Title	Reading comprehension questions: An analysis of upper secondary English textbooks
Author	Dr. Thanda Soe
Issue Date	

Reading Comprehension Questions:

An analysis of Upper Secondary English Textbooks

Dr Thanda Soe[1], Daw Ni Ni Hlaing[2]

Abstract

Based on the Cognitive Domain of Bloom's Taxonomy, this research aimed to analyse the cognitive process levels of reading comprehension questions included in Grade10 and Grade 11 prescribed English textbooks in Myanmar. A total of 676 reading comprehension questions from selected English textbooks were collected and analysed by using Bloom's Taxonomy of Cognitive Domain. The findings of this research revealed that the textbooks used different cognitive skills from the simple to complex levels and the levels of complexity of questions increased as the grade level became higher.

1.   Introduction

An English textbook serving as one of the main instructional materials covers all macro skills including reading skill. It provides students with a variety of reading texts followed by reading comprehension questions which are set to assess students' understanding of the given text. According to Franklin (1981), students' higher level thinking skills can be improved through handling and answering reading comprehension questions presented in textbooks. Textbooks apparently play an important role in education at all levels and hence reading comprehension exercises are expected to help students develop their cognitive skills. Therefore, reading comprehension texts are important vessels that may train learners to practise all levels of cognitive skills and they are believed to serve to a certain extent as the foundation for the formal learning process.

Comprehension is the basis of any type of reading which makes reading comprehension a major component in measuring students reading ability. In reading, questions establish a basis for identifying and clarifying a reader's purpose; this influences the method of reading, degree of comprehension, reading rate, and the skills employed. Hence, reading

[1] Dr Thanda Soe, Professor, Department of English, University of Mandalay
[2] Daw Ni Ni Hlaing, Professor(Head), Department of English, University of Mandalay

comprehension questions should provide students with higher thinking skills, which can be obtained by introducing in the textbooks, different higher level questions. Thus, considering the significance of higher thinking skill for reading questions, this research aimed at identifying and analyzing the types and levels of questions available in Grade 10 and Grade 11 prescribed English textbooks at the upper secondary level. The purpose of the analysis was to determine the distribution of the questions over the six levels of Bloom's Taxonomy of the cognitive domains.

Bloom (1956) proposed the new widely accepted Taxonomy for classifying objectives and assessments items for the cognitive domain. Their system specifies six levels of understanding and each higher level would subsume the properties of the lower levels. The cognitive domain involves knowledge and the development of intellectual skills, which includes the recall or recognition of specific facts, procedural patterns, and concepts that serve in the development of intellectual abilities and skills. The levels of the taxonomy range from the lowest to the highest: Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation.

It is vital for the students to be equipped with the higher level thinking skills, for instance, the ability of analytical reasoning, synthesis, problem solving or higher mental processes by which they can become highly qualified human resources who can face and handle the challenges likely to be encountered in the future. Questions can be a means of activating and training the students' level of thinking and they have been used for a wide variety of educational purposes: reviewing previously read or studied material; diagnosing student abilities, preferences, and attitudes; stimulating critical thinking; managing student behaviour; probing student thought process; stirring creative thinking; personalizing the curriculum; motivating students; and assessing student knowledge. Bloom (1956) suggest that questions in textbooks should be oriented towards developing the students' abilities of higher thinking skills (Application, Analysis, Synthesis, and Evaluation) as well as the lower levels of thinking (Knowledge, Comprehension). The first two levels, knowledge and comprehension, are regarded as lower-cognitive levels while the last four levels are classified as higher-cognitive levels. These categories provide a framework for classifying questions that prompt students to engage in different thinking behaviours. The levels in the cognitive domain increase in complexity moving from the less complicated to the more complex.

Thus this research is conducted with the aim of analysing the reading comprehension questions of two prescribed English Textbooks, each respectively from Grade 10 and Grade 11 and classifying them using Bloom's Taxonomy of cognitive domain to find out the proportion of questions developing different cognitive skills and the extent to which complexity increases or decreases depending on the skills involved, or the higher or lower level.

Theoretical Background

Bloom (1956) developed a series of six levels for categorizing degrees of abstraction of questions. The series is based on degrees of difficulty and includes the recall or the recognition of specific facts, procedural patterns, and concepts that serve in the development of intellectual abilities and skills. Bloom's taxonomy is a hierarchical system of ordering thinking skills from lower to higher, with the higher levels including all of the cognitive skills from the lower levels. The major idea of the Taxonomy is that what educators want students to know can be arranged in a hierarchy from less to more complex. The levels are understood to be successive, so that one level must be mastered before the next level can be reached. The original levels by Bloom et al. (1956) were ordered as Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation. In each of the three domains, Bloom's Taxonomy is based on the premise that the categories are ordered in their degrees of difficulty. An important premise of Bloom's Taxonomy is that each category (or 'level') must be mastered before progressing to the next. The categories within each domain are levels of learning development, and these levels increase in difficulty. According to Bloom (1956), lower level question is a question that requires students to respond at the cognitive level of knowledge or comprehension levels. Moreover, questions belonging to lower-cognitive levels are likely to require students to simply recall the prescribed data from memory, concentrating on factual information. Higher level question is a question that requires students to respond at the cognitive level of application, analysis, synthesis or evaluation levels. Questions belonging to higher-cognitive levels require students to be engaged in critical thinking, for instance problem solving, analysing, creating or evaluating information.

Bloom, with a group of educational psychologists, developed a classification of levels of intellectual behaviour in learning. This became taxonomy of three overlapping domains: the Cognitive Domain, psychomotor and affective domain. Bloom's Taxonomy of Cognitive Domain was used in this research. Bloom's Taxonomy of Cognitive Domain is considered as a remarkable resource in the educational planning because of its successful history in analysing questions. Bloom's Taxonomy of Cognitive Domain is an appropriate instrument for the purpose of this research.

3.   Materials and Methods

The reading passages and accompanying comprehension questions that appeared in the Grade 10 and the Grade 11 English textbooks were data sources for the analysis. In general, a reading passage is followed by a set of exercises and activities, which include comprehension tasks, vocabulary, grammar and writing. The Grade 10 textbook contains 10 units with 10 reading passages followed by exercises and activities. The Grade 11 textbook includes 14 units with 14 reading passages followed up by comprehension exercises and language activities. In this research, 273 reading comprehension questions from Grade 10 English textbook and 403 reading comprehension questions from Grade 11 English textbook, a total of 676 reading comprehension questions were analysed, and classified into two levels, the lower level and higher level based on the cognitive levels of Bloom's Taxonomy. In this research, the following criteria were used in analysing the questions.

Table 1: The criteria used for analysing the data

Competence	Skills Demonstrated
Knowledge	• observation and recall of information • knowledge of dates, events, places • knowledge of major ideas • mastery of subject matter; ***Question Cues*** list, define, tell, name, describe, identify, show, label, collect, examine, tabulate, quote, name, who, when, where, etc.
Comprehension	• understanding information • grasp meaning

	• translate knowledge into new context • interpret facts, compare, contrast • order, group, infer causes • predict consequences ***Question Cues*** summarize, describe, interpret, contrast, predict, associate, distinguish, estimate, differentiate, discuss, extend
Competence	• use information • use methods, concepts, theories in new situations • solve problems using required skills or knowledge seeing patterns, • organization of parts • recognition of hidden mean • identification of component ***Question Cues*** apply, demonstrate, calculate, complete, illustrate, show, solve, examine, modify, relate, change, classify, experiment, discover
Analysis	• seeing patterns • organization of parts • recognition of hidden meanings • identification of components ***Question Cues*** analyse, separate, order, explain, connect, classify, arrange, divide, compare, select, explain, infer
Synthesis	• use old ideas to create new ones • generalize from given facts • relate knowledge from several areas • predict, draw conclusions ***Question Cues*** • combine, integrate, modify, rearrange, substitute, plan, create, design, invent, what if?, compose, formulate, prepare, generalize, rewrite

Evaluation	• compare and discriminate between ideas • assess value of theories, presentations • make choices based on reasoned argument • verify value of evidence • recognize subjectivity ***Question Cues*** assess, decide, rank, grade, test, measure, recommend, convince, select, judge, explain, discriminate, support, conclude, compare, summarize

(Source: Bloom, 1956)

The following table shows occurrences of comprehension questions analysed according to Bloom's taxonomy.

Table 2: Questions items of Grade 10 and Grade 11 Textbooks analysed using Bloom's Taxonomy

Textbook	Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation	Total
Grade 10	93	75	99	4	0	2	273
Grade 11	99	11	17	7	0	16	403
Total Frequency	19	18	26	11	0	18	676
Percentage	28	28	39	2	0	3	100%

As shown in the above table, of 676 questions, 192 (28%) were concerned with knowledge. Comprehension based questions account for 186 items (28%) whereas application questions have the highest frequency at 269 questions (39%). Analysis items have a very low occurrence at 11 questions (2%) while that of Evaluation were slightly higher at only 18 questions (3%). Items belonging to the synthesis level were totally absent. 273 post reading comprehension questions in Grade 10 textbook consists of 93 (34%) at the knowledge level, followed by comprehension level with a total

of 75 questions (27%). In Grade 10 textbook, the occurrence of application question is the most frequent at 99 items (36 %), followed by knowledge questions at 93 items (34%) and 75 comprehension questions (27%). Items at higher levels are infrequent with only 4 analysis questions (3%) and 2 Evaluation questions (1%). As for Grade 11 textbook, out of 403 post-reading comprehension questions in 14 units, the occurrence of Application questions is more frequent compared to that of Grade 10 textbook at 170 items (41%). That of Comprehension level is similar to that of Grade 10 text, at 111 items (28%). Occurrence of higher level items is low with only 16 Evaluation questions (4%) and 7 Analysis questions (2%).

As seen in Table 1, it is clear that there was a difference in the questions' distribution across the levels in each unit in the selected textbooks. Question types of certain categories were totally absent while other types had a large proportion. In the selected textbooks, the questions for the analysis and evaluation levels ranged from 0-10 questions. The knowledge, comprehension and application levels ranged from 0-24. However, there were no questions at the synthesis level for both textbooks. The reading comprehension questions of the two textbooks the questions were then classified into two major categories, lower level cognitive skill and higher level cognitive skill, in order to find the level of complexity.

In the two textbooks, a total of 378 low level questions (56%), and 295 high level questions (44%) were found.

Table 3: Questions categorized according to lower and higher level cognitive skills

Grade	Level of questions	Frequency	Percentage
Grade 10	Lower level	168	62%
	Higher level	105	38%
Grade 11	Lower level	210	52%
	Higher level	193	48%
Total	Lower level	378	56%
	Higher level	298	44%

As given in Table 3, an examination of the two individual textbooks shows that occurrence of lower level questions is the most frequent at 168

items (62%) compared to 108 items (38%) for higher level questions in Grade 10 textbook. For Grade 11 textbook, the ratio of lower level questions decreased with 210 items (52%) and that of higher level increases with 193 items (48%). Generally, it can be concluded that the proportion of lower level questions is higher for both textbooks.

Figure 1 represents the lower level thinking skills and the higher level thing skills of Bloom's Taxonomy found in the two textbooks.
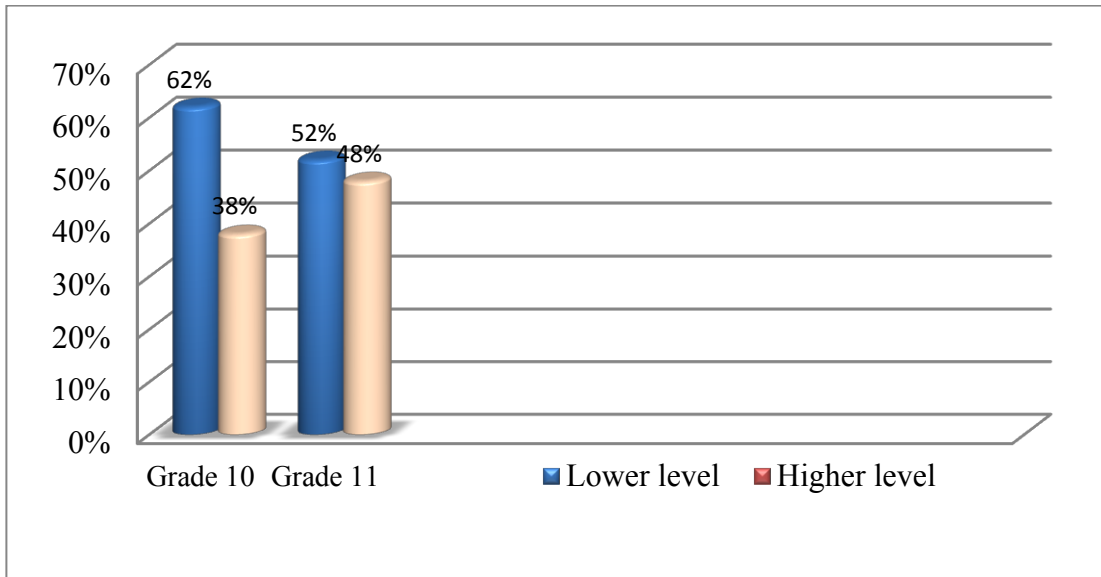

Figure 1: Summation of Higher and Lower level questions for two textbooks

As shown in Figure 1, Grade 11 textbook contained a larger number of questions for higher level cognitive skills (48%) in comparison with Grade 10 textbook which contained only (38%). The level of difficulty increased from Grade 10 to Grade 11 with (62%) of lower level question in Grade 10 compared to (52%) in Grade 11.

4.   **Findings and Discussion**

The result revealed that Grade 10 textbook had the greater proportion of the lower level questions than Grade 11 textbook. The lower level questions for Grade 10 textbooks included 168 questions out of 373 questions with (62%) and for Grade 11 textbooks contained 210 questions out of 403 questions with (52%). The higher level questions for Grade 10

textbooks included 105 questions with (38%) and Grade 11 textbook contained 193 questions with (48%). The findings indicate a larger portion of lower level questions than higher level questions. Even though there was a slight difference in the percentages of the question distribution among the levels, the majority of the questions were of the cognitive levels which are knowledge, comprehension and application. It is notable that most of the questions were categorized within the first three levels: knowledge, comprehension and applications. Among the three levels, occurrence of questions at the application level is found to be most frequent. It is also worth noting that the level of complexity increases as the grade level becomes higher. From the results, it can possibly be concluded that the reading comprehension questions of Grade 10 and Grade 11 prescribed English textbooks mostly have quality of measuring skills of application, which is higher level cognitive skill.

5. Conclusion

As indicated by the findings of this research, different levels of the cognitive skills except synthesis level were found in the questions in the selected textbooks. A mixture of questions at various levels of the taxonomy might result in the effective learning at higher level and lower level thinking skills. The advantage of having textbooks with mixed questions, is that low ability students performed better on knowledge recall questions; and high ability students performed better on application level questions. Among the six levels of cognitive skills, the application level formed the largest number in selected textbooks. The overall findings of this research demonstrated that the level of difficulty increased as the grade level became higher. Thus, it can be concluded that the selected textbooks contained different cognitive levels of questions from simple to complex level and the level of difficulty increased when the grade level become higher and that inclusion of synthesis level questions which are conspicuously absent from both textbooks, will possibly encourage creative thinking for students.

References

Alul, F. (2000). Analyzing English Textbook Questions for the Elementary Eighth Grade in Palestine Based on Bloom's Taxonomy of Educational Goals at its Cognitive Domain. Unpublished Master's Thesis. An-Najah National University, Nablus, Palestine.

Blooms, B (1956), Taxonomy of Educational objectives: Cognitive and Affective Domains, New York: David Mckay Company Inc.

Franklin, D. M (1981), An Analysis of Questions in Sixth-Grade Social Studies Textbooks published between 1965-1969 and 1975-1979. Diss. Indiana University