# Critical Thinking within the Context of the Revised Bloom's Taxonomy in Written Language Tests

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#### **Abstract**

Critical thinking is still infrequently taught in the classroom, particularly in Indonesia, despite the fact that many experts believe it is a vital problem in the education area. As a result, the purpose of this research was to picture the use of the revised Bloom taxonomy to investigate critical thinking in language tests. The article analyses the test items in language tests which consists of the High thinking order level based on the revised Bloom's theory. To begin, this current work summarizes past research, which found that critical thinking has been studied in a variety of areas in language teaching but has yet to address language evaluation using the revised Bloom's taxonomy. It is necessary to present the six-level Anderson and Krathwohl (2001) taxonomy, which is then referred to as the revised Bloom's taxonomy, before discussing how to promote critical thinking. Then, the finding indicates that the item tests which are considered to be high order skills consistently direct students to think critically and systematically.

# Keywords

critical thinking; the revised bloom taxonomy; HOTS; test items



### I. Introduction

Amongst the most important aspects of education is critical thinking. In general, most educational institutions, especially universities, emphasize critical thinking as a key feature of their graduates' abilities. University graduates will be able to handle novel situations and respond to actual challenges in the workplace that did not exist when they were in college. This is why critical thinking is an important talent that distinguishes a highly qualified graduate. Critical thinking is the ability to study and evaluate information, including attitudes, values, and character, as well as one's entire self Ekahitanond, (2013). Furthermore, obtaining the human character in a person is a skill. Some research on critical thinking have been conducted, such as Ekahitanond's (2013) study on fostering critical thinking through peer feedback, and Aghaei's (2018) study of the relationship between critical thinking and listening comprehension. The majority of studies on critical thinking focused on English language skills, such as listening in Aghaei's study, reading in Wilson's Wilson (2016); Mbato (2019), writing in Mall-amiri (2014), speaking in Soodmand and Rahimi, 2014), reading comprehension in Barjesteh & Vaseghi, 2012; Fahim & Haghighi, 2014, and so on. Those research did not look into how the revised Bloom's taxonomy in language assessment can help students acquire critical thinking skills. As a result, this paper provides a picture of why and How language assessment based on the revised Bloom's taxonomy helps university students develop critical thinking skills.

According to Astuti et al (2019) Education is an obligation of every human being that must be pursued to hold responsibilities and try to produce progress in knowledge and experience for the lives of every individual. Education is one of the efforts to improve the ability of human intelligence, thus he is able to improve the quality of his life (Saleh and

Budapest International Research and Critics Institute-Journal (BIRCI-Journal)

Volume 5, No 2, May 2022, Page: 14706-14715

e-ISSN: 2615-3076 (Online), p-ISSN: 2615-1715 (Print)

www.bircu-journal.com/index.php/birci email: birci.journal@gmail.com

Mujahiddin, 2020). Education is expected to be able to answer all the challenges of the times and be able to foster national generations, so that people become reliable and of high quality, with strong characteristics, clear identities and able to deal with current and future problems (Azhar, 2018).

Critical thinking has been acknowledged as one of the most crucial talents in education, as well as in the personal and social lives of individuals. It is also used to characterize the extent to which various abilities or competencies are acquired or mastered. The reason for the requirement of critical thinking in language instruction is success in the modern world, where the rate of new knowledge creation is growing rapidly. In addition, individual variances in student learning result from the promotion of critical thinking as a key objective of English language learning and teaching. It also encourages individuals to think and examine critically their own learning, as well as to seek and build competence in their own areas of accelerating professionalism (Setyowati, 2019)

In addition, individual variances in student learning result from the promotion of critical thinking as a key objective of English language education. It also encourages individuals to think critically and assess their own learning, as well as to strive for and build knowledge in their own areas of professionalism (13).

#### II. Review of Literature

# 2.1 The Revised Bloom Taxonomy and Critical Thinking

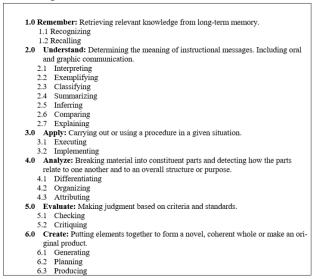
The Revised Bloom's Taxonomy (1956) is chosen as the theoretical framework to define critical thinking and evaluate data in this study since it is widely regarded by educators as a framework for socio-cognitive presence in classrooms. It also elucidates the features of higher-order thinking skills, against which numerous educational systems are measured and assessed. In particular, educators will use the revised Bloom's taxonomy to investigate issues linked to higher-order thinking and the relationship between language and cognition. It provides instructors with a model for delivering ideas and concepts at diverse levels of thought remembering, understanding, applying analyzing, evaluating, and creating. In addition, the Revised Taxonomy is a classification of cognitive domains that is "ahead of its time" in many ways (Krathwohl, 2014), which facilitates the updating of skills in education domains. The taxonomy is a key paradigm of critical thinking skills, which is the primary issue in the current 4.0 education period.

Bloom's (1956) taxonomy of critical thinking identifies the cognitive level of analyzing, evaluating, and creating as essential components of critical thinking Davies (2015) and numerous types of studies have been undertaken in the field of critical thinking and the revised Bloom taxonomy. English language skills: writing (Wilson, 2016); (Mbato, 2019), (Mall-amiri & Sheikhy, 2014), speaking (Soodmand & Rahimi, 2014), reading comprehension (Barjesteh & Vaseghi, 2012; Fahim & Haghighi, 2014), and others. Consequently, numerous studies have demonstrated that critical thinking is evidently related to The Bloom's taxonomy, particularly the skills of analyzing, evaluating, and creating (Aghaei et al., 2018); (Wilson, 2016); (Mbato, 2019); (Mall-amiri & Sheikhy, 2014); (Soodmand & Rahimi, 2014); (Barjesteh & Vaseghi, 2012; Fahim & Haghighi (Ebadi, 2016). In addition, it is acknowledged that Bloom's taxonomy was the first to identify the talents of analyzing, evaluating, and creating critical thinking categories. Thus, the application of Bloom's taxonomy has been shown to improve students' critical thinking (Eber & Parker, 1999). Students develop critical thinking abilities when they actively engage in analyzing, evaluating, and producing (Aghaei et al., 2018).

Even though numerous studies have been undertaken on the revised Bloom's taxonomy and critical thinking, empirical and theoretical research on strengthening critical thinking through the implementation of language evaluation based on the revised Bloom's taxonomy is scarce. Critical thinking is an analytical and evaluative skill that includes the capacity for self-directed, self-disciplined, self-monitored, and self-corrective thought (Paul, R & Elder, 2008). It requires correct patterns, effective and conversational connection, as well as problem-solving skills. In this context, precise patterns include models, concepts, definitions, theories, and rules, but effective and communicative contact addresses the issue at hand, perspective, orientation, and assumptions. The competency also includes the manner in which pupils solve challenges despite previously unknown obstacles.

As noted previously, within the new Bloom's taxonomy, instructors are directed to construct assessments that foster students' critical thinking through analyzing, evaluating, and creating. The three-level of analyzing, evaluating, and creating are categorized as higher-order thinking skills (HOTS). It is necessary to present the three cognitive domain. The following provides specifics:

**Table 1.** Cognitive Domain in the Revised Bloom Taxonomy



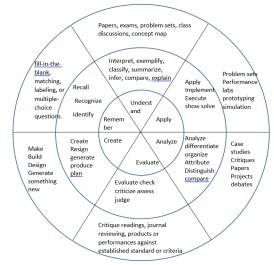


Figure 1. The operating Bloom Verb

# 2.2 Higher Order Thinking Skills

From the cognitive domain of the revised Bloom's revised taxonomy table above, analyzing, evaluating, and creating are included in higher-order thinking skills (HOTS). HOTS is the procedure of thinking that encompasses the cognitive domain and metacognitive. It contains analyzing, evaluating, and creating. "Higher Order Thinking Skills comprises analyzing, synthesizing, and evaluating and necessitate mastery of preceding levels, such as applying routine rules to acquainted or fresh issues". Students with HOTS receipts new knowledge from the learned and interconnect or reorganize it and then outspread this knowledge to accomplish a goal (Tayyeh et all, 2021)

HOTS occurs when a learner takes new knowledge and information stored in memory and interconnects and or reorganizes and extends this information to gain a purpose or find possible answers in a confounding situation. Higher-order reasoning is the capacity to consider knowledge or details above rote memorization. Rote's recall of memories is not even thought. The talents of higher-order reasoning include simply doing things about the information we discover. As students practice their higher-order cognitive capability, which can be recognized that they understand, they can discover similarities between several data, manipulate them, and bring them together in new ways. Most noticeably, to discover new solutions to challenges, they should utilize them.

In addition HOTS can be defined as a higher-level thinking skill that requires complicated thinking such as applying, analyzing, evaluating, and creating. Understanding to assist the ability of critical thinking, offering a logical reason, systematic, and practical, problem-solving, decision-making, and product creation skills are all supported. Students should have basic knowledge, memory, comprehending, and understanding when building HOTS. The framework of HOTS (Akib, E., & Arief M, 2019).demonstrates the following:

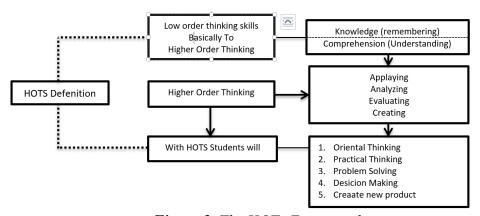


Figure 2. The HOTs Framework

In this article, the components of critical thinking employ the cognitive thinking skill in revised Bloom's taxonomy particularly the HOTS level: analyzing, evaluating, and creating. The term 'analyzing' refers to the process of dissecting material to discover connections and interconnections. Analysis typically employs the operational verbs categorize, classify, compare, contrast, discover, divide, investigate, group, inspect, sequence, simplify, create distinctions, relationships, function, presume, or draw conclusions. Justifying or defending a position or course of action is the cognitive skill of evaluating. The award, choose, defend, determine, evaluate, judge, justify, measure, compare, mark, rate, recommend, pick, agree, appraise, prioritize, support, prove, refute, assess, impact or value are frequent evaluation operational verbs. The highest cognitive skill in Bloom's taxonomy is creating. Creating is the generation of novel concepts, goods,

or perspectives. Design, create, produce, invent, combine, compile, develop, formulate, envision, modify, change, improve, elaborate, plan, propose, or solve are frequent operative verbs.

## III. Research Method

This was a qualitative descriptive study that employed content analysis as its methodology. Using the updated Bloom's taxonomy, this method was utilized to characterize the content of the manual. One of the objectives of this technique was to identify higher-order thinking skills in test items of written language tests created by EFL lecturers. There are four EFL lecturers whose the final and midterm examinations were taken as the object of the current study.

The source of data for this study was fifteen Final and fifteen middle examinations. The data is in form of test items and the total test items were one hundred and sixty-five analyzed. In qualitative research, the human researcher is the primary tool for data collection and processing (Ary et al, 2010). In this study, the researcher acted as both a collector and an analyst of data. As a data collector, the researcher utilized a variety of instruments and analyzed the data using Bloom's taxonomy (Bloom, 1956; Anderson, & Krathwohl, 2001;) The test items in written language tests were evaluated for the presence of higher-order thinking skills using two different types of checklists. The first is a checklist for classifying problems in accordance with revised Bloom's taxonomy and The HOTS level. The subsequent stage was to assess the HOTs indications using Anderson's or the revised Bloom's taxonomy. In order to draw conclusions, the final phase consisted of describing data interpretations based on the outcomes of the analysis. Figure 1 illustrates the HOTs analysis flow for the fullness.

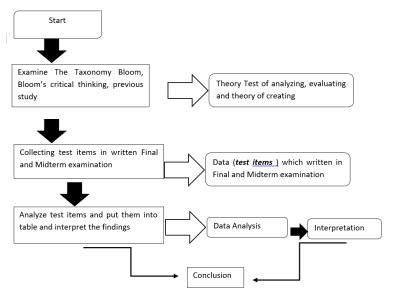


Figure 3. Research Flow Chart

## IV. Results and Discussion

#### 4.1 Results

As indicated previously, the source of the data is written language tests, namely final and midterm examinations for English department students created by four EFL lecturers who teach in universities in Indonesia. The tests differ by course name, a number of test items, duration, and test type (subjective and objective). The educational background, but not the gender, of the EFL professors who devised the examinations is the primary factor in their selection. In other words, the other reasons, including the subjects they taught, their skill, and their hobbies, are disregarded. This study's data encompass a total of one hundred sixty-five test items.

The collected test items are then categorized and listed in a table according to the critical thinking of revised Bloom's taxonomy which is popular as HOTS: test of analyzing; test of evaluating; and test of creating. Each category includes instances of action verbs for each level, as well as keywords representing the cognitive domain. The table is created to collect classification to categorize the data and make it more manageable.

**Table 2.** Test Items categorization based on the critical thinking of revised Bloom's taxonomy which is popular as HOTS.

Test items	Identity	C4	C5	C6
		Analyzing	Evaluating	Creating
Select two American plays from the reading list you have studied. Now analyze both two plays based on all literary elements.	S2.4	V		
analyze about the news in relation with sociolinguistics perspectives (for example about how the media construct the news and report; how the Covid-19 effects people to help each other without seeing the difference in religion, race, and country; what are the differences in culture between Indonesian people and other countries' citizens in facing Covid-19 pandemic	S4.5		V	
Write a 1,000 to 1,250-words paper detailing issues of literary translation.	S1.5			$\sqrt{}$

#### a. Test of Analyzing

Test of analyzing means to test and ask students to analyze content by breaking it down into its component pieces and identifying how those parts connect to one another and to the whole. The objective of test Items of analysis is to deconstruct, discover the relationship between pieces, and determine the overall structure. It was noted that there were fourteen test items considered as the skill of analysis in the revised Bloom's critical thinking component. The test of analyzing entails dividing content into its constituent parts and understanding how those parts relate to one another and a larger framework. This competency involves the study of how to discern (distinguish) the relevant or significant portions of a signal, how to configure (order) those pieces, and the signal's underlying meaning (attribute). In line with this, Paul asserted that analyzing the quality of sources is

one of the facets of critical thinking (2006). Students are expected to demonstrate their critical thinking abilities through activities such as case studies, articles, projects, and debates during this phase. In these exercises, students are needed to discriminate, identify relevant and irrelevant information, determine how elements function together and identify bias, values, or concepts. As the example; *Analyze the use of the "components" by using Discourse Pattern and Culture Approach (S4.8)* 

Test items of S4.8 showed that the presented materials are discourse pattern and culture approach. What to find in this test item is the use of the "components". Students were given presented the material in the form of work and form of a title. They have to look for various sources regarding the presented material provided by the lecturer, namely discourse patterns and cultural approaches by themselves.

# **b.** Test of Evaluating

As demonstrated by the data analysis, three test items designed by the first and fourth EFL instructors can be included in evaluating cognitive level. Evaluating cognitive skills is for assessing on a test that asks the learner to make decisions. The evaluations are based on the criteria and standards established. The criteria include consistency, quality, effectiveness, and efficiency, whilst the standards include both quantitative (countable) and qualitative (non-countable) measures (uncountable). Evaluating is a cognitive activity that requires some sort of judgment. Those are checking and critiquing. Checking focuses on internal consistency, whereas criticizing focuses on the influence of external factors on judgment. Here is an the test item which is identified as a test of evaluating, Comment in 500 to 600 words on the issues of translation (S1.6). This test item includes a test of evaluating which demands the student to critique. In informing a critic, two factors are considered: establishing the criteria and the standards. Consistency, quality, effectiveness, and efficiency are the criteria. In this data, the four criteria are translation difficulties. Then, for the standard, there are qualitative and quantitative indicators. The qualitative component of this data is the quantity of words that must be produced, namely 500-600 word comments, whereas the qualitative component is translation challenges.

Students should be able to analyze hypotheses or opinions expressed by themselves or others on test of evaluating. Therefore, learners should compose a critical analysis of the topics from their own perspectives. Then, students must determine the criterion or rationale for their favorable, negative, or mixed criticism. When deciding the foundation for critique, they should consider both the positive and negative aspects of the method they admire. The ultimate consequence is that they are able to form judgments based on the compiled qualities. The lecturers impose restrictions (standards) on the students' critical thinking ideas.

# c. Test of Creating

Test of creating involves combining elements to form a coherent or functional whole; that is, restructuring elements into a new model or framework. It entails having students develop the original product. It also requires students to create the initial item. In this cognitive level, students should engage in activities that enhance their critical thinking, such as research project activities, performance assessments, essay writing, and product design.

Data S1.2, 'Write a short "essay" about Othello. Explore as to what, how, and why Shakespeare's Othello is a tragedy. This item test assigned students to write a short essay about Othello. They should also investigate what, how, and why it is a tragedy. The lecturer uses Othello as the specific specification in this item test. Othello is one of

Shakespeare's most famous plays. The story of Othello, a mercenary soldier who falls in love with the lord's daughter, Desdemona, is told in this adaptation of Shakespeare's play. Because Othello is black and Desdemona is white, their marriage is fraught with controversy. Othello is a tragedy because it portrays the story of a good, upright hero who makes a terrible error of judgment, culminating in a devastating conclusion in which the majority of the characters are killed or severely injured.

#### 4.2 Discussion

This study aims at picturing the implementation of the revised Bloom taxonomy to examine critical thinking in language tests. It turned out that twenty-six test items consisted of components of critical which are stated in the revised Bloom taxonomy. The components include test items for analyzing, evaluating, and creating. These three components of cognitive skills are famous as higher-order thinking skills. The component of the revised Bloom's critical thinking boosts learners to maximize their minds and think comprehensively and creatively about the learned materials, new knowledge, and updated phenomena. In this study, the test items encourage learned materials, new knowledge, and updated phenomena, drive learners to access more information within books or by browsing the internet. In addition, the test items involve learners reviewing and reconsidering the learned materials along with more complicated forms of thinking. (Nilson in Akib and Arief, 2020)

The findings indicated that the written language tests constructed by the EFL lecturers were confirmed as appropriate evaluations which accommodate components of the revised Bloom taxonomy of critical thinking. The test items consisted of Bloom's 'operating verb' as stated in figure 1 in the previous paragraphs. The EFL lecturers explored numerous of Bloom's verbs to define test of analyzing, test of evaluating, and test of creating which are also markers of critical thinking. In test items of analysis, the learners are required to see patterns, organization of parts, recognition of hidden meanings, and identification of components. While test items of evaluating students are demanded to compare and discriminate between ideas, assess the value of theories, and presentations, make choices based on reasoned argument, verify the value of the evidence, and recognize subjectivity. And test of creating asked learners to use old ideas to create new ones, generalize from given facts, relate knowledge from several areas, predict, draw, conclusions. (Setyowati et al, 2020)

In the learning of the disruptive era, critical thinking must be incorporated into the educational process and evaluated comprehensively. In order for students to develop critical thinking, assessment systems must be adapted to the learning process and used in learning evaluation. Thus, there is congruence between students' cognitive ability and the evaluation instruments used for grading.

## V. Conclusion

Critical thinking is acknowledged as one of the vital skill of a university graduate, and most universities require it of their graduates. The design of learning activities such as evaluation must enhance critical skill. The ability to analyze, evaluate, and create, all of which are the component of the revised Bloom's critical thinking, should be used to mobilize students' critical thinking. The Revised Bloom's taxonomy is widely used in the educational area to help teachers plan and conduct assessments that encourage students to think critically. The evaluation must recall the ability to analyze, evaluate, and create, which are popular as higher order thinking skills. The examples of assessments offered in

the discussion clearly indicate how the revised Bloom's taxonomy can help students recall information and improve their critical thinking skills. The assessment is based on how students respond to tasks that test their ability to analyze, evaluate, and create. Students are getting used to reasoning, expressing logical reasons, delivering ideas with clear and structured thoughts, and presenting well-endorsed remarks to Bloom's inquiry in evaluation. Presenting an idea with clear and logical reasoning, and delivering well-supported commentary to persuade the audience students' critical thinking is promoted in the revised Bloom's taxonomy in assessment via their responses to assessment activities.

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