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## An Evaluation of Revised Bloom's Taxonomy on a General English Test For Non-English Major Students

#### Nurdiana

Department of English Language and Culture University of Bunda Mulia, Jakarta, Indonesia

Abstract: It is not an easyassignment to write test items as there are some aspects which should be taken into account. One of them is the cognitive level of the test items. The cognitive level in this study refers to Revised Bloom's Taxonomy (RBT). This study aims are evaluating the RBT applied in a test used in a General English class for non-English major students. It examines the consistency between the RBT planned to achieve stated in the syllabus of the course and the RBT applied in the test. Content analysis using the theoretical framework of RBT was employed in this study. Results show that the RBT levels found in the test were not consistent with the ones stated in the syllabus.

**Keywords:** A language test, Revised Bloom's Taxonomy

## I. INTRODUCTION

Revised Bloom's Taxonomy (RBT) originated from Bloom'taxonomy which was originally developed by Benjamin Bloom in 1956. Bloom's taxonomy is a classifying thinking skills according to six cognitive levels of complexity (Bloom, 1956). There are two major thinking skills in Bloom's taxonomy: high order and low order thinking skills. The old version of Bloom's taxonomy covers knowledge, comprehension, application, analysis, synthesis, and evaluation. Anderson et al. (2001) updated the old version of Bloom's Taxonomy. The new version is called Revised Bloom's Taxonomy which orders cognition process from simple remembering to higher order critical and creative thinking process.

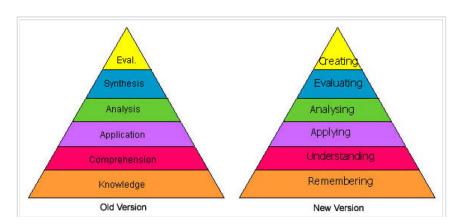
Ideally, RBT should be integrated in language teaching, e.g. in language teaching materials and their syllabus, and in language tests as well as language assessment. A study conducted by Kurnain (2014) reported that by applying Bloom's Taxonomy in a language test, test writers or test makers can design better questions which employ lower and higher order thinking skills. In relation to language tests and assessment, RBT has similarities with the basic theories of language tests and assessment – that is both of them measure or examine learners' or students' thinking skills and cognition process. The similarities can be seen through two aspects a language test measures: knowledge of language and the ability to use the language. Knowledge of language can be represented in level 1 (C1) or level 2 (C2) of RBT. C1 deals with "remembering" and C2 is related to "understanding". The ability to use the language can be classified as C3 (applying) or even C4 (analysing).

Unlike Kurnain's work, this research aims at evaluating Revised Bloom's Taxonomy (RBT) on a General English testused in a General English 1 class at a private university in North Jakarta. It is worth researching as to my knowledge, the only aspect assessed in the tests (before they are administered) was the quality of the test items without evaluating the RBT.

#### II. REVIEW OF LITERATURE

### 2.1 Bloom's Taxonomy

Bloom's taxonomy is a classifying thinking according to six cognitive levels of complexity (Bloom, 1956). There are two major thinking skills in Bloom's taxonomy: high order and low order thinking skills. The old version of Bloom's taxonomy covered knowledge, comprehension, application, analysis, synthesis, and evaluation while the new version or revised Bloom's taxonomy includes remembering, understanding, applying, analysing, evaluating, and creating (Forehand, 2005). Below are the pyramids of the old and the new/revised version of Bloom's taxonomy.



(Forehand, 2005)

The original Bloom's Taxonomy consists of 6 levels taxonomy (Roohani, et al. 2014).

## 1. Knowledge

## 1.1 Knowledge of Specifies

- 1.1.1 Knowledge of terminology
- 1.1.2 Knowledge of specific facts

## 1.2 Knowledge of Ways and Means of Dealing with Specifics

- 1.2.1 Knowledge of conventions
- 1.2.2 Knowledge of trends and sequences
- 1.2.3 Knowledge of classifications and categories
- 1.2.4 Knowledge of criteria
- 1.2.5 Knowledge of Methodology

## 1.3 Knowledge of Universals and Abstractions in a Field

- 1.3.1 Knowledge of Prnciples and Generalizations
- 1.3.2 Knowledge of Theories and Structures

## 2. Comprehension

- 2.1 Translation
- 2.2 Interpretation
- 2.3 Extrapolation

## 3. Application

## 4. Analysis

- 4.1 Analysis of Elements
- 4.2 Analysis of Relationships
- 4.3 Analysis of Organizational Principles

## 5. Synthesis

- 5.1 Production of a unique communication
- 5.2 Production of a plan, or proposed set of operations.
- 5.3 Deviation of a Set of Abstract Relations

#### 6. Evaluation

- 6.1 Evaluation in terms of internal evidence
- 6.2 Judgments in terms of External Criteria

Anderson et al. (2001) updated the old version of Bloom's Taxonomy. The new version is called Revised Bloom's Taxonomy (RBT) which orders cognition process from simple remembering to higher order critical and creative thinking process.

- 1. Remember: retrieve relevant knowledge from long-term memory.
- 2. Understand: construct meaning from instructional messages, including oral, written, and graphic communication long-term memory.
- 3. Apply: carry out or use a procedure in a given situation.
- 4. Analyze: break materials into parts and determine how the parts relate.
- 5. Evaluate: make judgments based on criteria and standards.
- 6. Create: put elements together to form a coherent or functional whole; we organize elements into a new pattern or structure."

Below are the details of the cognitive domain process proposed by Andersen et al. (2001).

## C1 – Remembering

Categories & Cognitive	Alternative Names	Definition		
Processes				
Remember		Retrieve knowledge from		
		long-term memory		
Recognizing	Identifying	Locating knowledge in		
		long-term memory that is		
		consistent with presented		
		material		
Recalling	Retrieving	Retrieving relevant		
		knowledge from long-		
		term memory		

## C2 – Understanding

Categories & Cognitive Processes	Alternative Names	Definition		
Understand		Construct meaning from instructional messages, including oral, written, and graphic communcation		
Interpreting	Clarifying Paraphrasing Representing Translating	Changing from one form of representation to another		
Exemplifying	Illustrating Instantiating	Finding a specific example or illustration of a concept or principle		
Classifying	Categorizing Subsuming	Determining that something belongs to category		
Summarizing	Abstracting Generalizing	Abstracting a general theme or major point(s)		
Inferring	Concluding Extrapolating Interpolating Predicting	Drawing a logical conclusion from presented information		
Comparing	Contrasting Mapping Matching	Detecting correspondences between two ideas, objects, and the like		
Explaining	Constructing models	Constructing a cause and effect model of a system		

# C3 – Applying

Categories & Cognitive	Alternative Names	Definition
Processes		
Apply		Applying procedure to an unfamiliar task
Executing	Carrying out	Applying a procedure to an unfamiliar task
Implementing	Using	Applying a procedure to an unfamiliar task

## C4-Analyzing

Categories & Cognitive Processes	Alternative Names	Definition		
Analyze		Break material into its constituent parts and determine how the parts to one another and to an overall structure or purpose		
Differentiating	Discriminating Distinguishing Focusing Selecting	Distinguishing relevant from irrelevant parts or important from unimportant parts of presented material		
Organizing	Finding coherence Integrating Outlining Parsing Structuring	Determining how elements fit or function within a structure		
Attributing	Deconstructing	Determine a point of view, bias, value, or intent underlying presented material		

## C5 – Evaluating

Categories & Cognitive Processes	Alternative Names	Definition
Checking	Coordinating Detecting Monitoring Testing	Detecting inconsistencies or fallacies within a process or product; determining whether a process or product has internal consistency; detecting the effectiveness of a procedure as it is being implemented
Critiquing	Judging	Detecting inconsistencies between a product and external criteria; determining whether a product has external consistency; detecting the

Categories & Cognitive Processes	Alternative Names	Definition		
		appropriateness of a procedure for a given problem		

## C6 – Creating

Categories & Cognitive	Alternative Names	Definition		
Processes				
Creating		Put elements together to		
		form a coherent or		
		functional whole;		
		reorganize elements into		
		a new pattern or structure		
Generating	Hypothesizing	Coming up with		
		alternative hypotheses		
		based on criteria		
Planning	Designing	Devising a procedure for		
		accomplishing some task		
Producing	Constructing	Inventing a product		

According to Ormrod (2011), RBT consists of six general cognitive processes ranging from simple to complex.

- "1. Remember: Recognizing or recalling information learned at an earlier time and stored in long-term memory.
- 2. Understand: Constructing meaning from instructional materials and messages such as making inferences, identifying new examples, or summarizing.
- 3. Apply: Using knowledge in a familiar or new situation.
- 4. Analyze: Breaking information into its constituent parts and perhaps also identifying interrelationships among the parts.
- 5. Evaluate: Making judgments about information using certain criteria or standards.
- 6. Create: Putting together knowledge, procedures, or both to form a coherent, structured, and possibly, original whole."

In each level of Bloom's Taxonomy, there are action verbs which can be the keywords of the cognitive level. The following is the table of action verbs of the old version of Bloom's Taxonomy and the new version of Bloom's Taxonomy (RBT).

Bloom's Taxonomy Action Verbs

Level	Definition			Sample verbs			Sample behaviors
KNOWLEDGE	Student recalls or recognizes information, ideas, and principles in the approximate form in which they were learned.	arrange define describe duplicate	identify label list match	memorize name order outline	recognize relate recall repeat	reproduce select state	The student will define the 6 levels of Bloom's taxonomy of the cognitive domain.
COMPREHENSION	Student translates, comprehends, or interprets information based on prior learning.	explain summarize paraphrase describe illustrate classify	convert defend describe discuss distinguish estimate explain	express extend generalized give example(s) identify indicate	infer locate paraphrase predict Recognize	rewrite review select summarize translate	The student will explain the purpose of Bloom's taxonomy of the cognitive domain.
APPLICATION	Student selects, transfers, and uses data and principles to complete a problem or task with a minimum of direction.	use compute solve demonstrate apply construct	apply change choose compute demonstrate discover dramatize	employ illustrate interpret manipulate modify operate	practice predict prepare produce relate schedule	show sketch solve use write	The student will write an instructional objective for each level of Bloom's taxonomy.
ANALYSIS	Student distinguishes, classifies, and relates the assumptions, hypotheses, evidence, or structure of a statement or question	analyze categorize compare contrast separate apply	change discover choose compute demonstrate dramatize	employ illustrate interpret manipulate modify operate	practice predict prepare produce relate schedule	show sketch solve use write	The student will compare and contrast the cognitive and affective domains.
SYNTHESIS	Student originates, integrates, and combines ideas into a product, plan or proposal that is new to him or her.	create design hypothesize invent develop arrange assemble	categorize collect combine comply compose construct create	design develop devise explain formulate generate plan	prepare rearrange reconstruct relate reorganize revise	rewrite set up summarize synthesize tell write	The student will design a classification scheme for writing educational objectives that combines the cognitive, affective, and psychomotor domains.
EVALUATION	Student appraises, assesses, or critiques on a basis of specific standards and criteria.	Judge Recommend Critique Justify Appraise Argue	Assess Attach Choose Compare Conclude Contrast	Defend Describe Discriminate Estimate Evaluate Explain	Judge Justify Interpret Relate Predict	Rate Select Summarize Support Value	The student will judge the effectiveness of writing objectives using Bloom's taxonomy.

(Quoted from: <a href="http://www.fresnostate.edu/academics">http://www.fresnostate.edu/academics</a>)

Table 2.1 The old version of Bloom's Taxonomy Action Verbs

## REVISED Bloom's Taxonomy Action Verbs

Definitions	I. Remembering	II. Understanding	III. Applying	IV. Analyzing	V. Evaluating	VI. Creating
Bloom's Definition	Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers.	Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas.	Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.	Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations.	Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria.	Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.
Verbs	Choose Define Find How Label List Match Name Omit Recall Relate Select Show Spell Tell What When Where Which Why	Classify Compare Contrast Demonstrate Explain Extend Illustrate Infer Interpret Outline Relate Rephrase Show Translate	Apply     Build     Choose     Construct     Develop     Experiment with     Identify     Interview     Make use of     Model     Organize     Plan     Select     Solve     Utilize	Analyze     Assume     Categorize     Classify     Compare     Conclusion     Contrast     Discover     Dissect     Distinguish     Divide     Examine     Function     Inference     Inspect     List     Motive     Relationships     Simplify     Survey     Take part in     Test for     Theme	Agree     Appraise     Assess     Award     Choose     Compare     Conclude     Criteria     Criticize     Decide     Deduct     Defend     Determine     Disprove     Estimate     Evaluate     Explain     Importance     Influence     Interpret     Judge     Justify     Mark     Measure     Opinion     Perceive     Prioritize     Prove     Rate     Recommend     Rule on     Select     Support     Value	Adapt Build Change Choose Combine Compile Compose Construct Create Delete Design Develop Discuss Elaborate Estimate Formulate Happen Imagine Improve Invent Make up Maximize Modify Original Originate Plan Predict Propose Solution Solve Suppose Test Theory

(Quoted from: http://www.apu.edu)

Table 2.2 The New Version of Bloom's Taxonomy Action Verbs

## 2.2 Language Tests

In language learning, a test is a method to measure students' performance or ability to use the language learned. In addition, it is used to examine students' knowledge of language. A test is basically a subset of an assessment. In other words, tests are parts of assessments. All tests are assessments, but not all assessments are tests. As a method, a test can be an instrument which is a set of techniques, procedures, or items. This instrument must be able to measure ones' ability or competencies. There are several types of tests: language aptitude tests, proficiency tests, diagnostic tests, placement tests, and achievement or classroom tests.

Language tests can be divided into two forms: direct and indirect test items. According to Harmer (2007), a direct test item is defined as a test which aims at examining students' ability to use a language. In other words, students do something with the language. For example, writing letters, essays, or paragraphs. Harmer (2007) further said that direct test items are classified as integrative testing which means "asking students to use a variety of language and skills to complete a task successfully. Indirect test items, on the other hand, deals with knowledge of language. It can be measured by controlled test items such as multiple-choice questions or gap-filling items (Harmer, 2007). An example of indirect test is a grammar or a vocabulary test.

#### III. RESEARCH METHOD

## 3.1 Aprroach

This research deploys a qualitative approach (qualitative content analysis) as it does not involve any numerical data or statistical programs to answer research questions. Kumar (2014) states that the qualitative approach:

"aims to explore diversity rather than to quantify; emphasizes the description and narration of feelings, perceptions, and experiences rather than their measurement; and communicates findings in a descriptive and narrative rather than analytical manner, placing no or less emphasis on generalizations."

## 3.2 Sources of Data and Research Data

The source of data was the midterm test used in General English 1 classes (even semester 2016/2017) for non-English major students while the research data were taken from the test instructions and the test items of the midterm test.

### **3.3 Data Collection Procedures**

- 1. Oberving and highlighting the potential data;
- 2. Collecting the potential data (the midterm test for General English 1) used in the even semester, 2016/2017 to be analysed using the theoretical framework of the RBT.

## 3.4 Data Analysis Procedures

The data were analysed through the following procedures.

- 1. Observing the instructions of each part of the tests and the test items;
- 2. Classifying them using six levels of cognitive domain of Revised Bloom's Taxonomy;
- 3. Describing and discussing the results of the analysis (the classification of RBT) by referring to the RBT and the syllabus of General English 1;
- 4. Wrapping up the analysis.

#### V. FINDING AND DISCUSSION

## 4.1 Finding

Results show that that most of the test items did not represent C3 level of the RBT. To examine the taxonomy level of the test instructions, the syllabus and the samples of the test items of General English 1 should be referred to.

**Table 4.1.1 UTS (Mid Term Test)** 

Bahan (Minggu)	Level	Bentuk	
1 s/d 8	C3	Fill in the blanks	
		Open ended	
		questions	
		Multiple choice	
		Constructing	
		questions	

**Table 4.2.2 UAS (Final Term Test)** 

Bahan (Minggu)	Level	Bentuk	
1 s/d 13	C3	Fill in the blanks	
		Open ended	
		questions	
		Multiple choice	
		Constructing	
		questions	

## **Part 1: ReadingComprehension**

Read the passage below to answer the questions. Give short and simple answer.

## Eight Billionaires as Rich as Half the World

The world's eight richest men have as much money as half the world. A new report from the charity Oxfam said eight billionaires are as rich as the 3.6 billion poorest people in the world. Six of the world's richest people are from the USA. The richest is Microsoft founder Bill Gates, who is worth \$75 billion. Amazon and Facebook founders Jeff Bezos and Mark Zuckerberg both have wealth estimated to be around \$45 billion. Oxfam's report is called 'An Economy for the 99 Per Cent'. Oxfam said: "It shows that the gap between rich and poor is far greater than had been feared." It added that businesses and the "super-rich" are creating greater income inequality by avoiding tax and paying low wages.

Winnie Byanyima, Executive Director of Oxfam International, said: "It is obscene for so much wealth to be held in the hands of so few when 1 in 10 people survive on less than \$2 a day. Inequality is trapping hundreds of millions in poverty." She added that: "Across the world,

people are being left behind. Their wages are [not going up] yet corporate bosses take home million-dollar bonuses." She said governments only care about big business and a "wealthy elite". Economist Mark Littlewood attacked the report as being unfair. He said: "As an 'anti-poverty' charity, Oxfam seems to be strangely [obsessed] with the rich." He said Oxfam should focus on ways to boost growth instead of complaining about the rich.

Source: http://www.breakingnewsenglish.com/1701/170118-income-inequality.html

- 1. How many poor people are the billionaires as rich as?
- 2. Who is the richest person in the world?
- 3. How much is Mark Zuckerberg worth?
- 4. What gap is greater than had been feared?
- 5. What did Oxfam say the "super-rich" avoid paying?

The cognitive level of the test items of reading comprehension seems to be inconsistent with the syllabus of the course (General English 1). In the syllabus, the cognitive level achieved should be C3 or applying; however, the action verbs used in each item of the reading comprehension such as, "what" and "how" show that the cognitive level reached is C1 or remembering. It can also be classified as C2 or understanding if it is based on the description of C2—that is "demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas."

## **Part 2: Multiple Choices**

Choose the correct answer to fill in the blanks. 1. \_\_\_\_\_ Mr. John always \_\_\_\_\_ lunch in the office? a. Does, have c. Does, has b. Do, have d. Do, has 2. The secretary \_\_\_\_\_ report every month. a. don't make c. doesn't make b. isn't make d. doesn't makes 3. Miss Nova to come to the office. a. doesn't able c. aren't able b. isn't able d. not be able 4. 4. The CEO is crazy about \_\_\_\_\_ golf with his friends. a. playing c. to play d. play b. plays 5. Mr. Parker is \_\_\_\_\_ construction business. a. on c. in b. at d. of

Apparently, the test items in part 2, multiple choices, do not suit the cognitive level which should be achieved as stated in the syllabus. Item 1 to 5 shows that students are only asked to exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers (C1- remembering). All of the items deal with recalling basic concepts of grammar. Therefore, the cognitive level achieved is not consistent with the RBT level stated in the syllabus of General English 1.

## Part 3: Vocabulary

Fill in the blanks using the words in the box below. Use each word once.

vet	language	patience	queue	overtime
Mexican	Spaniard	employee	intern	optician

- 1. Dave loves eating \_\_\_\_\_ food.
- 2. The CEO comes from Spain. He is a . .
- 3. There is a long \_\_\_\_\_ of people in front of the cinema.
- 4. He must work \_\_\_\_\_ to earn more money.
- 5. My dog is sick. I need to bring him to a \_\_\_\_\_.

Item 1 to 5 in part 3, vocabulary, seems to be similar with those in part 2. Students are merely asked to choose the best vocabulary or word that is suitable with each sentence. Hence, the cognitive level of RBT reached in part 3 is C1 or remembering.

## Part 4: Dialogue

Complete the following dialogue from the expressions in the box.

a) let me introduce you	f) I work in the English Department
b) that's cool	g) long time no see
c) aren't you	h) how do you do
d) would you like to join us	i) I am sorry to cut in
e) if I remember correctly	j) you're right

Diana: Hi, Susy (1) \_\_\_\_\_.

Susy: Hello Diana. It's been 20 years. So is he your son?

Diana: Yes, he is. (2) \_\_\_\_\_ to my son, Bobby. Bobby, she is Aunt Diana. She is my colleague.

Susy : How do you do?

Bobby : (3) \_\_\_\_\_?

Diana: Bobby, your mother told me that you are in education business, (4) \_\_\_\_\_?

Bobby: Yes, (5) \_\_\_\_\_. I am working as a lecturer at BundaMulia University.

As seen in item 1 to 5 in part 4, dialogue, students have to complete the dialogue using the expressions provided in the table. The instructions of part 4 show that the students should choose suitable expressions based on the context or the dialogue. Implicitly, this part of the test suits C1 or remembering. It can also be seen from one of the action verbs in C1 level—that is "match". Thus, the cognitive level failed to achieve C3 or applying.

### Part 5: Quantifier

### Part A. Fill in the blanks with a, an, some, or any

1.	Dave needs	hou	r to	finish	his	report

2. The new staff doesn't have \_\_\_\_\_ skill for this job.

- Maria has \_\_\_\_\_ information about the new product.
   There is \_\_\_\_\_ new intern in the marketing department.
   Mr. Kenji is a jeweler. He sells \_\_\_\_\_ high quality jewelry.
- Part B: Fill in the blanks with much or many
- 1. Vivi doesn't have \_\_\_\_\_ time to finish her job.
- 2. How \_\_\_\_\_ times does the CEO travel abroad in a year?
- 3. Honda borrows \_\_\_\_\_ money from the bank.
- 4. PT. Furnitura produces \_\_\_\_\_ furniture this year.
- 5. There are \_\_\_\_\_ people queuing in front of the store.

It is obviously that part 5, quantifier, tests the students' knowledge of language—that is a grammar test on "articles", "some", "any", "much", and many. Thus, according to the cognitive level of RBT, this part employs C1 or remembering.

## **Part 6: Constructing Questions**

Make questions based on the underlined information in the sentences below.

- 1. The meeting lasts **for 2 hours**.
- 2. BCA recruits new employees twice a year.
- 3. They quit their job because they doesn't like the boss.
- 4. Mr. Smith works for **UBM**.
- 5. Natasha is responsible for **recruiting new employees**.

The last part of the test is part 6 which is about constructing questions. Students are asked to make wh-questions based on the underlined phrases in each item of part 6. This test needs students' ability to analyse which "wh" is appropriate to make questions. It involves C4 or analysis to be able to make the wh-questions. Bloom's definition of C4 is "examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations".

## 4.2 Discussion

Based on the findings described in point 4.1, it implies that most of the test items applied C1 (remembering) and C2 (understanding). It is not an easy assignment to deploy RBT in a test, particularly in the one which consists of several types of test items. In addition, as the Bloom's definition of each cognitive level is still conceptual and the action verbs of each cognitive level are rarely found in the instructions of each part of the test analysed in this study, it needs a careful and a thorough observation on the instructions of each part of the test and on the test items themselves.

Interestingly, there might be a correlation between the cognitive levels in RBT and the theories of types of test items proposed by Harmer (2007). He underlined that there are two types of test items: direct and indirect test items. Direct test items might closely related to C3 or applying and indirect test items deal with C1 (remembering) and C2 (understanding). Therefore, the test observed and analysed in this small research applied more indirect test items rather than direct test items.

#### V. CONCLUSION

To sum up, there seems to be inconsistency between the cognitive level stated in the syllabus and the midterm test items. In the syllabus, the cognitive level of RBT which should be achieved is C3 or applying while most of the test items only reached C1 (remembering) and C2 (understanding). However, there is one part of the test which goes beyond the cognitive which should be reached—that is C4 or analyzing.

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