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Student's Higher Order Thinking Skilll's on Economics in The VUCA Era

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ABSTRACT

Students will require higher-order thinking skills in order to meet the challenges of the VUCA era. These skills can be stimulated using assessments that can test higher-order thinking skills. This study aims to assess students' thinking skills. It was measured using an economic test consisting of Lower-Order Thinking Skills (LOTS) and Higher-Order Thinking Skills (HOTS) items. The LOTS test contains understanding-level items, whereas the HOTS test assesses students' ability to analyze, evaluate, and create. The results indicate that students' thinking abilities remain on the lower end of the range. Only about 32% of students have higher-order thinking skills, and most of them are at the lowest HOTS level which is analyzing ability. These findings implies that learning quality should be improved by incorporating learning practices that promote students' higher-order thinking skills. Students are involved in evaluating and developing solutions to various problems. Furthermore, teachers should administer the HOTS tests more frequent to the students, not only on summative assessments but also on formative assessments.

Keywords: *higher-order thinking skills, students ability, assessment.*

1. INTRODUCTION

We are currently in the VUCA era which is full of volatility, uncertainty, complexity, and ambiguity. All this creates challenges as well as opportunities [1], thus requiring adjustments and adaptation of the quality of human resources [2]. In facing the VUCA era, the education sector is the backbone for producing quality human resources. So, to be able to realize this, it is necessary to create learning characteristics that are flexible, dynamic, creative, innovative, and intelligent [3]. If it is realized, it will create an atmosphere of freedom of learning, creativity, adaptation, and maximum competence which will lead to quality graduates.

One efforts to achieve this is by optimizing students' thinking skills. It is undeniable that low-level thinking skills will only bring students to remember and understand the topic, without being able to adopt that understanding in dealing with and solving real-life problems. To make matters worse, we are currently in an era of VUCA which is full of change and uncertainty. The ability to analyze every change and develop strategies for dealing with these changes necessitates problem-solving, critical thinking, and creative thinking skills [4]. These abilities can be encouraged through higher-order thinking skills.

Dewey demonstrated that thinking is stimulated by questions, as well as by perplexity, hesitation, and ambiguity [5]. Dewey's conceptualization is the basis in the development of problem-solving, cognitive strategies, and the importance of students thinking about their thinking processes. Higher-order thinking skills is a challenge and an extension of the use of the mind [6]. It occurs when a person is forced to interpret, analyze, or alter data because the subject or problem at hand cannot be solved using routine methods based on prior knowledge.

Thinking ability can be measured using the Depth of Knowledge Scale. It contains remembering, adaptation, strategic thinking, and advanced thinking are the four cognitive stages. [7]. The first is related to remembering facts and definitions, while the second level requires a higher level of thinking in developing actions. Level three requires students to think more complexly and abstractly and level four requires the ability to make several connections that connect ideas and must choose

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one approach among many alternatives about how the situation should be resolved.

Based on some of these expert definitions, it can be concluded that higher-order thinking skills are the ability to use knowledge, skills, and beliefs to solve problems, make decisions, and produce something through reasoning and reflection. HOTS necessitates complicated thinking that is neither simple nor limited to knowledge alone. It also necessitates complex mental processes.

Some research shows that students' higher-order thinking skills have not been honed well [8-11]. Therefore we need an appropriate strategy so that students' HOTS can develop properly.

Strategies to encourage students' HOTS can be honed through two activities, namely learning and assessment. One of the effective ways to promote HOTS is through assessment, either through formative or summative assessments [12]. The assessment activities can be carried out by teachers through written tests, oral tests, and performance tests.

Assessment development to measure higher-order thinking skills can use various criteria [13, 14]. The category of questions that can reveal HOTS abilities are questions that measure five aspects. 1) the top components of Bloom's taxonomy (analytical, evaluation, and creative abilities), 2) logical reasoning, 3) judgment and critical thinking, 4) problem solving, and 5) creativity and creative thinking [13, 15]. The five aspects are very complex because they do not only involve the cognitive level based on Bloom's taxonomy but also involve the ability to reason, think critically, solve problems, and think creatively.

Higher-order thinking skills can be developed using a hierarchical taxonomy to facilitate learning design and assessment [16]. Bloom's taxonomy has been used extensively in developing learning assessment designs in Indonesia. Related to the top component of Bloom's taxonomy, the top abilities that are considered higher-order thinking skills are the ability to analyze, evaluate, and create. However, the application capabilities are already in the HOT category [17]. This study aims to assess students' thinking skills. Students' thinking skills are grouped into two categories, namely lower-level thinking skills and higher-order thinking skills. These abilities are assessed using a set of tests in economics.

2. METHOD

This research is a descriptive study that analyzes the students' higher-order thinking skills using a set of economic tests. The sample in this study was 281 students. They were tested with a test kit containing 37 items consisting of 12 analysis items, 8 evaluation items, 8 creation level items, and 9 comprehension items as a comparison for lower-order thinking questions. This division adopts the provisions of the assessment center in learning of the Indonesian ministry of education which divides 3 cognitive levels, namely level 1 understanding which tests the ability to remember (C1) and understanding 9 (C2), level 2 application which is equivalent to Bloom's cognitive level C3, and level 3 reasoning which equivalent to Bloom's cognitive C3-C6 levels. Item analysis uses classical test theory by looking at the correct proportion of the tests being tested. This model is used because it is simpler to use, easy to interpret the results, and more importantly, it is more familiar to academics in Indonesia.

3. RESULTS AND DISCUSSIONS

Students' thinking skills are seen from their ability to answer items correctly. Broadly speaking, there are two groups of tests given, namely higher-order thinking skills and lower-order thinking skills tests. The LOTS test contains items at the level of understanding, while the HOTS test tests abilities at the level of analysis, evaluation, and creation. Comparison of students' thinking skills was obtained from the accuracy of students incorrectly answering the LOTS and HOTS questions.

Table 1. Students' Thinking Skills Level

Thinking Level		Percentage
LOTS	192	.68
HOTS	89	.32

The test shows the results that in general students' thinking skills are still at the level of lower-order thinking skills. Only about 32% of students have higher-order thinking skills. These results have implications for improving the learning process that is more able to encourage students' higher-order thinking skills by involving more ability to analyze, evaluate, and create.

Bloom's taxonomy shows a hierarchy of thinking, where the higher the cognitive level, the higher the complexity of thinking skills required. Students will find it difficult to answer questions at a high level if the lowest cognitive level has not been mastered properly. This can be seen from the proportion of correct answers

at each cognitive level of the test items. The test results for all items show that the correct proportions for each cognitive level are as follows.

Table 2. Proportion correct

Level cognitive	Proportion correct
Understanding (C2)	.43
Analysis (C4)	.40
Evaluation (C5)	.33
Creation (C6)	.14

The findings showed that the correct proportion of understanding levels was higher than the other three cognitive levels. At this level, understanding is defined as the ability to understand certain material. Understanding ability describes 1) basic understanding of a subject and simple problem solving, 2) demonstrating the ability to interpret data forms (tables, graphs, pictures), and 3) demonstrating the ability to relate basic facts with simple language [18]. The results of the analysis showed that as many as 43% of students were able to correctly answer questions at the level of understanding.

Not much different from the level of understanding, at the level of analysis, the correct proportion is only .4 which means that as many as 40% of students can correctly answer the comprehension level questions. The analytical ability is higher than the comprehension ability, which is in the 4th place in Bloom's taxonomy for the cognitive domain. The analysis is the ability to decompose a material into its parts. The ability to analyze can be in the form of (a) element analysis (identifying parts of the material); (b) relationship analysis (identifying relationships); (c) analysis of organizing principles (identifying the organization/organization) [19]. One of the indicators for measuring higher-order thinking skills in the C4 cognitive domain (analyzing) is identifying patterns or links by examining incoming data and separating or structuring it into smaller components. [20]. For example, in the questions being tested, students are asked to analyze the causes of inflation based on the cases given.

The proportion of correct answers is a comparison of the number of items that can be answered correctly with the number of test-takers. the higher the correct proportion means that the easier the item is for students [21]. Indirectly, the findings imply the analysis, evaluation, and creating items are more difficult than understanding items. Of the four groups of items, the most difficult for students to answer correctly are the questions at level C6. Based on the cognitive level structure of Bloom's taxonomy, level C6 is the highest level in the level of cognitive skills. This ability asks students to provide ideas, solutions, new ways of dealing with various problems [22].

Students' higher-order thinking skills can be seen from the students' ability to solve questions in the categories of analysis, evaluation, and creation. Separate item analysis for the HOTS test category shows the following results.

Table 3. Ability students on HOTS

Level HOTS	proportion	Percentage
Analysis	194	.69
Evaluasi	82	.29
Kreasi	5	.02

The lower ability of students in creative thinking has implications for improving learning in the classroom. There is a possibility that the learning approach or questions that have been used by teachers still do not support the development of creative thinking skills. More students are required to memorize concepts or just count. Related to these problems, it is very important to enhance students' thinking skills in learning. Strengthening thinking skills comprises more than just knowing concepts; it also entails problem-solving skills such as evaluating information and arguments in social contexts and making life decisions [23]. It would be nice if students were invited to think more contextually which is close to students' daily lives.

When students are required to identify the government regulations to address inflation problems, it is not difficult for the students to answer them correctly. Unfortunately, when they are challenged to suggest basic solutions to inflation concerns in their daily lives, many pupils struggle to respond.

Another example is on the concept of material related to calculations, for example on the basic competencies of the price index and inflation in high school. If the questions made are only limited to asking students to calculate inflation, then such questions are not included in the HOTS question category. The teacher can restructure the basic questions given so that students' thinking skills are further improved.

4. CONCLUSIONS

This study indicates that students' higher-order thinking skills are still low in economics. Therefore, further strategies are needed to improve students' thinking skills, especially for creative level thinking skills. Teachers need to design learning strategies that can encourage higher-order thinking skills, for example by using problem-solving and contextual learning. This approach will further hone students' thinking skills than the discovery approach. In addition, teachers should test students with HOTS tests routinely, not only on summative assessments but also on formative assessments.

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