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An analytic study of the levels of evaluation questions in English courses in Syrian secondary schools according to Bloom's Taxonomy

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Abstract:

This study aims to classify the levels of assessment questions according to Bloom's taxonomy in English course for eleventh grade in Syria and to analyze the percentage of questions in each level (recall, comprehension, application, analysis, synthesis, and evaluation). The sample of the study consists of student's book for eleventh grade in Syrian Arab Republic. The study follows the quantitative approach by making use the following tool: an analysis card to measure the frequency of assessment questions. The results show that assessment questions in English student's book for eleventh grade cover all levels of Bloom's Taxonomy. The percentages are: recall 51.65%, comprehension 14.89%, application 9.02%, analysis 2.8%, synthesis 7.48%, and evaluation 2.63%. Thus, recall which is the lowest thinking skill is the most frequent level of questions whereas evaluation is the least occurring level.

Key words: Bloom's taxonomy, course analysis, English Course.

دراسة تحليلية لمستويات الأسئلة التقويمية في مناهج اللغة الانكليزية في المدارس الثانوية السورية وفقاً لتصنيف بلوم

م. ميسون شمس الدين السكاف
قائم بالأعمال في كلية التربية بجامعة حماة

المخلص:

تهدف الدراسة إلى تصنيف مستويات الأسئلة التقويمية في مقرر اللغة الانكليزية للصف الثاني الثانوي في سورية وفقاً لتصنيف بلوم، كما تهدف إلى تحليل النسبة المئوية للأسئلة في كل مستوى (تذكر، فهم، تطبيق، تحليل، تركيب، وتقويم). تتألف عينة الدراسة من كتاب الطالب في الصف الثاني الثانوي في الجمهورية العربية السورية. وتتبع الدراسة المنهج الكمي باستخدامها أداة بطاقة التحليل لقياس تكرار الأسئلة التقويمية. تظهر النتائج أن الأسئلة التقويمية في كتاب الطالب للغة الانكليزية في الصف الثاني الثانوي تغطي جميع مستويات تصنيف بلوم. والنسب المئوية كالآتي: التذكر ٥١.٦٥%، الفهم ١٤.٨٩%، التطبيق ٩.٠٢%، التحليل ٢.٨%، التركيب ٧.٤٨%، والتقويم ٢.٦٣%. وهكذا، فإن التذكر وهو مهارة التفكير الأدنى هو المستوى الأكثر تكراراً في الأسئلة بينما التقويم هو المستوى الأقل وروداً.

الكلمات المفتاحية: تصنيف بلوم، تحليل المقرر، مقرر اللغة الانكليزية.

1. Introduction

Teaching English gets its significance from the fact that English is the world language of communication, technology and sciences. As a result, the processes of designing, teaching, and evaluating English courses are of great importance to develop courses and improve students' acquisition of language.

This study analyzes student's book for eleventh grade to highlight some points of strength and weakness in order to focus on positive aspects and treat negative ones for the sake of improving English courses in Syrian Arab Republic. It categorizes assessment questions in eleventh grade English books in Syrian Arab Republic from the perspective of Bloom's taxonomy of teaching cognitive objectives (recall, comprehension, application, analysis, synthesis, and evaluation). It depends on a criterion of the expected frequencies of each level that maintains that the questions should be distributed over the cognitive levels as the following: 25% for recall, 30% for comprehension, 25% for application, and 20% for the higher intellectual levels.

The idea of study springs out of my observations during my work as a teacher in public schools in Homs (2002 – 2008), as a lecturer in Education College in Hama University, and as a supervisor on diploma students in Hama schools since 2009. My observations have been as follows: Some students do not participate in English classes. Others read texts but do not speak or write. Some students understand teacher's questions but they tend to answer using their mother tongue. Some teachers still use Grammar-Translation method although the courses are based on Communicative Language Teaching or multi-syllabi syllabus. Some teachers lack the experience of forming classroom questions that evoke the high levels of thinking. Consequently, the questions of the books should be formulated appropriately to compensate teachers' lack of experience. There is an urgent necessity to have questions that require high mental capacities in order to increase the students' ability to learn.

2. Literature Review

This chapter discusses the most current studies about course analysis. It elaborates on some studies and books dealing with: Bloom's Taxonomy, and course analysis.

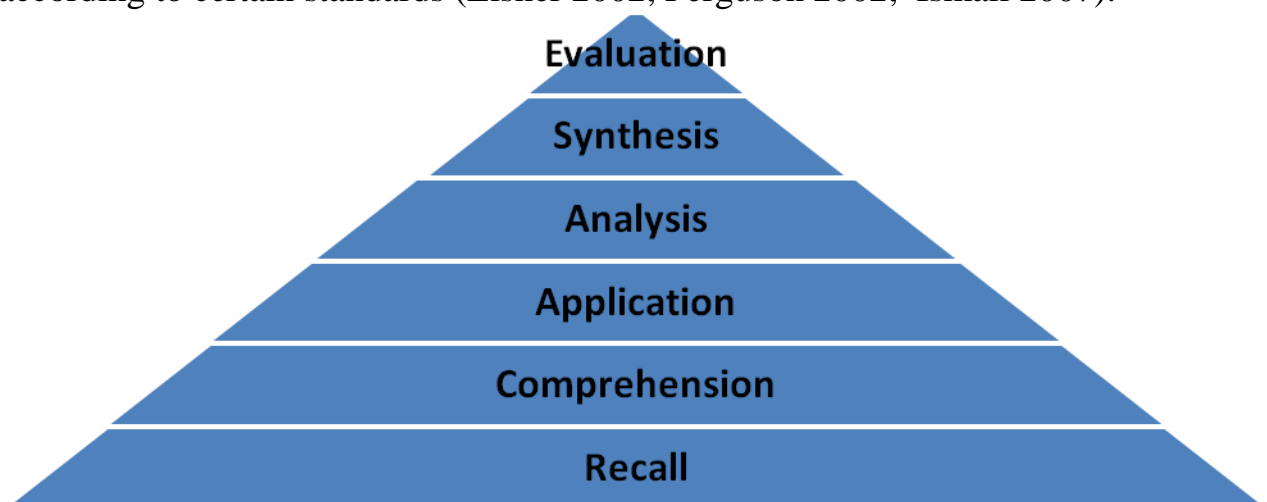
2.1. Bloom's Taxonomy:

Bloom's Taxonomy is "a method of classifying educational objectives, educational experiences, learning processes, and evaluation questions and problems" (Paul, 1985 p. 39). Bloom's Taxonomy has been translated into 22 languages and is one of the most widely applied and most often cited

references in education. (Anderson & Sosniak, 1994 preface, Houghton 2004, Krathwohl 2002). It classifies teaching objectives into three basic fields: cognitive, emotional, psychophysical. Each field has several levels arranged hierarchically. The cognitive field has six levels: recall (or knowledge), comprehension, application, analysis, synthesis, and evaluation. (Mursi ٢٠٠٩ Anderson & Krathwohl 2001, Bloom & Krathwohl 1956).

Cognitive levels can be measured in analyzing questions, drills, and activities. Each type of questions leads to a certain level of thinking. The questions that evoke high levels of thinking (analysis, synthesis, evaluation) make learning more effective because these questions need expressing opinions, taking decisions, and solving problems. They give learners an opportunity to think and rethink. However, the questions of low levels of thinking (recall, comprehension, application) are unavoidable because there is a dialectical relation between the high and low levels of thinking. (Anderson & Sosniak, 1994, Cruz 2004).

In recall level known also as knowledge level, learners recognize information and recall facts, terms, principles, and generalizations of a specific subject. In comprehension, learners prove that they understand, organize, and express the material in their own words. They can say the newly acquired material using their own language and style. In application, learners can apply the learnt material in new situations. In analysis, learners can divide information and create relations in order to discover the implied meanings of the material. In synthesis, learners can combine elements and parts into a whole in order to have a new entity or a unified compound. In evaluation, learners can evaluate the quality or quantity of a specific item according to certain standards (Eisner 2002, Ferguson 2002, Ismail 2007).



Graphic 1: Bloom's cognitive hierarchy

Jones (2009) explores the relationship between examination questions and Bloom's taxonomy. He states that a good and reasonable examination paper

must consist of various difficulty levels to accommodate the different capabilities of students. In his work, the difficulty level of each question in the examination paper is determined from the criteria of keyword/s found in the question. Further, he presents the cross-analysis across student performance, cognitive skill requirements, and module learning outcomes. Then, he provides conclusions on the current relationship between examination questions, learning outcomes and student performance, as well as providing some indication of the relative changes required to move toward a more appropriate association and hence improve an assessment strategy.¹

Marzano and Kenall (2006) do a research on the nature of knowledge and cognition and a reflection of the movement to standards-based education. They tackle the three domains of knowledge: information, mental procedures, and psychomotor procedures; and six levels of processing: retrieval, comprehension, analysis, knowledge utilization, metacognition, and self-system thinking. Their research offers specific applications for: designing and classifying educational objectives, creating assessments, redesigning state and district-level standards, formulating curriculum, and outlining a thinking-skills curriculum. Marzano and Kenall call for a revision of Bloom's Taxonomy, and consider that the New Taxonomy should be a framework for objectives, assessments, standards, curriculums and thinking skills.

2.2. Course analysis:

There are several studies that analyze the content of courses either according to their teaching objectives or levels of questions. Swedan (2009) analyzes and categorizes the questions of geography book for tenth grade in Syria according to Bloom's Taxonomy in cognitive field. His approach is descriptive analytical quantitative and his tool is analysis card. His study shows that the questions concentrate on the low levels of thinking only. So, comprehension has the highest percentage 60.24%; recall 28.44%, application 10.34%, evaluation 0.86%. There are no questions on analysis and synthesis.

Al-Ayasiraha (2004) analyzes the evaluative questions included in the Islamic education textbooks taught in the grades 1 - 4 in Jordan and the Sultanate of Oman. He finds that the evaluative questions in both countries concentrate on the lower levels of the cognitive domain. In the Jordanian case, the cognitive domain account for 85.4% of the total questions, while the psychomotor and the affective domains account only for 11.4% and 3.2%, respectively. Essay-type questions represent 68.1% of the total questions. As for the Omani case, 69.3% of the total questions deal with the

¹ Appendix A provides a list of "Bloom's Taxonomy Action Verbs" .

cognitive domain, 24.5% with the psychomotor domain and 6.2% with the affective domain. Essay-type questions represent 67.9% of the total questions.

Abu Humos (2012) analyzes the levels of difficulty of reading comprehension questions in *English for Palestine 12th grade English student's textbook* in terms of their categorization according to Barrets' Taxonomy. The researcher investigates whether the questions prepare students for future reading comprehension college experience. It also seeks to identify the compatibility of the 23 reading comprehension objectives in "English for Palestine" syllabus with Barrets' higher thinking skills Taxonomy. Through descriptive analysis, the researcher finds that the largest proportion of the questions in the 12th grade textbook are literal level questions represented with around 60% of the textbook total number of questions exceeding the syllabus objectives with %29.9. The reorganization, inferential, and appreciation questions are underrepresented compared to the syllabus objectives percentages. Only the evaluation questions are compatible with higher thinking skills Taxonomy as projected by the syllabus. The second question in this research is regarding the syllabus reading comprehension objectives which are compatible with higher thinking skills. The researcher recommends to incorporate these findings in the student's textbook to simulate the syllabus percentages.

Al-Farsi (2000) focuses in her study on teachers' questions, so she studies the functions and types of questions. She concludes that the most common function of questions is checking or testing learners' knowledge (accounting for almost 40% of the total). Asking questions to get learners to practice language and to encourage learners to participate are also quite common. Questions asked with the purpose of showing interest in what the learners have to say are very rare. Real information is being requested, but the range of possible answers is limited to 'yes' or 'no'." It is perhaps not surprising to find that teachers ask questions mainly to check learners' knowledge.

2.3. The present study:

The importance of the current study springs from three points: first, the books of English course for eleventh grade are a new edition 2012-2013, second, there is no previous study that analyzes the context of English books in Syria. This study tries to answer the following questions:

- 1- What is the most used level of Bloom's taxonomy (recall, comprehension, application, analysis, synthesis, and evaluation) in English course for eleventh grade?
- 2- What is the percentage of questions in each level of Bloom's taxonomy?

3. Data collection and methodology

The current study uses the qualitative approach particularly the descriptive analytical method to investigate teachers' and students' perspectives about English course and to categorize and analyze the assessment questions in English course for eleventh grade in Syria. This method has been used by similar studies (Abu Humos 2012 & Alagha 2002).

Questionnaires, checklist observations, and analysis cards give data that helps to expand our understanding of the complexity of teacher and learner perceptions of language learning, and converge the findings from various methods of study to confirm (or not) such findings (Creswell 2003). Researchers use these instruments because they can achieve validity through using multiple strategies. (Creswell 2007)

This chapter presents the design of the study. It is divided into four sections: the first section introduces the sample of the study; the second section tackles the instruments; the third section explains the procedures; and the fourth one discusses data analysis.

3.1. Sample

The materialistic sample of the study is “English for starters11, Students’ book”. It is one of three books that constitute EFL course for 11th grade in Syria.

The title of the book	modules	Units (lessons)	Pages
English for starters 11, Students' book	4	12	120
English for starters 11, Activity book	4	12	96
English for starters 11, scientific or literary		7	64

Table 1: EFL course for eleventh grade

3.2. Instruments

The tool of study is an analysis card according to Bloom's taxonomy for all assessment questions in English course for eleventh grade.

3.2.1. An analysis card

The steps of designing the analysis card were as follows: at the beginning, I searched the previous relevant studies to find out analysis cards. Then, I designed an analysis card to identify the frequency of questions in each level of cognitive Bloom's taxonomy. I chose to analyze questions because they reflect teaching objectives, play an important role in teaching-learning process, and form a major component of course. On one hand, questions stimulate students to think. On the other hand, they reflect students' knowledge, data, and values. Furthermore, they measure students' progress. After that, I made sure of the validity of the tool by asking a group of specialists working in Education College and educational supervisors on English teachers in the Directorate of Education to verify the apparent constructional validity. Later on, I selected a unit that has (245) questions

to be analyzed by a teacher and a supervisor to be compared with my analysis. Finally, I measured the reliability of the analysis card by calculating the reliability coefficient using Holisty formula²:

$$R = \frac{2(C_{(1+2)})}{C_1 + C_2}$$

The results of these analyses were:³

Analysis	Agreed upon units	Disagreed upon units	The percentage of reliability coefficient
A + B	222	23	90%
A + C	223	22	91%
B + C	217	28	88%

Table 2: The percentages of reliability coefficient in the units analyzed. These percentages confirm the reliability of analysis card.

3.3. Procedures

The analytical procedures of the study were related to analyzing English book for eleventh grade. The first step was designing an analysis card for the assessment questions and making sure of its validity and reliability. The second step was analyzing assessment questions quantitatively according to analysis card. The third step was calculating the frequency counts and percentages of each level using Excel. The last step was interpreting the results.

3.4. Data Analysis

3.4.1. Analyzing analysis card

I used Holisty formula to make sure of the reliability of analysis card. Then, I measured statistically the frequency and relative weight of each level of questions. The results of the frequency of assessment questions in each level of Bloom's taxonomy in cognitive field are shown in the following table:

Levels of Bloom's taxonomy	Frequency
Recall	607
Comprehension	175
Application	106
Analysis	33
Synthesis	88
Evaluation	31
The units of analysis in English book for 11 th grade	1040

Table 3: The frequency rate of assessment questions available in English book for 11th grade according to Bloom's taxonomy

² (R) is reliability coefficient, (C1) is the number of units of one analysis, (C2) is the number of units of another analysis, (C₍₁₊₂₎) is the number of units agreed upon by both analyses.

³ A is my analysis, B is the teacher's analysis, C is the supervisor's analysis.

After counting the frequency rate of assessment questions, the percentages could be easily deduced:

Levels of Bloom's taxonomy	Percentage
Recall	51.65%
Comprehension	14.89%
Application	9.02%
Analysis	2.80%
Synthesis	7.48%
Evaluation	2.63%

Table 4: The percentage of assessment questions in each level of Bloom's taxonomy

Then, I made a comparison between the actual percentages of assessment questions in EFL course for 11th grade and the standard percentages in each level of Bloom's Taxonomy.

Levels of Bloom's taxonomy	Analysis percentage	Standard percentage	The difference between analysis and standard
Recall	51.65	25	+26.65
Comprehension	14.89	30	-15.11
Application	9.02	25	-15.98
High levels of thinking (analysis, synthesis, and	12.93	20	-7.07

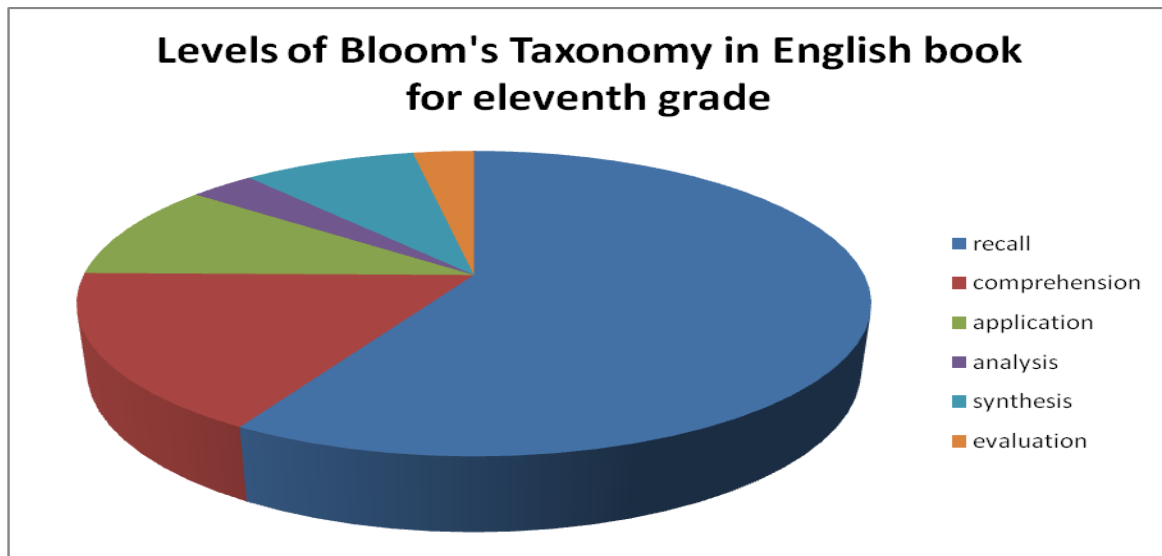
Table 5: A comparison between the percentages of assessment questions available in English book for 11th grade and the standard percentages

4. Results and discussion

This chapter illustrates the results of data analysis to answer the questions of the study and compare them with previous studies. It is divided into two parts: the first part deals with the most used level of Bloom's Taxonomy in EFL course for 11th grade. The second part discusses the percentage of questions in each level of Bloom's taxonomy.

4.1.1. The most used level of Bloom's taxonomy.

The results in table 3 show that English book for 11th grade covers all Bloom's levels which is a point of strength for the book. They refer to the course designers' emphasis on the acquisition of thinking skills included in Bloom's taxonomy. The frequency counts of assessment questions are: recall (607), comprehension (175), application (106), analysis (33), synthesis (88), and evaluation (31). Consequently, recall is the most used level of Bloom's Taxonomy in assessment questions in 11th grade English book. Thus, the most used level is recall which is the lowest level in Bloom's Taxonomy and in thinking skills. This is a point of weakness in the book because it refers to its concentration on lowest level of thinking and neglecting the high levels of thinking skills.

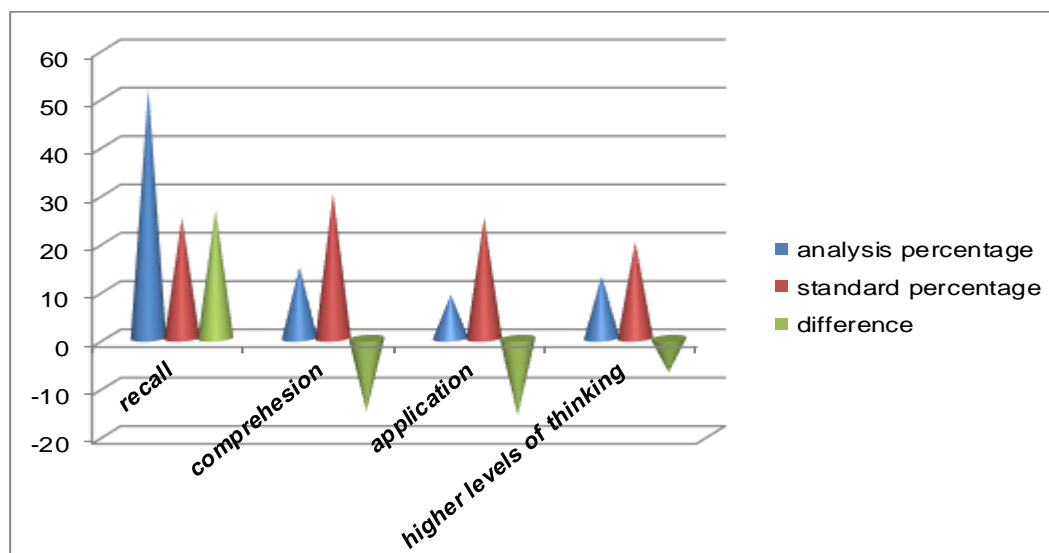


Graphic 2: Levels of Bloom's Taxonomy in English book for eleventh grade

4.1.2. The percentage of questions in each level of Bloom's taxonomy

The results in table 4 show the percentage of assessment questions in each level of Bloom's Taxonomy. Recall questions have the highest percentage (51.65%); comprehension questions come next (14.89%); application questions have (9.02%); synthesis questions come fourth (7.48%); analysis questions have a percentage of (2.80%); evaluation questions have the lowest percentage (2.63%).

The results in table 5 show that the percentage of recall questions in English book is more than the standard percentage, whereas the percentages of comprehension, application, and high levels of thinking questions are less than the standard percentages. Thus, there is a huge gap between the standard percentages and the actual percentages of assessment questions in English book for 11th grade. This gap is a shortcoming in the course because it refers to its disability to cover all levels of Bloom's Taxonomy according to their standard percentages. It refers to the course designers' emphasis on recall which is the lowest level in thinking skills and their ignorance to other levels especially the highest level, evaluation.



Graphic 3: The difference between analysis percentages and standard percentages of Bloom's Taxonomy

The results of the current study are similar in a way or another to the results of previous studies. After analyzing a geography book, Swedan finds that questions concentrate on the low levels of thinking only. However, comprehension has the highest percentage 60.24%, recall 28.44%, and application 10.34%. So, questions of low levels have a percentage of 99.02%. In another study about teachers' questions, Al-Farsi concludes that the most common function of questions is checking or testing learners' knowledge (accounting for almost 40% of the total). Al-Ayasirah also finds that the evaluative questions of Islamic education books in Jordan and Sultanate of Oman concentrate on the lower levels of the cognitive domain. The causes of concentration on low levels may be: first, course designers and teachers find that question formation of low levels is easier than question formation of high levels; second, students are accustomed to answering questions of low levels, so they become positively reinforced when answering correctly; third, exam questions also focus on low levels.

5. Conclusion

This chapter includes a summary of the findings, pedagogical implications and recommendations, limitations of the study, and suggestions for further research.

5.1. Summary of the findings

From an analytical perspective, this study shows that assessment questions cover all levels of Bloom's Taxonomy. The frequency counts of Recall, Comprehension, Application, Analysis, Synthesis, Evaluation are: (607, 175, 106, 33, 88, 31) respectively. The percentages are: recall 51.65%,

comprehension 14.89%, application 9,02%, analysis 2.8%, synthesis 7,48%, evaluation 2,63%. Thus, recall is the most frequent level of questions whereas evaluation is the least occurring level.

5.2. Pedagogical implications and recommendations

The results of course analysis according to Bloom's Taxonomy identify some limitations in English book for eleventh grade due to the unbalanced use of cognitive levels in assessment questions, activities, and exercises. The course designers' overemphasis on recall hinders students' linguistic and cognitive development because recall entails just remembering previous knowledge and does not trigger students' minds to work on finding solutions. Similarly, the course designers' de-emphasis on other levels affects badly students' ability to learn.

These shortcomings can be managed by the following recommendations:

- * Teachers should use modern methods of teaching to attract students' attention and to indulge them in communicative tasks. They should avoid Grammar-Translation method because of its overuse of mother tongue in teaching and classroom instructions. They should encourage students to have cooperative team work in writing wall charts and school magazines. They should maximize students' exposure to English in class by increasing the student talking time and adopting interactive communicative teaching activities and creative and independent thinking skills. They should involve students in interactional activities to evoke their productive skills of speaking and writing. They should use teaching techniques that integrate language skills rather than teaching them discretely.

- * Teachers should have a diploma or master in English Language teaching or they should be enrolled in in-service training courses.

- * Course designers and policy-makers have to modify courses to become culturally relevant and more appropriate to Syrian context. They also have to provide suitable teaching materials that meet students' needs and interests.

5.3. Limitations of the study

One of the limitations is the limited sample, so the results are not definitely representative of English Courses in general. Another limitation is the use of qualitative approach alone. One more limitation is the huge effort of analyzing assessment questions which has been done by the researcher alone.

5.4. Suggestions for further research

More research can be done in the field of course analysis according to several taxonomies: Bloom, Barret, or Krathwohl. So, studies can analyze books according to any content or performance standards. Other studies can check the frequency rates of the four linguistic skills: listening, speaking,

reading, writing in English books. Others can tackle thinking skills: induction, deduction, classification, organization, in English books.

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Appendices

Appendix A: Bloom's Taxonomy Action Verbs

Definit ions	Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation
Bloom's Definit ion	Remember previously learned information.	Demonstrate an understanding of the facts.	Apply knowledge to actual situations.	Break down objects or ideas into simpler parts and find evidence	Compile component ideas into a new whole or propose alternative solutions.	Make and defend judgments based on internal evidence or external criteria.

				to support generalizations.		
Verbs	Arrange Define Describe Duplicate Identify Label List Match Memorize Name Order Outline Recognize Relate Recall Repeat Reproduce Select State	Classify Convert Defend Describe Discuss Distinguish Estimate Explain Express Extend Generalize Give example(s) Identify Indicate Infer Locate Paraphrase Predict Recognize Rewrite Review Select Summarize Translate	Apply Change Choose Compute Demonstrate Discover Dramatize Employ Illustrate Interpret Manipulate Modify Operate Practice Predict Prepare Produce Relate Schedule Show Sketch Solve Use Write	Analyze Appraise Breakdown Calculate Categorize Compare Contrast Criticize Diagram Differentiate Discriminate Distinguish Examine Experiment Identify Illustrate Infer Model Outline Point out Question Relate Select Separate Subdivide Test	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	Appraise Argue Assess Attach Choose Compare Conclude Contrast Defend Describe Discriminate Estimate Evaluate Explain Judge Justify Interpret Relate Predict Rate Select Summarize Support Value

Appendix B: Analysis card

Number	Unit	recall	Comprehension	application	analysis	Synthesis	evaluation
The number of units							