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A Descriptive Content Analysis of the Extent of Bloom's Taxonomy in the Reading Comprehension Questions of the Course Book Q: Skills for Success 4 Reading and Writing

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Abstract

Bloom's taxonomy is probably the most commonly used one among the cognitive process models. It is a classification system that emphasizes the procedures starting from remembering the knowledge to more complex cognitive levels like evaluating the knowledge. Firstly, the aim of this study has been to find out to what extent Bloom's taxonomy is referred in reading comprehension questions of an English as a Foreign Language course book. With this in mind, the research question To what extent do the reading sections of the EFL course book Q: Skills for Success 4 Reading and Writing cover the lower and higher order cognition levels of Bloom's taxonomy? was formulated. The EFL course book Q: Skills for Success 4 Reading and Writing by Oxford Publishing was analyzed through descriptive content analysis method. Findings of the study suggested that this analyzed course book lacked the higher level cognitive skills involved in Bloom's Taxonomy. As a result, by means of the findings, some assumptions have been reached with the aim of suggesting how the course books which are being written or will be written should refer to Bloom's taxonomy in their reading sections.

Keywords

Bloom's Taxonomy, Reading Skill, Reading Comprehension Questions

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A Descriptive Content Analysis of the Extent of Bloom's Taxonomy in the Reading Comprehension Questions of the Course Book *Q: Skills for Success 4 Reading and Writing*

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Bloom's taxonomy is probably the most commonly used one among the cognitive process models. It is a classification system that emphasizes the procedures starting from remembering the knowledge to more complex cognitive levels like evaluating the knowledge. Firstly, the aim of this study has been to find out to what extent Bloom's taxonomy is referred in reading comprehension questions of an English as a Foreign Language course book. With this in mind, the research question To what extent do the reading sections of the EFL course book Q: Skills for Success 4 Reading and Writing cover the lower and higher order cognition levels of Bloom's taxonomy? was formulated. The EFL course book Q: Skills for Success 4 Reading and Writing by Oxford Publishing was analyzed through descriptive content analysis method. Findings of the study suggested that this analyzed course book lacked the higher level cognitive skills involved in Bloom's Taxonomy. As a result, by means of the findings, some assumptions have been reached with the aim of suggesting how the course books which are being written or will be written should refer to Bloom's taxonomy in their reading sections. Keywords: Bloom's Taxonomy, Reading Skill, Reading Comprehension Questions

Cognition is the scientific concept meaning the mental processes contained in obtaining knowledge and understanding, covering thinking, knowing, remembering, judging, and problem solving, while meta-cognition is the knowledge and comprehension of our own mental actions and capabilities and those of others, as well as organization of these actions (Special Education Support Service, 2009). The taxonomy concept is mainly employed in the realm of biology when it comes to the categorization of beings; however it is used in many other areas as a means of separating terms into groups and hierarchies of opinions. In 1948, Benjamin Bloom coordinated and directed a number of educators who, over a course of eight vears, categorized educational objectives that were finally called Bloom's Taxonomy. Reorganized in 2003, Bloom's Taxonomy is grouped into three areas of learning: cognitive, affective, and psychomotor. The cognitive domain is grouped under six subsequent levels of thinking. The initial three levels or lower order skills contain: remembering, understanding, and applying, while the last three levels or higher-order skills cover: analyzing, evaluating, and creating (Orey, 2010). In other words, the first three down levels are knowledge, comprehension and application, while the three up levels are analysis, synthesis and evaluation. Taxonomy is hierarchical; each step is located at the upper steps as well, which means high levels cover the levels at down. To give an example, a student being in the application level is able to function in both knowledge and comprehension levels as well. Eliciting meaning from reading passage necessitates a group of skills that go far beyond the ability to decipher or word perception (Konza, 2011). With all these in mind, this study aims at identifying to what extent the reading sections of EFL course book "Q: Skills for Success 4 Reading and Writing" by Oxford Publishing refers to the levels of Bloom's Taxonomy. To achieve this, each reading section was analysed carefully in order to have a broad view on which steps of taxonomy, either upper or down, were employed in the reading sections of the mentioned course book. Question stems focusing on each level and key words exemplifying the steps of the taxonomy were used to come to a conclusion on which levels of thinking order were available in the overall analysed reading sections. Furthermore, this study will bring a light on the scope of reading questions having the characteristics of lower and higher level thinking orders involved, and as a result the study will be a guide for the EFL course books being written or will be written in terms of covering Bloom's Taxonomy. Many EFL course books have been written through diverse learning theories with different principals regarding the mental processes. However, few EFL course books consider such mental processes, particularly the EFL course books employed in local scope and written by nonnative authors. Besides, one of these mental processes, the Bloom's Taxonomy, is not involved extensively in the formation of both local and global scope EFL course books, in our case this study refers to this gap by hinting on this course book which serves solely for the lower levels thinking orders. It will supply the informational needs of stakeholders serving both in local and global extent. To sum up, this research addresses a significant problem which is the lack of cognitive processes in the reading sections of the written EFL course books in both local and global scopes.

Literature Review

Efficient readers comprehend the aim of their reading, and so are able to form their reading style consequently. They know the reason of reading as well as how they ought to read to reach their aim. When they are in need of a particular telephone number, they know employing alphabetic and scanning skills to find out the name and number soon; if they want to know if a book fits to their requirements, they can skim content parts, chapter titles and a paragraph to make their selection; if they require to upload new software or make a complex recipe, they can pursue guidance thoroughly and gradually; if they need to synthesise data from a number of supplies, they can read analytically, elicit basic data and decipher what it conveys on the ground of their owned knowledge. The application of objected strategies in diverse cases and for different aims describes the competent reader having a number of strategies at his or her disposal (Konza, 2011). Reading comprehension skill is crucial for learners to develop. The lack of reading comprehension means flawed reading. The basic aim of reading is to obtain data from the document being read. In order to do this, the reader needs to be able to deal with the script properly to elicit meaning from it. An adequately written reading text supplies the reader with data in an organised manner. Authors employ various techniques to transfer meaning to the readers. Accordingly, the meaning eliciting action is a case that has to settle between the two sides to obtain the message in the simplest and the most proper way. For achieving this, readers should use several comprehension skills to assist them get meaning from reading documents. Language course books typically provide learners with reading passages. These passages present new vocabulary and try to improve reading comprehension skills by asking learners to read the document and then to answer some questions to see if they have comprehended the text (Alfaki, 2014). However, literature has showed that there is an insufficiency of higher-level questions and supremacy of lower-level questions in most of English Language course books appointed for learners. As far as Freahat and Smadi (2014) are concerned, no research has dealt with the use of Bloom's taxonomy in EFL reading instruction or evaluation. On the other hand, there are some studies referring to content analysis style which describes the extent of cognitive levels of Bloom's Taxonomy in EFL course books. Lower order thinking skills of Bloom's Taxonomy take place a great deal of emphasis in the course book content analysis of some researchers (Assaly & Igbaria, 2014; Assaly & Smadi, 2015; Zareian, Davoudi, Heshmatifar, & Rahimi,

2015; Sirait, 2014; Gordani, 2010; Askaripour, 2014; Roohani, Taheri, & Poorzangeneh, 2013).

Bloom's Taxonomy

Bloom and his assistants formed the Taxonomy, a ranked system of arranging thinking skills from lower to higher, with the higher levels covering all the cognitive skills from the lower levels (Duc, 2010). It is a clear taxonomy defining six levels for testing the achievement of the aims of students' cognitive domains: knowledge, comprehension, application, analysis, synthesis, and evaluation. Bloom's has various features making it the most generally employed taxonomy in the education field as Assaly and Igbaria (2014) suggest in the following:

1. The taxonomy is educationally oriented and can be used to distinguish between groups of objectives that teachers use for writing curricula, study programs and lesson plans.

2. The levels are clearly and logically defined.

3. The taxonomy describes psychological phenomena.

4. The taxonomy discusses thinking processes ranging from the simple to complex with each level resting upon the previous one.

5. It is continuous, with each objective leads to the one following it.

6. It is comprehensive in that each behavioural objective can be categorized according to the taxonomy.

Bloom, Englehart, Furst, Hill, and Krathwohl (1956) describe the six levels of the cognitive domain in Bloom's taxonomy as: Knowledge level symbolises the lowest level of learning results in the cognitive sphere. It is described as recognising formerly acquired data ranking from specific factual to total theories. Knowledge level contains remembering items without any further thinking procedures. *Comprehension* is the capacity to see the meanings of objects. It covers translating the item from one mode to another like numbers to words, clarifying text by interpreting or summing up, or foreseeing outcomes. Comprehension level symbolises the following level after remembering items and is the lowest stage of comprehending material. Application is the capacity to employ acquired data in recent and actual cases. It covers implementing principles, methods, terms and theories in proper circumstances. Learning results at this level necessitate a higher level of grasping meanings than those at the comprehension level. Analysis is the capability to decompose material into its elements to grasp its systematic structure. It contains describing sections, analyzing the connection between segments, and identifying the system laws contained. It necessitates an understanding of content and structural pattern of the material, and thus learning results employing analysis comprise a higher level of thinking than comprehension and application. Synthesis is the capacity to convene elements together to shape a new entity. It covers the generation of particular communication, a scheme of conduction like a research outline, or a program for categorising data such as a group of theoretical associations. Learning results in this part point out imaginative approaches, with biggest stress on the formation of recent structure. Evaluation contains the capacity to evaluate the value of material for a specific

aim, settled on certain principle decided by learners or instructors. These principles may be domestic or exterior ones which are related to the aims. The classification of evaluation contains thinking processes from all the former ones and is thus the highest in the ladder of cognition processes. The following figure brings a light to the classification of Bloom's view, in which the levels are seen step by step in an ascending order from down to top.

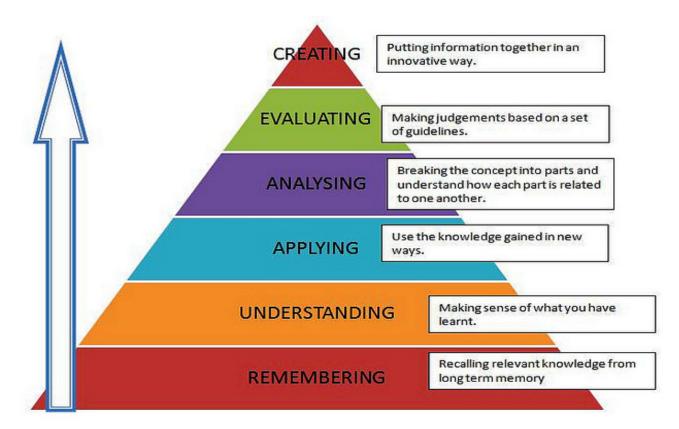


Figure 1. Bloom's Taxonomy by E. Robyn, 2014, ExpertBeacon, Inc.

In the case of this study, having taught English as a Foreign Language for many years and using a variety of EFL course books, now being a research assistant in the field of EFL, I realised that whether locally or globally formed, EFL course books lack higher order cognition levels specified in Bloom's Taxonomy. This study sheds a light upon the efficiency of course books in developing cognitive skills as well as guiding course book developers, educational policy-makers, and program and syllabus designers in terms of incorporating more higher-order questions in their materials, in our case course books, in a way to achieve higher level cognition skills.

The Research Problem

Most teachers do not have the required time, opportunity and ability to develop their own learning materials for teaching English. So, they follow or use course books and they are totally dependent upon them. The book that was selected for analysis in this study is the EFL course book titled, *Q: Skills for Success 4 Reading and Writing*. The aim of this analysis is to evaluate to what extent the book covers higher and lower level questions based on Bloom's taxonomy, through analysing the entire reading comprehension questions in the reading sections of the course book. That's to say, the reading section questions will be analyzed to determine their cognitive level according to Bloom's taxonomy. This analysis will clear up whether or not the reading comprehension questions in the book cover higher level thinking skills.

Purpose of the Study

This study aims to analyze cognitive levels of the reading comprehension questions in the EFL course book titled *Q: Skills for Success 4 Reading and Writing.* That's to say, it seeks to identify whether or not there are any weaknesses or strengths of reading comprehension questions in terms of lower and higher order thinking skills under Bloom's taxonomy. Therefore, I put forward the following research question:

To what extent do the reading sections of the EFL course book *Q: Skills for Success 4 Reading and Writing* cover the lower and higher order cognition levels of Bloom's taxonomy?

Significance of the Study

This study explores reading comprehension questions in the EFL course book *Q*: *Skills for Success 4 Reading and Writing* hoping to point out the extent of lower and higher cognition levels included in order to suggest ways which may help the course book authors preparing reading materials or designing reading comprehension questions. The results of this study will be of great benefit for teachers to be creative in designing or modifying reading comprehension questions according to cognition levels, as well. The results of the study will also contribute to all involved in the educational practice of EFL teaching, the course book writers as well as the Ministry of Educations. They will also increase their awareness of the results will again be useful for teachers regarding the significance of evaluating course books produced by local and global stakeholders to select the ones that much help them achieve the curriculum objectives.

Limitations of the Study

English course books should contain reading tasks of distinct cognitive demands to supply learners with the competence to carry out tasks at any cognitive level in English (Assaly & Smadi, 2015). I used solely Bloom's taxonomy to analyse reading questions from the course according to cognitive domain.

1. The study is limited only to the EFL course book *Q: Skills for Success 4 Reading and Writing*. The data collected did not represent the contents and aspects of other such EFL course books.

2. This study investigates reading comprehension skill questions only; therefore, the results are limited to evaluating reading comprehension questions.

Methodology

The procedure for the aim of the present study is the descriptive content analysis style which describes the occurrence of the categories of analysis precisely. I employed the cognitive levels of Bloom's Taxonomy in the categorization of the reading comprehension questions in the course book. Firstly, in order to find a solution to the research problem *To*

what extent do the reading sections of the EFL course book Q: Skills for Success 4 Reading and Writing cover the lower and higher order cognition levels of Bloom's taxonomy? question stems focusing on each level and key words exemplifying the steps of the taxonomy were used to come to a conclusion on which levels of thinking order were available in the overall analysed reading sections. This study was a kind of qualitative research since I described and analyzed the collected data. Frequencies and reporting percentages took place in the study as a quantitative research design while I provided examples of reading questions as a qualitative inquiry. Generally speaking, question stems and question words refer to the cognitive thinking levels of the Bloom's Taxonomy and in this particular study I presented such question samples related to the involved cognitive steps. Give your rationale for selecting a qualitative design in general and your particular qualitative design choice in particular and discuss how these choices are appropriate to answering the question under study. I identified the course book in terms of to what extent its reading section comprehension questions involve cognitive thinking levels. In order to do this, I applied descriptive analysis for the sections of each unit of the EFL course book. Then, I collected, listed, and analyzed the reading comprehension questions according to Bloom's Taxonomy: low order thinking skills: knowledge, comprehension, and application, and high order

and frequencies of in which each level of cognition appeared for each unit. Among diverse taxonomies and models for course book evaluation such as Vygotskian, Piagetian, and available learning theories (Anderson & Krathwohl, 2001), Bloom's Taxonomy can be a proper benchmark to assess learning activities and teaching materials with the cognitive learning domain like remembering, understanding, applying, analyzing, evaluating, and creating (as cited in Zareian at al., 2015). Moreover, I involved every coding category including examples of word stems for each level representing cognitive domain. To make the data more manageable, I presented the data in the form of tables. In each table, I provided raw frequencies as well as the percentage of the cognitive steps as well. With all the mentioned steps that I took, I tried to shed light on the order of cognitive thinking processes covered in Bloom's Taxonomy in this paper. The cognitive skill sets that learners of EFL courses mainly depend on learning activities that course book writers select to embed in course books. So, if teachers rely much on tasks from the text, the cognitive skills embedded in English course books may have an important influence on the learning that occurs in a course. If much low-level learning skills are contained in these tasks, there is a possible risk that low-level learning will extensively become true (Gordani, 2010). I used Bloom's Taxonomy as the theoretical framework of the study and as a result tabulated the findings accordingly.

thinking skills: analysis, synthesis, and evaluation. Afterwards, I calculated the percentage

Data Analysis and Results

The descriptive analysis covered classifying all questions according to the six categories of the cognitive level of Bloom's taxonomy, calculating frequencies, and reporting percentages. Results of the data were then clarified in terms of lower and higher-level categories and percentages were calculated to find out the extent to which the reading comprehension questions in the English course book *Q: Skills for Success 4 Reading and Writing* emphasize both lower- and higher-levels of questions. All the data which emerged from descriptive analysis, such as frequencies and percentages, were employed in the inferential component of data analysis. The following tables and their descriptions bring a light in terms of the above mentioned aspects. As it is clear from the following table, the lower and higher order cognitive thinking skills are presented.

Level of question	Frequencies	Percentages
Knowledge	92	%51
Comprehension	87	%49
Application	0	%0
Analysis	0	%0
Syntheses	0	%0
Evaluation	0	%0
Total	179	%100

Table 1: Frequencies and Percentages of the Six Levels of the Cognitive Domain in Bloom's Taxonomy in the Reading Section *Questions of Q: Skills for Success 4 Reading and Writing*

As it can be seen in the Table 1, the reading comprehension questions in the book cover only knowledge and comprehension levels of Bloom's taxonomy. That's to say, according to Table 1, the reading questions are based on the lower order cognition levels of Bloom's taxonomy while they lack the higher order cognition levels. The percentage of knowledge level contained in the reading questions are very close to the percentage of comprehension level with the percentages of %51 and %49. To clarify the issue in a detailed manner, the following table represents the knowledge and comprehension levels with their percentages and frequencies regarding each unit. Sample excerpts from the data are illustrated below.

- Read the sentences. Number the main ideas in the order they are developed in the excerpt. Use the sub headings in the excerpt to help you. (Lower level, knowledge step, p. 9)
- Complete the chart with information about Yohannes Gebregeorgis and Carmen Salva. (Lower level, knowledge step, p. 15)
- Answer the questions. Do all superheroes have superpowers? If not, what powers do they have? (Lower level, knowledge step, p. 9)
- What do you think the two people have done that makes them heroes? (Lower level, comprehension step, p. 11)
- Think about both Reading 1 and Reading 2 in this unit as you discuss the questions. Would you rather be a real life hero or a super hero? Why? (Lower level, comprehension step, p. 17)
- Discuss the questions in a group. (Lower level, comprehension step, p. 10)

Table 2: Frequencies and Percentages of Knowledge and Comprehension Levels of the Units

	Knowledge		Comprehension	
	Frequency	Percentage	Frequency	Percentage
Unit 1	8	%42	11	%58
Unit 2	9	%56	7	%44
Unit 3	9	%47	10	%53
Unit 4	10	%63	6	%37
Unit 5	9	%50	9	%50
Unit 6	12	%71	5	%29
Unit 7	8	%42	11	%58
Unit 8	8	%50	8	%50
Unit 9	8	%44	10	%56
Unit 10	11	%52	10	%48

Total	92	%51	87	%49

First of all, for the 1st unit, it is clearly understood from the table that *comprehension* level is more dominant in reading comprehension questions, with a percentage of %58 which means that comprehension step in lower order thinking skills according to Bloom's Taxonomy rates higher than knowledge level within the same lower order. To clarify the issue, I arrived at this rate by taking the percentages of the frequencies of the mentioned cognitive steps.

When it comes to the 2^{nd} unit, one can easily understand from the table that *knowledge* level rates more than its correspondence in reading comprehension questions, with a percentage of %56 meaning that knowledge step in lower order thinking skills according to Bloom's Taxonomy rates higher than comprehension level within the same lower order, at which point I arrived by taking the percentages of the frequencies of the mentioned cognitive steps.

In terms of the 3rd unit, *comprehension* level is more dominant in reading comprehension questions than its counterpart, with a percentage of %53 in that comprehension step in lower order thinking skills according to Bloom's Taxonomy takes place more than knowledge level within the same lower order, which point I found out by taking the rates of the frequencies of the dealt cognitive steps.

Regarding the 4th unit, the table illustrates that *knowledge* level is seen more in reading comprehension questions than comprehension level, with a percentage of %63. In other words, knowledge step in lower order thinking skills according to Bloom's Taxonomy is higher than the other mentioned step within the same lower order, which I clarified by taking the rates of the frequencies of the cognitive thinking levels.

For the 5th unit, it is clearly understood from the table that both *comprehension* level and knowledge level are equal. To sum up, knowledge and comprehension steps in lower order thinking skills according to Bloom's Taxonomy are equally employed in the reading comprehension sections when we look at the equal percentages.

Besides, for the 6th unit, *knowledge* level is employed more in reading questions than comprehension level by looking at the percentage of %71, that it means knowledge step in lower order thinking skills of Bloom's Taxonomy is used more than the other step within the same lower order, which I suggested by providing the rates of the frequencies of the cognitive thinking levels.

By looking at the 7th unit, it is clearly understood that *comprehension* level is more administered in reading comprehension questions than its counterpart, with a percentage of %58 that means comprehension step in lower order thinking skills according to Bloom's Taxonomy rates more than knowledge level within the same lower order, at which conclusion I reached by taking the percentages of the frequencies of these cognitive steps.

Moreover, for the 8th unit, both *comprehension* level and knowledge level are equal again. To bring a light to the issue, knowledge and comprehension steps in lower order thinking skills according to Bloom's Taxonomy are employed in the same rate in the reading comprehension sections by looking at the identical percentages.

At the same time, by looking at the 9th unit, one can easily see that *comprehension* step takes place more than knowledge step in reading questions, with a percentage of %56. It means that comprehension step in lower order thinking skills situated in Bloom's Taxonomy is used more than knowledge level within the same lower order, the result of which I arrived by specifying the percentages of the frequencies of these cognitive steps.

Furthermore, seeing the 10^{th} unit, it is clearly perceived from the table that *knowledge* level is more included in reading comprehension questions than its correspondent, with a percentage of %52, which means knowledge step in lower order thinking skills of Bloom's

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Taxonomy is applied more than comprehension step within the same lower order, which I pointed out by finding out the rates of the frequencies of the cognitive thinking levels.

Finally, for the whole units, it is clearly understood from the table that *knowledge* level is more dominant in reading comprehension questions, with a percentage of %51. However, the quantity of both knowledge and comprehension levels are close to each other with the percentages of %51 and %49. To sum up, these mentioned frequencies and percentages supplied me with the results of the findings related to the rate of each cognitive thinking levels of Bloom's Taxonomy.

Suggestions

In light of the findings of the study, the researcher suggests the following criteria to be taken into account.

1. Similar research ought to be conducted on other series of the course book *Q: Skills for Success 4 Reading and Writing.*

2. This kind of research ought to be extended over other course books, regarding reading comprehension assessment.

3. The reading parts in course books ought to refer to both lower-level and higher level thinking processes.

Conclusion

As far as I see, a big number of course books have been formed on various learning theories, each introducing a diverse pile of approaches and principles on an intricate frame of study about how we engage in mental processes. This course book stimulates the learners to succeed academically, but it only serves for the lower levels of cognition process, having a lack of steps in higher levels. Freahat and Smadi (2014) states that "One should consider the nature of relationship between lower- and higher- cognitive questions. This relationship can be described as integrative. Lower-level questions can enhance the acquisition of factual knowledge and the foundations for attaining high-cognitive skills. On the other hand, higher-level questions are effective tools for stimulating thinking and developing other cognitive skills such as problem solving and decision making." Question centred approach supplies a unique foundation for every unit. Though there is a lack of higher level thinking processes, the book develops key cognitive skills such as remembering and understanding.

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