of students who choose distractor

N = number of students taking the test

B = number of students answer correctly on each question

n = number of answer options

1 = fixed number

(6) Higher Order Thinking Skills

While to see higher order thinking skills in students can be obtained through the results of higher order thinking skills based assessment instruments, which can be seen from the percentage based on the formula below, namely:

Student Value = (Student Score)/(Maximum Score) × 100 %

(Purbaningrum, 2017, p. 43)

RESULT AND DICUSSION

The research on the development of higher order thinking skills based assessment instruments was carried out on February 21, 2019 and February 25, 2019 at Senior High

School 1 Cerme with research subjects as students of class Social Eleven 1. In this study the development model adopted from Brog & Gall was limited to five stages of development are: data collection, product design, product testing, product analysis and final product revision. The stages of development can be explained as follows:

(1) Data collection

At the stage of data collection, researchers conducted interviews with economic teachers at Senior High School 1 Cerme related to curriculum, students' abilities and judgments used. Based on the results of the interview, the curriculum used in the school is the revised 2013 curriculum in 2018 with learning characteristics that direct students to have high-level thinking skills. Analysis of students' abilities

Addressed to students of social eleven one class as the subject of research. Based on suggestions from economic teachers, students who are suitable to be used as research subjects are 33 students of Social Eleven One class with aged between 16-17 years. This is because students of Social Eleven One class have a fairly good average ability seen from the results of daily tests and results of midterm tests. Then, the assessment analysis used in the school is aimed at the assessment sheet used by educators during the learning process with basic competencies 3.4 price index and inflation, where in the 2018/2019 school year an assessment has been developed that directs students to have higher order thinking skills.

(2) Product Design

At the product design stage, researchers designed alternative solutions to solve problems, namely in the form of higher order thinking skills based assessment instruments on economic subjects. In this study, the assessment instruments developed were higher order thinking skills based questions totaling 25 items and tested twice in basic competencies 3.4 so that the final product would produce the 15 best items in basic competencies 3.4. In this study, the questions made were multiple choice objective questions with five alternative answer choices.

(3) Product Trial

At the product testing stage, higher order thinking skills questions are tested on the subject of the research, in this case the validator and students. The results of the trial from the question validator were qualitative data, namely study data and validation of higher order thinking skills based assessment instruments. While the results of trials to students in the form of quantitative data. According to the material expert validator, the questions used were in accordance with the material used in the school. Meanwhile, according to the expert evaluation validator, there are still some questions that must be revised. This can be seen based on the percentage of results from the Gutmann Scale presented in the table below, namely:

Table 1. Results Validation of Evaluation Experts

Percentage	Number of Question	Question Number	Information
0%	2	23, 25	Questions Denied
36,36%	6	4, 16, 19, 20, 21, 24	Questions Revised

Source: Processed Primary Data (2019)

After seeing the results of the validation, then the question is revised and re-validated by the evaluation expert, so as to produce a feasible question.

Then the question was tested on 33 students of Social Eleven One class at Senior High School 1 Cerme by using a one shot case study trial design where students were given higher order thinking skills based assessment instruments then the data from this study were obtained based on analysis of the results of higher order thinking skills based assessment instruments carried out by students of Social Eleven One class. Data from the results of tri-

als on these students will be analyzed quantitatively.

(4) Product Analysis

At the product analysis stage, researchers test the quality of the product quantitatively, namely through testing the validity of the question, reliability of the question, difficulty of the question, the differentiation of the questions, the effectivity of distractor and see the results of the ability of students.

(5) Final Product Revision

After the product is analyzed, then the 15 best questions are selected which will be tested again in the second trial and the results are re-analyzed to see the feasibility of the items that have been made and see high-level thinking skills in students after working on the questions twice at different times with the questions same.

The following results of the first trial and the second trial which can be seen based on the results of the item analysis on the Table 2.

The criteria for higher order thinking skills based assessment instruments produced are seen based on quantitative analysis. In quantitative analysis includes analysis through validity test. The results of the validity test can be seen based on the calculated count which is greater than the r table value. Based on the results of the first trial there are five questions that have a very low validity level which is less than the r table value (0.344) on numbers 9, 10, 17, 18 and 22. While in the second trial as a whole all the questions have a level of validity of "Enough" and greater than r table. Based on Surapranata, (2009, p.64) as stated by Nunnally stated that good questions have a validity level above 0.3. Meanwhile, in the second test all questions have a validity level above 0.3. This shows that, in the second test as a whole the problem can be said to be good. According to Arikunto (2015, p. 101) high and low validity will affect the high and low reliability. So, questions that do not meet the level of validity should be discarded, because it will affect the value of the reliability of the question. Therefore, in the second trial only questions which were included in the valid category were only selected.

Table 3. Test Reliability 1

Cronbach's Alpha	N of Items
.786	25

Source: Processed Primary Data (2019)

Table 4. Trial Reliability 2

Cronbach's Alpha	N of Items
.763	15

Source: Processed Primary Data (2019)

Reliability of the questions in general can be stated reliably based on the results of the value analysis of Cronbach's Alpha, as

Table 2. Validity of Question

Category	Number of Question		Question Number	
	Trial 1	Trial 2	Trial 1	Trial 2
Very Low Validity	5	-	9, 10, 17, 18, 22	-
Middle Validity	19	15	1, 2, 3, 4, 5, 6, 7, 8,11, 12, 13, 14, 15, 16, 19, 20, 23, 24, 25	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15
High Validity	1	-	21	-

Source: Processed Primary Data (2019)

well as the research conducted by Abosalem (2016, p. 6) that uses Cronbach's Alpha in measuring question reliability. According to the results of a study from Lestari et al., (2016, p. 81), the test can be said to be reliable when the alpha value has a value greater than r table. While the results of the research are Ngah et al., (2017, p. 3); Oktanisa & Fitrayati (2018, p. 360); Puteh et al., (2018, p. 1243) states that higher rder thinking skills problem can be declared reliable if it has a Cronbach's Alpha value greater than 0.60. In this study the r table value is 0.344 with a significance level of 5%. In the first test, the Cronbach's Alpha value was 0.786 and the second Cronbach's Alpha value was 0.763. Both test results have a value greater than r table and greater than 0.60. In this case the question being tested can be stated reliably, both in the first and the second test, because it has a value from Cronbach's Alpha greater than r table and greater than 0.60.

Based on the results of the first trial, the level of difficulty of the questions on average is in the category of "Medium" which is a number of 18 items and there are 3 questions included in the category "Easy" and 5 questions including the category "Difficult".

Whereas based on the results of the second trial the average questions are in the category of "Medium" which is a number of 9 items. While the 3 questions are in the "Easy" category and 3 questions are included in the "Difficult" category. According to Arikunto (2015, p. 222) the level of difficulty of a good question when testing a problem is a question that has a level of difficulty in the category "Medium". In the study of Najihah et al., (2018, p. 23); Walid & Ramli (2015, p. 375); Rofi'ah, Aminah, & Ekawati (2013, p. 18) also mentioned that in order to measure higher order thinking skills in students, questions that were at the moderate level were used.

Based on the results of the first trial, the differentiation of the problem as a whole is in the category of "Very Good" which

Table 5. Level of Difficulty Questions

Category	Number of Question		Question Number	
	Trial 1	Trial 2	Trial 1	Trial 2
Easy	3	3	1, 4, 14	4, 8, 11
Medium	17	9	3, 5, 6, 7, 8, 10, 11, 12, 13, 15, 18, 19, 20, 22, 23, 24, 25	1, 2, 3, 5, 6, 10, 12, 13, 14, 15
Difficult	5	3	2, 9, 16, 17, 21	6, 7, 9

Source: Processed Primary Data (2019)

Table 6. The Differentiating Question

Category	Number of Question		Question Number	
	Trial 1	Trial 2	Trial 1	Trial 2
Bad	5	-	9, 10, 17, 18, 22	-
Enough	1	2	16	6, 9
Good	3	3	5, 11, 15	1, 5, 14
Very Good	16	10	1, 2, 3, 4, 6, 7, 8, 12, 13, 14, 19, 20, 21, 23, 24, 25	2, 3, 4, 7, 8, 10, 11, 12, 13, 15

Source: Processed Primary Data (2019)

is a number of 16 items. While the results of the second trial contained 11 questions that were categorized as "Very Good". According to Arikunto (2015, p. 232 a good question is a question that has a distinguishing category that is good and very good. In line with that, in the study of Arifin & Retnawati (2017, p. 104); Walid & Ramli (2015, p. 373); Rofi'ah et al., (2013, p. 373) said that, the questions that have better differentiation can be used to measure and differentiate the ability of students to solve higher order thinking skills based questions.

The effectivity of distractor on the results of the first trial cannot function on 8 items and can function on 17 items. While on the results of the second trial, the effectivity of the question was less able to function properly in 3 items and could function well on 12 items. According to Arikunto (2015, p. 234) deception can function well, when the deceit is chosen by at least 5% of the test participants. In line with that, based on research conducted by Nisa & Wasis (2018, p. 205); Walid & Ramli (2015, p. 373); Rofi'ah et al., (2013, p. 19) argued that the effectiveness of question fraud can function well, if almost 5% of students choose the answer choices on the question.

The results of the analysis of high-level thinking skills in students of Social Eleven One class at Senior High School 1 Cerme were obtained based on the value of higher order thinking skills based assessment instrument workmanship on economic subjects. According to Nisa & Wasis (2018, p. 205); Arifin & Retnawati (2017, p. 105); Purbaningrum (2017, p. 45) analysis of high-level thinking skills in students is obtained from the results obtained by students in working on higher order thinking skills based assessment instruments.

Table 8. Higher Order Thinking Skills

Category	Number of Students	
	Trial 1	Trial 2
Bad	7	7
Enough	13	15
Good	8	3
Very good	5	8

Source: Processed Primary Data (2019)

Based on these values a percentage will be obtained, and the results of these percentages will be categorized based on students' thinking abilities. In the results of the first trial known to students who fall into the category of "Very Good" a number of 5 students. Students with the category "Good" number 8 students. Students included in the category of "Enough" are 13 students. Students who are included in the category of "Less" are 7 students. While the results of the second trial are known to students included in the category of "Very Good" a number of 8 students. Students in the "Good" category are 3 students.

Table 7. Effectivity of Distractor

Category	Number of Question		Question Number	
	Trial 1	Trial 2	Trial 1	Trial 2
Very Bad	5		7, 9, 11, 13, 14	7
Bad	3		2, 4, 17	6, 9
Enough	-		-	-
Good	3		10, 22, 24,	1, 3, 14, 15
Very Good	14		1, 3, 5, 6, 8, 12, 15, 16, 18, 19, 20, 21, 23, 25	2, 4, 5, 8, 10, 11, 12, 13

Source: Processed Primary Data (2019)

Students who are included in the category "Enough" are 15 students. Students who are included in the category of "Less" are 7 students.

The difference in results between students in the first trial and the second trial did not differ much. This is due to the method of retesting (Test-retest Method), which is through a trial as much as two times which aims to see the alignment of results or the determination of the test results tested. In this method the grace period between the first trial and the second trial is not too long, so in general the results of the second trial tend to be better than the first trial.

Meanwhile, when researchers conducted an empirical analysis, there were still a number of questions that had a level of difficulty in the "difficult" category which caused students to find it difficult to answer these questions, which resulted in the failure of the functioner's effectiveness in the problem. So, in this case the students mostly answered incorrectly on "difficult" categorical questions which had an impact on the value obtained by students, that is, the average was included in the category of "sufficient" high-level thinking ability.

In this study, the final results of the questions were tested in a number of 15 items consisting of 8 questions with the C-4 question level, 5 questions with the C-5 and 2 questions with the C-6 question level. Based on the test results, the average student can answer questions with the C-4 and C-5 question levels, while for questions with level C-6 students tend to be difficult and most of them answer incorrectly on the questions with that category. It can be known based on the distribution of students' answers which can be seen from the effectiveness of the question scam. Thus, higher order thinking skills in students at Senior High School 1 Cerme, precisely in class Social Eleven One class, are included in the category of analyzing and evaluating, while the creative category still needs to be improved.

The difference in higher order thinking skills in each student is caused by many factors, including the ability to absorb each student in understanding each given material is different. This is in line with the research conducted by Nisa & Wasis (2018, p. 206) which states that higher order thinking skills in students are influenced by the way students think, students' learning strategies and teaching strategies applied by different educators . Therefore the educator's strategy in teaching and learning activities in order to improve students' higher order thinking skills is very important. This is consistent with the research conducted by Heong et al., (2012, p. 202) which states that higher order thinking skills are important for students, because they can help students in learning and completing tasks, so that educators must help students to improve their higher order thinking skills through conventional teaching and a supportive learning environment.

CONCLUSION

Based on research conducted by researchers about the development of higher order thinking skills based assessment instruments on economic subjects, conclusions can be drawn that to produce higher order thinking skills based assessment instruments that have been developed, according to the stages of development adopted and modified based on the research steps of the development of Borg & Gall which consists of the five steps of development namely data collection, product design, product testing, product analysis and final product revision. The final product results consist of 15 best items in basic competencies 3.4 and questions in the form of objective questions with multiple choice questions with five alternative answer choices. Based on the results of this study, it can be seen the thinking ability of Social Eleven One student at Senior High School 1 Cerme in working on higher order thinking skills based assessment instruments. Overall, the average student has high level of thinking ability which is included in the sufficient category.

Based on the results of this study, sug-

gestions can be made as follows, in order to be able to improve the quality of higher order thinking skills based assessment instruments especially on economic subjects, it is expected that further researchers can carry out testing on a broader subject. Development of assessment instruments, especially in the C-6 cognitive domain, needs to be developed more broadly, because the number is still limited. Efforts to support the learning process that is useful for improving high-level thinking skills in students are very necessary.

REFERENCES

Abosalem, Y. (2016). Assessment Techniques and Students' Higher-Order Thinking Skills. *International Journal of Secondary Education,* 4(1), 1. https://doi.org/10.11648/j.ijsedu.20160401.11

Anderson, L. W., Krathwohl, D. R., Airasian, P. W., A, K., Cruikshank, Meyer, R. E., … Wittrock, M. C. (2001). *A Taxonomy for Learning Teaching and Assessing (a Bridged).* New York: Addison Wesley Logman.

Apandi, I. (2018). *Mewujudkan Pembelajaran Abad 21 dan HOTS melalui Penguatan Keterampilan Proses Guru dalam PBM.* Retrieved November 14, 2018, from https://www.kompasiana.com/idrisapandi/5b8e7fcd12ae9436241aabf5/mewujudkam-pembelajaran-abad-21-dan-hots-melalui-penguatan-keterampilan-proses-guru-dalam-pbm?page=all

Arifin, Z. (2009). *Evaluasi Pembelajaran.* Bandung: PT Remaja Rosdakarya Offset.

Arifin, Z., & Retnawati, H. (2017). Pengembangan Instrumen Pengukur Higher Order Thinking Skills Matematika Siswa SMA Kelas X Developing an Instrument to Measure Mathematics Higher Order Thinking Skills of 10 th Grade Students in Senior High School. *Jurnal Pendidikan Matematika*, 12(1), 98–108.

Arikunto, S. (2015). *Dasar-Dasar Evaluasi Pendidikan (2nd ed.).* Jakarta: Bumi Aksara.

Astutik, P. pudji. (2016). Integrasi Penguatan Pendidikan Karakter (PPK) dan High Order Thinking Skills (HOTS) dalam Pembelajaran Tematik SD. *In Seminar Nasional Pendidikan* (pp. 343–354). Malang: Fakultas Ilmu Pendidikan Universitas negeri Malang.

Benjamin, R. (2008). *The Case for Comparative Institutional Assessment of Higher Order Thinking Skills.* Change: The Magazine of Higher Learning, 40(6), 50–55.

BSNP. (2019). *Standar Nasional Pendidikan*. Retrieved from http://bsnp-indonesia.org/standar-nasional-pendidikan/

Conklin, W. (2012). *Higher Order Thinking Skills to Develop 21st Century Learners.* Huntington Beach: Shell Educational Publishing, Inc.

Craig, R. (2011). Developing Cognition And Language Proficiency Through the Acquisition and Articulation of Knowledge: Real World Communication Activities for Engineering Students in and Across the Disciplines. *International Journal of Arts & Sciences,* 4(10), 69–76.

Heong, Y. M., Yunos, J. B. M., Hasan, R. B., Othman, W. B., & Kiong, T. . (2011). The Perception Of The Level Of Higher Order Thinking Skills Among Technical Education Students. *In International Conference on Social Science and Humanity* (pp. 281–285).

Heong, Y. M., Yunos, J. M., Othman, W., Razali, H., Kiong, T. T., & Mohamad, M. M. (2012). The Needs Analyss of Learning Higher Order Thinking Skills for Generating Ideas. *Procedia Social and Behavioral Science*, 197–203.

Istiyono, E., Mardapi, D., & Suparno. (2014). Pengembangan Tes Kemampuan Berpikir Tingkat Tinggi Fisika (PysTHOTS) Peserta Didik SMA. *Jurnal Penelitian Dan Evaluasi Pendidikan,* 18(1), 1–12.

Kawuwung, F. (2011). *Profil Guru, Pemahaman Kooperatif NHT, dan Kemampuan Berpikir Tingkat Tinggi di SMP Kbupaten Minahasa Utara.* El-Hayah, 1(4), 157–166.

King, F., Goodson, L., & Rohani, F. (2011). *Higher Order Thinking Skills: Definitions, strategies, Assessment. Center for advancement of learning and assessment.* Tallahassee: FL : Florida State University. Retrieved from www.cala.fsu.edu

Krathwohl, D. R. (2002). A Revision of Bloom's

Taxonomy: An Overview. *Theory into Practice,* 41(4), 1–8.

Kurniati, D., Harimukti, R., & Jamil, N. A. (2016). Kemampuan Berpikir Tingkat Tinggi Siswa SMP di Kabupaten Jember dalam Menyelesaikan Soal Berstandar Pisa. *Jurnal Penelitian Dan Evaluasi Pendidikan,* 20(2), 142–155.

Kusaeri, Usadieda, L., Indayati, T., & Ifaizien, M. (2018). DevelopinganAssessment Instrument of Higher Order Thinking Skills in Mathematics with in Islamic Context. *Journal of Physics: Conference Series,* 1–7. https://doi.org/10.1088/1742-6596/1097/1/012151

Kusuma, M. D., Rosidin, U., Abdurrahman, & Suyatna, A. (2017). The Development of Higher Order Thinking Skill (Hots) Instrument Assessment In Physics Study. *Journal of Research & Method in Education*, 7(1), 26–32.

Lawson, A. E. (1993). At What Levels of Education is The Teaching of Thinking Effective? *Theory Into Prctice,* 32(3), 170–178.

Lestari, A., Saepulrohman, A., & Hamdu, G. (2016). Pengembangan Soal Tes Berbasis HOTS Pada Model Pembelajaran Latihan Penelitian di Sekolah Dasar. *Jurnal Ilmiah Mahasiswa Pendidikan Guru Sekolah Dasar,* 3(1), 74–83.

Nadlir, M. (2018). *Komnas HAM Catat 4 Kondisi Darurat Pendidikan Indonesia.* Retrieved November 14, 2018, from https://nasional.kompas.com/read/2018/05/02/12581141/komnas-ham-catat-4-kondisi-darurat-pendidikan-indonesia

Najihah, A. R., Serevina, V., & Delina, M. (2018). The Development of High Order Thinking Skills (HOTS) Assesment Instrument for Temperture and Heat Learning. *Jurnal Pendidikan dan Pengembangan Pendidikan Fisika,* 4(1), 19–26.

Ngah, N., Ismail, Z., Tasir, Z., & Said, M. N. H. M. (2017). Students' Higher Order Thinking Skills and Their Relationships with Problem Posing Ability. *Advanced Science Letters*, 23(4), 2876–2879. https://doi.org/10.1166/asl.2017.7589

Nisa, S. K., & Wasis. (2018). Analisis dan Pengembangan Soal High Order Thinking Skills (Hots) Mata Pelajaran Fisika Tingkat Sekolah Menengah Atas (SMA). *Jurnal Inovasi Pendidikan Fisika,* 7(2), 201–207.

Nugroho, B. P. (2018). *Mengenal "HOTS", Penyebab Soal UNBK Dikeluhkan Begitu Sulit.* 17 April. Retrieved from http://news.detik.com

Nursalam, Angriani, A. D., Darmawati, Baharuddin, & Aminuddin. (2018). Developing Test Instruments for Measurement of Students' High-Order Thinking Skill on Mathematics in Junior High School in Makassar. *Journal of Physisc*, 1020(12169), 1–5. https://doi.org/10.1088/1742-6596/1028/1/012169

Oktanisa, L., & Fitrayati, D. (2018). Pengembanagn assesmen soal Berbasis Higher Order Thinking Skills Pada mata Pelajaran Ekonomi. *JUPE*, 6(3), 355–361.

Purbaningrum, K. A. (2017). Kemampuan Berpikir Tingkat Tinggi Siswa SMP dalam Pemecahan Masalah Matematika ditinjau dari Gaya Belajar. *JPPM*, 10(2), 40–49.

Puteh, M., Aziz, A. A. M. A., Tajudin, N. M., & Adnan, M. (2018). Developing a Secondary Mathematics Higher Order Thinking Skills Assessment (SMHOTSA) Instrument. *The Turkish Online Journal of Design, Art and Communication (TOJDAC)*, 1238–1246.

Riduwan M.B.A. (2016). *Skala Pengukuran Variabel-Variabel Penelitian.* Bandung: CV Alfabeta.

Rofi'ah, E., Aminah, N. S., & Ekawati, E. Y. (2013). Penyusunan Instrumen Tes Kemampuan Berpikir Tingkat Tinggi Fisika pada Siswa SMP. *Jurnal Pendidikan Fisika,* 1(2), 17–22.

Schellens, T., & Valcke, M. (2005). Collaborative Learning in Asynchronous Discussion Groups: What About The Impact on Cognitive Process? *Computers in Human Behavior,* 21(6), 957–975.

Sugiono. (2010). *Metode Penelitian Administrasi.* Bandung: Alfabeta.

Surapranata, S. (2009). *Analisis, Validitas, Reliabilitas dan Interpretasi Hasil Tes Implementasi Kurikulum 2004 (4th ed.).* Bandung: PT Remaja Rosdakarya Offset.

Walid, A., & Ramli, M. (2015). Penyusunan Instrumen Tes High Order Thinking Skills

pada Siswa SMA Kelas XI Materi Sistem Reproduksi Constructing A Test for Assessing Higher Order Thinking Skills of High School Students on Reproductive System, 371–377.

Wang, S., & Wang, H. (2014). Teaching and Learning Higher Order Thinking. *International Journal of Arts & Sciences*, 7(2), 179–187.

Widiawati, L., Joyoatmojo, S., & Sudiyanto. (2018). *Higher Order Thinking Skills Pada Peembelajaran Abad 21 (Pre Research). In Prosiding Seminar Nasional Hasil Penelitian pendidikan dan Pembelajaran* (pp. 295–301). Jombang: SKTIP PGRI Jombang.

Widihastuti. (2014). Pentingnya Higher Order Thinkig Skills Bagi Mahasiswa Bidag Tekstil dn Busana dalam Pengembangan Ekonomi Kreatif Menuju MEA 2015. *In Prosiding Seminar Nasional Pendidikan Teknik Boga dan Busana (pp. 1–12).* Yogyakarta: Jurusan Pendidikan Teknik Boga dan Busana Fakultas Teknik Universitas Negeri Yogyakarta.

Widiyanto, N. (2016). *Revisi Kurikulum 2013, Guru Lebih Dimudahkan.* Retrieved November 14, 2018, from https://www.kemdikbud.go.id/main/blog/2016/06/revisi-kurikulum-2013-guru-lebih-dimudahkan

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