

# Assessing Higher Order Thinking Skill's on Economics: A Literature Review

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## ABSTRACT

The quality and effectiveness of learning can be realized by stimulating students' thinking skills. Higher order thinking skills are provided to enhance students' thinking skills so that they would think reasonably and behave creatively. These abilities are critical for success in responding to the changes and challenges of life in the 21st century. Bloom's taxonomy has been widely used in Indonesia to promote higher order thinking skills because of its practicality, but it also has limitations. It focused more on learning and cognitive processes rather than assessment. This study discusses alternative strategy to foster higher order thinking skills on economics class. It is reflected by critical, problem solving, and creative thinking abilities, which provide indicators to assessing it.

**Keywords:** *Higher-order thinking skills, student's ability, assessment*

## 1. INTRODUCTION

To generate competitive and inventive graduates in the post-covid-19 epidemic, educational institutions must increase their ability to provide excellent learning. Learning which has traditionally been centered on developing student scientific competence, must be optimized in order to enhance students' soft skills. Therefore, the challenges of learning in the 21st century really expect students to master a number of soft skills that are needed so that students are able to adapt to various changes that occur. The soft skills in question include communication skills, collaboration skills, critical thinking and problem solving skills, and creative thinking skills. Universities can overcome these challenges when they strengthen students' thinking skills in learning.

Thinking skills are fundamental for gearing up students to succeed in a global context. Thinking skills does not proceed by itself, but is triggered by issues and questions, as well as uncertainty, skepticism, and vagueness [1]. It teaches learners how to notice a problem, determine the actual problem, the circumstances, and then how to address them. This problem awareness shines a spotlight on the objectives that must be met in order to solve the problem. Then we'll be aware in seeing what barriers we need to encounter as well as how to face them in order to achieve excellence.

In general, there is a dichotomy of thinking skills known as Higher-Order Thinking Skills (HOTS) and Lower-Order Thinking Skills (LOTS). The cognitive level theory of Bloom's taxonomy provides the most straight forward interpretation of these two types of thinking skills. The three lowest cognitive levels indicate LOTS, and the highest three cognitive levels represent HOTS consisting of abilities to analyze, evaluate, and create. Many studies have established the HOTS assessment using the Bloom's taxonomy [2-4] This taxonomy is frequently used since it is simple to implement.

Higher order thinking skills are both a challenge and an enlargement of the mind's capabilities [5]. It emerges when a person is required to interpret, analyze, or manipulate information because the issue or problem to be addressed or solved cannot be solved using normal methods based on previously gained knowledge. Based on this concept, it is not appropriate to view higher-order thinking skills solely through the top cognitive level of Bloom's taxonomy, because it is complex and may be perceived a range of viewpoints. It entails the capacity to use understanding, abilities and values in logic and decision-making, as well as the ability to generate anything. Thus, basically, higher order thinking skills do not only involve cognitive abilities but also integrate values in thinking about something so that they are able to solve a problem and dare to make decisions in different ways.

Higher order thinking skills are both a challenge and an expansion of the mind's use [5]. It happens when a stimulus is required to interpret, analyze, or manipulate information because the issue cannot be solved using routine approaches based on previously learned knowledge. Furthermore, it would not be appropriate to consider higher-order thinking skills merely through the top cognitive level of Bloom's taxonomy, because this ability is complex and can be perceived from a broad perspective. It consist of the ability to apply knowledge, skills, values, the capacity to solve problems and make decisions. Higher order thinking skills involve not only cognitive abilities but also the incorporation of values in understanding about something in order to solve a problem and risk to make decisions in different manners.

Bloom's taxonomy has been widely used in Indonesia to develop instructional design and learning assessments, but it also has limitations [6-9]. It focused more on learning and cognitive processes than assessment (Airasian and Miranda, 2002). Furthermore, using taxonomies and other methodologies in constructing HOTS questions is critical so that educators are aware that there are other options for building assessment besides Bloom's taxonomy. So, this study aims to discuss some thoughts on higher order thinking skills, as an alternative to Bloom's taxonomy.

## **2. METHOD**

This study employs a literature review approach. It advances theoretical and methodological contributions to specific issues. The review was formed utilizing narrative synthesis related to higher order thinking skills on economics. The process of conducting a literature review is one of the most important stages in the early stages of research because it is used in almost all types of research, both qualitative and quantitative.

## **3. RESULTS AND DISCUSSIONS**

Higher Order Thinking Skills explain the complexities of thinking that involve multiple mental processes [10-12]. Although the number of mental processes in issue differs amongst the experts, the HOT ability comprises at least three mental processes, notably problem solving, critical thinking, and creative thinking. The same perspective have conveyed to investigated students' higher-order thinking skills through critical thinking, questioning, and creative thinking [13].

Furthermore, Higher order thinking skills assesses throught five thinking skills; 1) the top components of Bloom's taxonomy, 2) logical reasoning, 3) judgment and critical thinking, 4) problem solving, and 5) creativity and creative thinking [14]. The five characteristics are quite complicated since they include

not only the cognitive level as defined by Bloom's taxonomy, but also the reasoning, critical thinking, problem solving, and creative thinking.

Higher order thinking skills can assist each student be a cure for each other and the society around them. It influences the awareness to their social environments and encourages them to become a problem solver. The primary goal of HOTS is to improve students' thinking skills, particularly those connected to the mental capacity critically in acquiring various types of information and generate ideas in solving a problem utilizing the knowledge they have.

### **3.1. Critical Thinking**

Critical thinking has varied definitions because there is no one universal agreement from experts to define it. Critical thinking is characterized as an intellectual process in which information is intentionally and effectively conceived, utilized, analyzed, synthesized, and evaluated. [15]. The use of the word intellectual process shows that critical thinking skills involve thinking activities. Critical thinking is a process, a thinking activity, the same as rational thinking or reasoning [16]. Thinking activities involve the ability to think actively such as asking questions, seeking relevant information, and trying to solve problems encountered.

Critical thinking abilities, as a component of higher-order thinking skills, are not something that a person is born with; rather, they must be purposefully studied and cultivated. [17]. This definition means that every student has the opportunity to hone their critical thinking skills in various ways. Critical thinking is an activity to process information skillfully, accurately, thoroughly, and as carefully as possible in such a way as to lead to conclusions that are reliable, logical, and contain the truth [18]. These conclusions will be the basis for a person to make responsible decisions about his life, behavior, and actions, which are fully based on knowledge of the assumptions and consequences of the decisions he makes.

Some of the definitions above show that there are several important components in critical thinking. These components include the ability to reason, analyze, synthesize, and draw conclusions. Furthermore, it also include the ability to analyze ideas, draw conclusions through inductive and deductive approach, assess or evaluate, and make judgements or solve problems [19]. Critical thinking skills are associated with cognitive processes that involve conceiving, applying, analyzing, synthesizing, and/or evaluating knowledge derived from or generated by observation, experience, reflection, reasoning, or communication [15].

The consensus of expert on the panel of The American Philosophical Association (APA) agreed to establish two dimensions of critical thinking, namely the

cognitive dimension and the attitude dimension of the disposition (affective disposition) [20]. The cognitive dimension consists of several subskills, namely interpretation, analysis, evaluation, inference [21]. The level of a person's critical thinking ability is determined by how many cognitive skills and sub-skills are mastered. The four subskills are then used as the basis for developing various critical thinking skills tests. Critical thinking skills can be measured through questions in the form of analysis, synthesis, and evaluation to solve problems and make decisions [25].

Critical thinking skills in affective disposition attitudes include open-mindedness [22, 23], fair thinking, curiosity, desire to get good information, flexibility, and willingness to respect other people's points of view [20, 24]. Researchers believe that critical thinking is associated with effective thinking. Persons with the aptitude and propensity may demonstrate actual critical thinking.

Previous study indicated that the implementation of critical thinking skills has been successfully used in economics class in secondary school [25]. Students learn to analyze, synthesize, and draw conclusions about a set of economic issues. Other studies even show that critical thinking skills as the highest cognitive strategy in business and economic learning in high school [2]. Economic problems are prevalent in daily situations, so students' critical thinking skills are required to address the issues they face. It promotes critical thinking, which is essential in economics class.

According to empirical research, critical thinking abilities emerge at a young age, notably among secondary pupils [26]. Students has to be able to think critically in order to adapt to changes in the social environment, advances in technology and science, and a range of practical challenges. As a consequence, learners with critical thinking abilities will be able to successfully confront obstacles [25]. It suggests that there is a strong connection between critical and problem solving abilities. Problem-solving necessitates the use of critical thinking skills.

**3.2. Problem Solving**

Problem solving is one of the cognitive skills that has high application in everyday life, because most humans are faced with various problems and are required to be able to solve problems. Not only in everyday life, most psychologists and educators in the world of education reveal problem solving as the most important learning outcome for life [27]. This ability is needed to encourage higher order thinking skills.

Problem solving can be interpreted simply as a process to get the best answer to the unknown or the process of making a decision on some of the obstacles encountered [28]. This definition shows that problem

solving ability involves a thinking process in solving problems based on the constraints that occur. The general definition of problem-solving skills that is often used as a reference is a person's ability to engage in cognitive processing to understand and solve problems where methods to solve problems are not available [29]. This definition specifically emphasizes the involvement of cognitive processes, not only in the process of solving problems but starting from understanding the problems that occur.

Based on the two definitions above, there are two characteristics of problem solving abilities, which involve cognitive processes and the complexity of knowledge and skills [29]. These two characteristics indicate that when a person solves a problem, he does not only use abstract thinking processes but also involves mental processes in order to be able to produce solutions to the problems at hand. There are many experts who formulate the steps in problem solving. Although different, the existing theories basically depart from the same assumptions. Some basic theories that can be used as guidelines in developing problem-solving steps are as follows.

Table 1. Types of Problem Solving

	John Dewey (1933)	George Polya (1988)	Stephen Krulik and Jesse Rudnick (1980)
<b>Steps in Problem Solving</b>	Confront Problem	Understanding the Problem	Read
	Diagnose or Define Problem	Devising a Plan	Explore
	Inventory Several Solutions	Carrying Out the Plan	Select a Strategy
	Conjecture Consequences of Solutions	Looking Back	Solve
	Test Consequences		Review and Extend

Sources: [30]

The three theories above, although different in the number of stages revealed by each expert, but at least there is a common perception of experts in formulating problem-solving steps that can be concluded in three stages. The first step is to understand or determine the problem, the second step is to determine the solution for solving the problem, and the last step is to evaluate the strategy that has been implemented.

This conclusion is in line with one's cognitive processes in problems solving identified by Mayer in the 4 components of the problem solving process, namely translation, integration, planning, and execution [31] Translation and integration are related to the stage of involving mental processes in understanding the problem, while planning and execution represent the stage of finding solutions. In the early stages of problem solving, a person will recognize or identify the problem and define the problem mentally. If the problem faced has been able to be understood carefully, then the next process is to develop a solution strategy by allocating mental and physical resources to solve the problem. It is

merely descriptive; it does not imply that every problem solving must go sequentially through all stages. Therefore, flexibility is needed so that someone is able to solve problems successfully.

### 3.3. Creative Thinking

Critical thinking and creative thinking are two cognitive aspects that are connected and have similarities but with different processes [26]. Someone who thinks creatively can use their imagination to come up with a unique solution to a problem. This happens because people who think creatively are able to see problems from different perspectives and then relate them to a number of information, so they can find various ways to solve problems [32].

Creativity as the capacity to detect gaps, propose solutions to solve problems, generate new ideas, recombine, and peek at new relationships between ideas [33]. The main dimensions of creativity is the generation of original products, ideas, inventions, re-elaboration, and increasing the value of products or ideas (Alencar and Fleith, 2003). Its relates to the divergent thinking aspects by Guilford, namely fluency, flexibility, originality, and elaboration [34].

Creativity does not emerge spontaneously or randomly, but rather when an individual has the appropriate combination of information, abilities, and motivation to promote innovation [35]. This definition shows that creativity is not an innate trait, but an integration of knowledge and skills with the surrounding environment. This definition implies that creativity can be learned, trained and measured [36]. Someone who thinks creatively can use their imagination to come up with a unique solution to a problem. This happens because people who think creatively are able to see problems from different perspectives and then relate them to a number of information, so they can find various ways to solve problems [32]. Therefore, the ability to think creatively is needed by students in facing the challenges of the 21st century.

Creativity includes broad thinking skills but can be identified [37]. The ability to produce ideas (fluency), generate multiple categories of ideas (flexibility), the desire to generate unique ideas (originality), and the ability to elaborate (elaboration) are indicators that can be used to measure creative thinking skills [38] It's refer to Torrance's creative thinking indicator.

Therefore, the ability to think creatively is needed by students in facing future challenges that are full of uncertainty. Based on the description above, it can be seen that higher order thinking skills are very complex because they do not only include reasoning abilities but also problem solving, critical and creative thinking skills.

## 4. CONCLUSIONS

Higher-order thinking skills can be used to challenge students' thinking skills in economics class. both a challenge and an expansion of the mind's use in economics. Teachers need to design learning strategies that can encourage higher-order thinking skills. Furthermore, higher order thinking assessment should be provided to the students on a regular basis, not only for summative but also for formative assessments. Critical thinking abilities, problem solving, and creative thinking can be used to assess it. Because these three skills have a strong relationship, it is important to implement them in order to encourage students' higher order thinking skills. It encourages students to think critically when analyzing and concluding a condition, as well as to identify problems and determine solutions to these problems through the use of creative and innovative thinking skills.

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