Aksaqila International Humanities and Social Sciences Journal [AIHSS]
Vol 3 Nomor 2 Agustus 2024, hal: 58-66
ISSN: 2964-8831

The Influence of a High-Order Thinking (HOTS)-based Learning Model on Students' Midterm Question Analysis

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Abstract

This research aims to determine the cognitive level categorization of the Revised Bloom's Taxonomy on Indonesian language and literature UTS questions for classes X, XI, The 2020/2021 academic year at SMA Muhammadiyah 18 Sunggal contains higher order thinking skills. The sample used in this research is UTS questions for Indonesian language subjects from classes X to XII. The research method used is descriptive survey research. Data sources were taken from each class, each class consisting of 30 questions. Data analysis techniques use Milles and Huberman, namely data collection, data reduction, data presentation, drawing conclusions. The research results from class In class In class In class In class In class XII even semester, the categories are Lost 7%, Most 0%, Hots 93%. This shows that the question is included in the hots question.

Keywords: Question Analysis, High Order Thinking Skills, Revised Blooms' Taxonomy

1. INTRODUCTION

In connection with information on the development of international standard education, in the independent learning curriculum it is hoped that 21st century learning can be implemented. There are four things that reflect 21st century learning, namely critical thinking and problem solving skills (Critical Thinking and Problem Solving Skills), creativity and innovation (Creativity and Innovation), communication and collaboration (Communication and Collaboration). Therefore, the 2013 curriculum was designed with many improvements, one of which is an emphasis on evaluation standards, namely gradually adapting international standard evaluation examples. It is hoped that assessing participants' learning outcomes can help them improve their higher order thinking skills (HOTS), because higher order thinking can encourage students to think broadly and deeply about subject matter.

Higher order thinking skills include critical, logical, reflective, metacognitive and creative thinking abilities. Critical thinking skills are needed in solving problems and making decisions. Higher order thinking skills (HOTS) will develop if individuals face unknown problems, challenging questions, or face uncertainty/dilemmas. Higher order thinking will occur if

someone has information stored in memory and obtains new information, then connects, and/or organizes and develops that information to achieve a goal or obtain a possible answer/solution to a confusing situation.

It should be noted that higher order thinking skills are different from higher order thinking. If we refer to Bloom's revised taxonomy, higher level thinking is related to cognitive abilities in analyzing, evaluating and creating. Meanwhile, higher order thinking skills are related to the ability to solve problems, think critically and think creatively. In general, complex analysis and system analysis skills are part of problem solving so they are not stated separately in the main elements of HOTS.

Logical thinking and evaluation skills are part of critical thinking, so the main elements of HOTS can be made simpler. Basically, higher order thinking skills include higher order thinking skills. For example, to be able to solve a case, students must be able to analyze the case, think about alternative solutions, practice problem solving strategies, and evaluate the procedures and solutions applied.

Education in the in the independent learning curriculum is expected to support students to think deeply and creatively about material. Therefore, equipment is needed that can improve students' top-level thinking skills. Higher order thinking skills can support students in improving their logical and reasoning skills, analysis, assessment and creation. This skill will certainly really help students in solving problems found in everyday life.

According to data from observations with teachers, the quality of the UTS questions made by Indonesian teachers cannot be said to be correct because there is no research that proves whether the Hots questions made by the teacher are good or not, apart from that, the teacher also finds it difficult to assess the Hots questions made by him and the teacher has doubts about their validity. The hot questions he made were based on the fact that the school did not have any workshop or seminar activities with the HOTS theme which could lead teachers to understand and understand the true concept of HOTS. Therefore, researchers will conduct research regarding the analysis of HOTS (High) based mid-semester exam questions. Order Thinking Skill) students at Muhammadiyah 18 Sunggal High School for the 2022/2023 academic year so they can see the results of the teacher-made questions.

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2. METHODOLOGY

Population

Population is a group of elements or elements that are the object of research (Siburian, 2013: 56). The population in this study were all UTS questions for Indonesian language subjects at SMA Muhammadiyah 18 Sunggal for the 2022/2023 academic year.

Sample

The sample is a portion or representative of the population studied (Arikunto, 2014: 174). The sampling technique used in this research was a purposive sample. Purposive sampling is carried out by taking subjects not based on strata, random or region but because of a certain purpose (Arikunto, 2014: 183). The sample questions used in this research were odd semester midterm exam questions for Indonesian language subjects for classes X, XI, XII SMA Muhammadiyah 18 Sunggal for the 2020/2021 academic year.

Data Source

The data in this research are the mid-term exam questions for classes X, XI, The questions consist of 7 essay questions for each grade level. The data source comes from the Indonesian language subject teacher at SMA Muhammadiyah 18 Sunggal.

Data Collection Technique

Documentation methods or techniques are looking for data regarding written matters in the form of notes, transcripts, manuscripts, newspapers, meeting minutes, agendas, and so on. This technique is used to collect data sourced from school documents. Documents in the form of question papers will be examined to see the scope and high-level thinking skills contained in the questions.

Research Instrument

Research instruments are tools used to collect data. The author starts by reading the questions one by one, then the data obtained in the document is analyzed and grouped according to the cognitive domains C1 - C6 and finally categorizes them into high-level thinking skills groups (C4-C6).

Table 1. Guidelines for Determining the Cognitive Level of Question Items

Cognitive Processes	Indicator
Remember	Recognize and recall old information Enough Bad
Understand	Constructing/explaining a concept or information
Apply	The use or applicatio

Analyze	n of a procedure Breaking down or specifying
Evaluate	aspects Make decisions based on criteria and standards

Data Presentation

The next step after reduction is data presentation. Data presentation can be done in the form of short descriptions, charts, relationships between categories. The data presentation used in qualitative data is text in narrative form. By presenting data, it will be easier to understand what happened, plan further work based on what has been understood.

Drawing Conclusions

At this stage of drawing conclusions, the activity carried out is to provide conclusions on the data resulting from the interpretation. The initial conclusions put forward are still temporary, and will change if supporting evidence is not found at the next stage of data collection.

3. RESULT

The mid-semester exam questions for classes X, XI, learning at the school. The questions were analyzed based on the cognitive level categorization of the Revised Bloom's Taxonomy and higher order thinking skills. The research results obtained the following data.

Grouping Question Items for Class X Even Semester Based on the Cognitive Domain of Revised Bloom's Taxonomy

Table 2. Grouping of Question Items

	Question Number	Amount	%
Remembering (C1)	1,8,9,11,13,15	6	40%
Understanding (C2)	**-**	-	-
Applying (C3)	-	-	-
Analyzing (C4)	4,2,3,5,6,7,10,12,14	8	53%
Evaluate (C5)		-	-
Creating (C6)	**-**	**-**	**-**

The results of the analysis of question items based on the cognitive domain of the Revised Bloom Taxonomy in class) then 40% in the remembering category (C1). Based on the question proportion category, the questions have 40% in the low category, 0% in the medium category,

and 53% in the high category. This question can be said to have good proportions according to the question rules, namely, 30% in the low category, 30% in the medium category, and 40% in the high category.

Table 3. Grouping Class XI Odd Semester Question Items Based on the Cognitive Domain of Revised Bloom's Taxonomy

	Question Number	Amount	%
Remembering (C1)	1,3,9,15	4	27%
Understanding (C2)	**-**	-	-
Applying (C3)	4	1	7%
Analyzing (C4)	2,6,7,8,10,11,12,,14	8	53%
Evaluate (C5)	5,13	2	13%
Creating (C6)	**-**	**-**	**-**

The results of the analysis of question items based on the cognitive domain of the Revised Bloom Taxonomy in class), then 13% in the evaluating category (C5), 7% in the applying category (C3) and 26% in the Remembering category (C1). Based on the question proportion category, the questions have 27% in the low category, 7% in the medium category, and 66% in the high category. This question can be said to have good proportions according to the question rules, namely, 30% in the low category, 30% in the medium category, and 40% in the high category.

Table 4. Grouping Class XI Even Semester Question Items Based on the Cognitive Domain of Revised Bloom's Taxonomy

	Question Number	Amount	%
Remembering (C1)	6,12,15	3	27%
Understanding (C2)	**-**	-	-
Applying (C3)	-	-	-
Analyzing (C4)	1.2.3.4.5.7.8.10.11.13.14	11	73%
Evaluate (C5)	9	1	7%
Creating (C6)	**-**	**-**	**-**

The results of the analysis of question items based on the cognitive domain of the Revised Bloom Taxonomy in class), then 7% in the evaluating category (C5), and 27% in the Remembering category (C1). Based on the question proportion category, the questions have 27% in the low category, 0% in the medium category, and 80% in the high category. This question can be said to have good proportions according to the question rules, namely, 30% in the low category, 30% in the medium category, and 40% in the high category.

Table 5. Grouping Class XII Odd Semester Question Items Based on the Cognitive Domain of Revised Bloom's Taxonomy

	Question Number	Amount	%

Remembering (C1)	1,3,4	3	20%
Understanding (C2)	-	-	-
Applying (C3)	-	-	-
Analyzing (C4)	1.2.3.4.5.7.8.10.11.13.14	11	73%
Evaluate (C5)	15	1	7%
Creating (C6)	-	-	-

The results of the analysis of question items based on the cognitive domain of the Revised Bloom Taxonomy in class), then 7% in the evaluating category (C5), and 20% in the Remembering category (C1). Based on the question proportion category, the questions have 20% in the low category, 0% in the medium category, and 80% in the high category. This question can be said to have good proportions according to the question rules, namely, 30% in the low category, 30% in the medium category, and 40% in the high category.

Table 6. Grouping Class XII Even Semester Question Items Based on the Cognitive Domain of Revised Bloom's Taxonomy

	Question Number	Amount	%
Remembering (C1)	1,3,4	7	7%
Understanding (C2)	-	-	-
Applying (C3)	-	-	-
Analyzing (C4)	1.2.3.4.5.7.8.10.11.13.14	9	60%
Evaluate (C5)	15	5	33%
Creating (C6)	-	-	-

The results of the analysis of question items based on the cognitive domain of the Revised Bloom Taxonomy in class), then 33% in the evaluating category (C5), and 7% in the Remembering category (C1). Based on the question proportion category, the questions have 7% in the low category, 0% in the medium category, and 93% in the high category. This question can be said to have good proportions according to the question rules, namely, 30% in the low category, 30% in the medium category, and 40% in the high category.

4. DISCUSSION

A. Categorization of Question Items Based on High Level Thinking Skills

Based on the categorization of mid-semester exam questions for classes X, XI, XII 2020/2021 academic year SMA Muhammadiyah 18 Sunggal based on high-level thinking skills, the following data was obtained.

B. Categorization of Class X Odd Semester Mid Semester Questions.

Table 7. Categorization of Class X Odd Semester Mid Semester Questions

Class X Odd Semester Questions

Form Question	Thinking Skills High level		Cognitive Processes		
			C4 Analyze	C5 Evaluate	C6 Create
	Yes	No			
Multiple Choice	✓	-	✓	-	-
Multiple Choice	✓	-	✓	-	-
Multiple Choice	✓	-	✓	-	-
Multiple Choice	✓	-	✓	-	-
Amount			4	-	-
Percentage = Number of questions per category/ Number of all questions x 100%			100%	-	-

C. Categorization of Class X Odd Semester Question Items Based on Higher Order Thinking Skills

Table 8. Categorization of Class X Odd Semester Question Items Based on Higher Order Thinking Skills

	Question Number	Amount	%
Analyze (C4)	7,12,13,15	4	27%
Evaluate (C5)	-	-	-
Create (C6)	-	-	-
Total Higher Order Thinking Skills Questions		4	27%

The results of the analysis based on high-level thinking skills in the mid-semester exam questions for Class High-level thinking skills questions only consist of the cognitive process of analyzing.

The discussion in this research is in the form of a descriptive analysis regarding the analysis of hots-based mid-semester exam questions (high order thinking skills) of students at SMA Muhammadiyah 18 Sunggal for the 2020/2021 academic year. The following is a description of the analysis in descriptive form.

5. CONCLUSION

In class X UTS questions Muhammadiyah High School Odd Semester 18 Sunggal academic year 2020/2021 can be concluded that from the research results, namely in the cognitive domain level C1 60%, cognitive domain C2 13%, cognitive domain C3 0%, cognitive

domain C4 27%, cognitive domain C5 0%, realm C6 0% can be seen that the class X UTS questions, the odd semester of SMA Muhammadiyah 18 singles for the 2020/2021 academic year has not been categorized as a HOST question because it contains 60% more LOST elements compared to 13% MOST and 27% HOST. In class X UTS questions even Semester of SMA Muhammadiyah 18 Sunggal for the 2020/2021 academic year it can be concluded that from the research results, namely in the cognitive domain level C1 40%, cognitive domain C2 0%, cognitive domain C3 0%, cognitive domain C4 53%, cognitive domain C5 0%, cognitive domain C6 0% can be seen that the class X UTS questions. The even semester of Muhammadiyah 18 Sunggal High School for the 2020/2021 academic year includes HOST questions because they contain 53% HOTS elements compared to 0% MOST and 40% LOTS.

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