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Assessment of Taif University Lecturers Exam questions quality according to Bloom's Cognitive Taxonomy and Testing Criteria

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Abstract
The aim of this study is to help teachers and lecturers evaluate their current exam questions and hence develop them to represent higher cognitive levels. Bloom's Taxonomy on the cognitive levels is used as a scientific tools to classify exam questions of Foreign Languages Department in Taif University. This classification is very useful to determine the real cognitive level represented by exam questions for each course. This requires lecturers' designing such learning objectives that are consistent with this aim. In other words, a lecturer is recommended to plan for learning objectives that require training students on higher order thinking skills whether in class activities or assignments. This enables the lecturer to write exam questions which represent higher cognitive levels. This , in turn, is reflected in students' results which will logically give a realistic reflection to what they have already learned. Useful recommendations are also submitted to help lecturers transform their exam questions from lower cognitive level into higher cognitive levels.
Keywords: Bloom's Taxonomy- exam questions-cognitive levels-thinking skills.

1.Introduction

The present study is an attempt to submit such appropriate recommendations for improving and developing the quality of Taif University lecturers' exam questions in form and content. The theoretical part illustrates Bloom's taxonomy with specific reference to the cognitive domain which focuses on knowledge retention gradually from the simplest levels (LOTs) or low order thinking skills (i.e. Memorizing, understanding and application as called by psychologists and (HOTS) or high order thinking skills (i.e. an analysis, synthesis and evaluation) . (MASL, 2014) The importance of the present study lies in its being a tool that allows lecturers to evaluate their exam questions out of its cognitive level on one hand and out of examination criteria on the other hand. This benefits in trying to modify them to include higher cognitive levels exam questions as well as the other levels. Exam question cognitive level modification is useful to satisfy students individual differences. The importance of the present study also lies in its being a tool to help lecturers improve the quality of both their subjective and objective question in order to add more clarity to the question and to make it accurately capable of measuring the objectives for which it is designed.

1.1. What is Bloom's Taxonomy

A taxonomy can be defined as:

"the practice and science of classification. It is a particular classification Table arranged in a hierarchical structure. Mathematically, a hierarchical taxonomy is a tree structure of classifications for a given set of objects. It is also named Containment hierarchy. At the top of this structure is a single classification, the root node that applies to all objects. Nodes below this root are more specific classifications that apply to subsets of the total set of classified objects." (Malon, (1988).).

Benjamin S. Bloom was born on 21 February 1913 in Lansford, Pennsylvania, and died on 13 September 1999. He received a bachelor's and master's degree from Pennsylvania State University in 1935 and a Ph.D. in Education from the University of Chicago in March 1942. He became a staff member of the Board of Examinations at the University of Chicago in 1940 and served in that capacity until 1943, at which time he became university examiner, a position he held until 1959. (W.Eisner, 2000) He served as an educational adviser in a variety of nations such as Israel and India following to his appointment as an instructor in the Department of Education in the University of Chicago in (1944).

The secret of his success as a teacher was not because of his creating the most creative learning activities but it lies in his being a model of an *inquiring scholar* who inspired his learners. He was such an optimist who was always fond of finding out and realizing human potential and to make such potential possible. He uses education as an exercise to carry out such optimism and inspirations. Hence, employing facts is such an important factor in his way of learning.

(Forehand, 2005; Krathwohl, 2002) claim that Bloom's taxonomy has been translated into 22 different languages as one of "the most frequently referred to and applied instructional design systems in the field of education, and has been used by curriculum planners, researchers, administrators, and classroom teachers at all levels of education" (Forehand, 2005).

(Bloom B. S., 1956) developed a taxonomy for learning objectives to help teachers and students acquire educational experiences and to help teachers design assessment tools for the purpose of evaluating the

experiences they have already learned. They agreed to categorize these educational objectives into three categories; the first works on the cognitive domain, the second works on the affective domain and the third works on the psychomotor domain. Bloom decided that the most important of these domains is the cognitive domain which is relevant to acquiring knowledge and using them in developing more searches and experiences. (ibid. in (Naomee, 2013)).

1.2. The importance of Bloom's Taxonomy in an Educational Community

The focus of the current study, in its main part in theory and application, is the cognitive domain because it , according to (Bloom,1965), deals with recall and knowledge as well as the recognition of intellectual abilities. According to Bloom also, the cognitive domain is the domain where most of the work in curriculum development has taken place and where clear definition of objectives is mostly needed. Bloom's Taxonomy , therefore, is useful to let the lecturer determine the cognitive levels he already uses and develop them. On the other hand, a lecturer can also use the taxonomy to plan for specific cognitive levels for different student in different times durations during teaching.

2.Part1: Theoretical Background:

2.1. Components of Bloom's Taxonomy

Bloom's creative studies and research in education resulted in three taxonomies that describe learning objectives; the *cognitive taxonomy* which is related to knowledge and mental skills, the *affective taxonomy* which is related to feelings and attitude and the *psychomotor taxonomy* that is related to manual skills. The first taxonomy, which is our main area of application in the current study, is based on the cognitive domain and it consists of six levels starting from the lower level cognitive domain that reflects only retention of information and the ability to recall such information and ends in the highest level of cognitive domain that reflects higher level of thinking such as critical thinking and the ability to evaluate. The second is the affective domain which is relevant to manual skills.
(Anderson L. a., 2001) (Anderson L. a., 2001) (Anderson L. a., 2001) (Anderson L. a., 2001)

2.1.1. The cognitive Domains

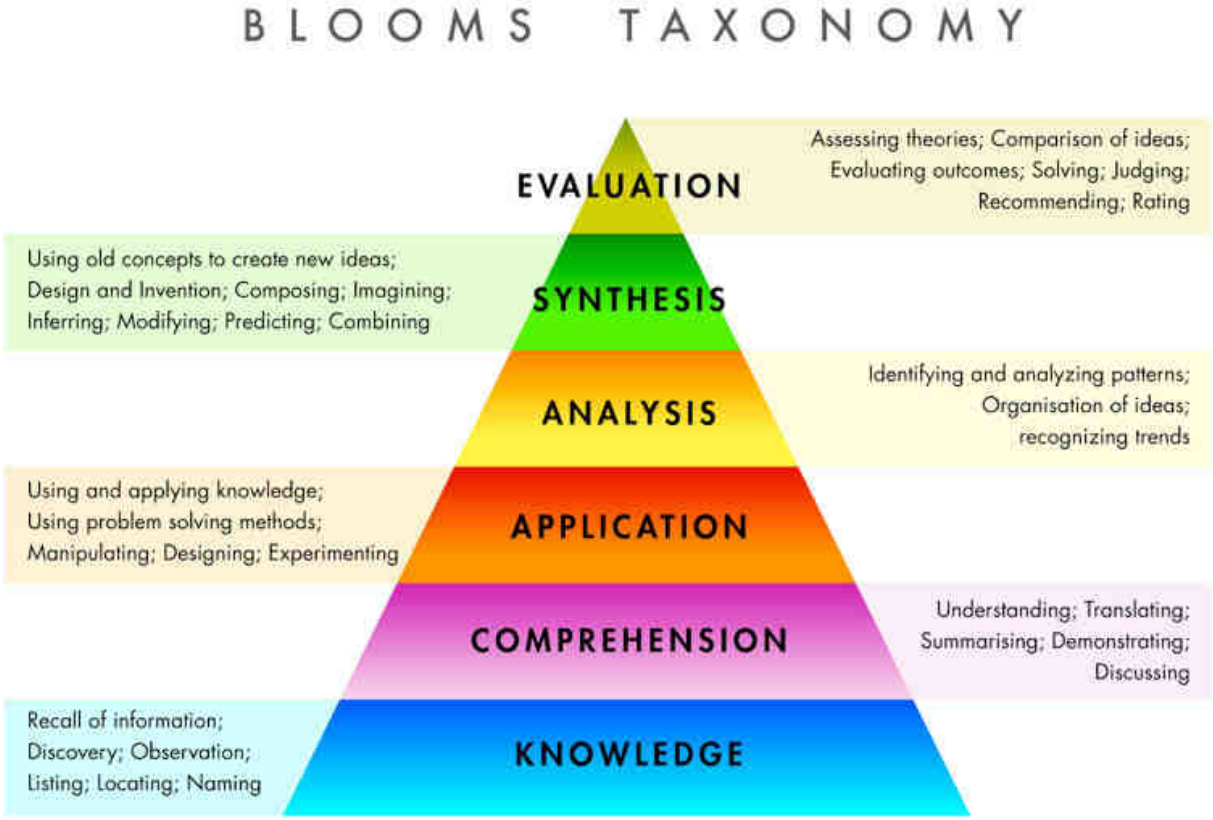


Figure 1: Bloom's Taxonomy representing the cognitive level with illustrations.

According to Bloom et al (1965).This taxonomy consists of six levels as explained on the diagram. The aim of describing them in this study is to shed light on the way each level is reflected in the exam questions designed by Taif University Foreign Languages department lecturers

a- *Knowledge* : At this level, the student is to able to memorize the information he studies. Retention of information is a characteristic of this level. A student is able to recall information on the long term memory. This level is essential and basic to secure such an appropriate development in the higher level. To master this level, a student should be interested in taking notes, watching videos, listening to lectures, studying and memorizing terminology and rules relevant to a specific major. A teacher can expose his students to a type of questions that measures their retention of the given information such as multiple choice questions, true and false…etc. A teacher can ensure that his students are able to pass this level by asking them to define scientific terms , recall facts, list generalizations or categories relevant to a specific subject, list procedures to carry out a process, read, name, repeat, record information…etc. (Activities at various cognitive levels of learning, 2014)

b- *Comprehension*: At the comprehension level, the student is able to follow the ideas relevant to a specific subject matter when someone discusses them in front of him because he already understands them. A student ,therefore, can also interpret, translate, paraphrase or summarize a subject ,in a specific domain, in his own words. He can also interpret the components of a diagram, a graph, a chart…etc. into a verbal form or vice versa. This level is logically based on the knowledge acquired in the preceding level. This level also reflects the ability of the students to state the problem discussed by textbook and suggest the appropriate solutions out of his understanding. A teacher can measure students' understanding of a subject by asking them to locate or identify, discuss, interpret , describe a problem or restate the same problem in other words as well as to submit solutions to such problems by following appropriate techniques. Hence, a teacher can test his students by questions about problems on the comprehension level.

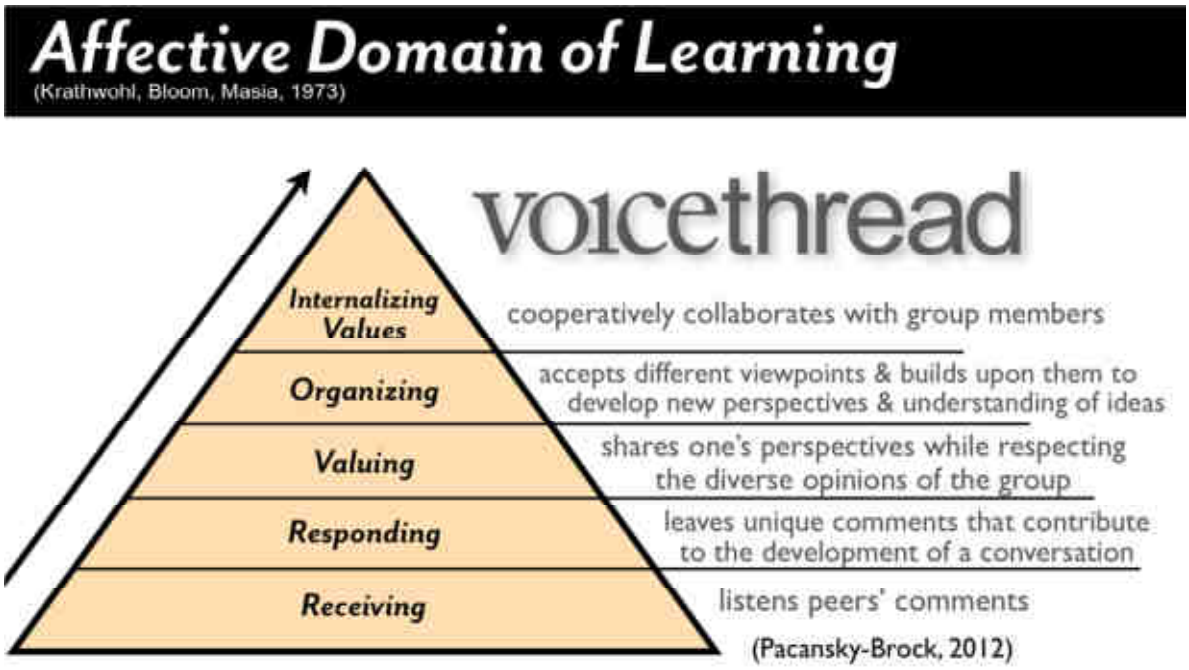
c- *Application*: At this level, the student uses both the knowledge he learns at the basic level and the procedures and strategies of solving a problem in a new situation. In other words, he applies what he knows and the methodology and techniques of problem solving on discussing and solving a brand new problem without any guidance from his teacher. This level requires deeper thinking to employ what he learned in a new situation. A teacher can test his students at this level by assigning him a new problem to locate, discuss and suggest solutions by following expected steps or procedures (i.e. employing grammatical rules to solve a new sentence with an implicit problem or applying mathematical rules to solve a new problem)

d- *Analysis*: This level requires both knowledge and understanding. However, it does not require the application level and requires prompting by the teacher to follow his development. A teacher can test his students by asking them to analyze the components of a situation, a problem, a figure, a subject… etc. At this level, a student will be able to justify his answers and clarify why his solution works in a specific problem. In other words, the student stands in a strong position to defend the results he achieved. He can examine, compare and contrast theories and differentiate different solutions of different problems.

e- *Synthesis*: This level requires the preceding four levels; knowledge, comprehension, application and analysis. It requires a guidance and follow up at the side of the teacher. At this level, a student needs to learn how to assemble parts into a whole by means of creative thinking. He can suggest his own procedures to solve a new problem. He can also make a new piece of writing about a specific subject. A teacher can test the ability of his students to pass this level by asking him to design a diagram, to submit a project plan, to propose a new design. We can say that there is a big similarity between this level and the comprehension level since the student needs to demonstrate and explain his new plan for example. However, the difference lies in his demonstration of his new own project that he designed himself. This level is also characterized with more depth.

f- *Evaluation* : This level requires all the preceding five levels to be carried out. It resembles the comprehension level to a great deal. However the difference lies in the degree of depth in which the student should demonstrate his design or project. At this level, the student should be able to evaluate a piece of work or a design by giving a value judgment based on its being useful or effective. He should analyze the components of a design to evaluate its consistency. A student should be able to evaluate a product out of internal criteria ,such as accuracy and consistency, and external criteria such as cost and appropriateness to carry out the goals for which it is designed. He should also be able to report the feasibility of a product in such a presentation that is characterized in more depth and richer content. A teacher , hence, can ensure that his students are able to evaluate a situation or a product by asking them to assess, evaluate, compare competing opinions relative to a specific problem or design prior to submitting his own judgment.

2.1.2. The affective Domains



(Krathwohl, (1964))

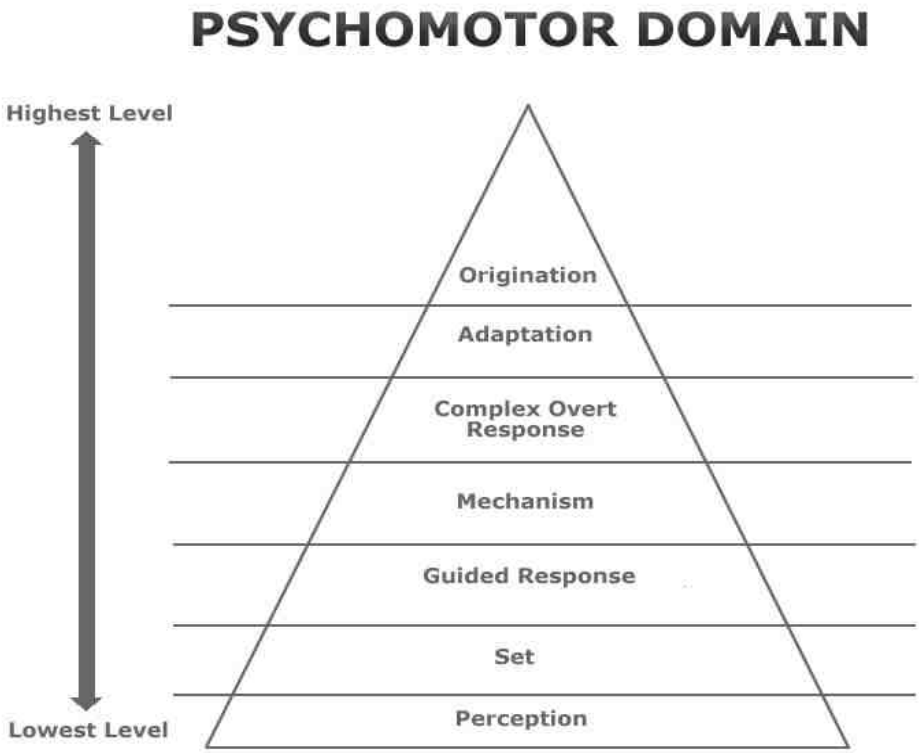
Figure 2: Bloom's Taxonomy representing the affective domain of learning.

The upper figure describes the levels of affective domain taxonomy which is said to be relevant to heart and feelings as well as to what extent a student will have a change in his own values because of learning and experiencing something new.

According to Seels and Glasgow (Glasgow, (1990)) , the affective domain of learning "is ordered according to internalization" and hence they explain what internalization refer to as "the process whereby a person's affect towards an object passes from a general awareness level to a point where an effect is 'internalized' and consistently guides a person's behavior (ibid.)

The affective taxonomy is ordered from the simplest feeling which is *receiving* the information to be instructed by a teacher, then *responding* to these information by following a conversation for example and commenting on what he understood from this conversation or educational experience. The third level is *valuing* which is relevant to sharing one's opinions or point of view with others with a sense of mutual respect. The fourth level in the affective domain is *organizing* which is relevant to a student's acceptance of different values and their effect on himself and on others and hence building upon them in order to develop his own perspectives. The final level that concludes the affective domain taxonomy and considered the most complex of them is *internalizing* values, which makes a student able to collaborate cooperatively with group members with his unique values that he learned and made him also ready to teach others such values out of his behaviour in the given educational experiences.

2.1.3. The psychomotor Domains



(University of Auckland, 2014)

Figure 3: Bloom's Taxonomy representing the psychomotor domain

The psychomotor domain is described by (Simpson E.J., (1972)) as including physical movement, coordination and using motor skills. In order to develop such skills, the students need more practice until they acquire precision and speed in performing such skills. The performance of students in this domain can be measured by means of how precise and fast a student is able to carry out the assigned procedures of a specific motor skills. The skills relevant to this domain are arranged from the simplest to the most complex and each level requires its preceding level. The seven skills in the psychomotor domain are described by (Clark, (2009)). The first skill in the psychomotor domain is *perception* which refers to the ability to use sensory cues to guide motor activity, the second is *set* which refers to the readiness to act and it includes mental, physical, and emotional sets. These three sets are dispositions that predetermine a person's response to different situations and many scholars think that they refer to the skill's being requiring an adult who fits well for such skills and not a child for example, the third skill is the *guided Response* that requires that a teacher or a trainer watches the performance of his trainees. These early three stages are basic in learning a complex skill and they include imitation and trial and error. Adequacy of performance is achieved by more practicing. The fourth skill is *mechanism* and it is considered the intermediate stage in learning a complex skill. At this level, learned responses have become habitual and the movements can be performed with some confidence and proficiency. The fifth skill is the *complex Overt Response* that reflects the skillful performance of motor acts that involve complex movement patterns. At this level, proficiency is indicated by a quick, accurate, and highly coordinated performance, requiring a minimum of energy. This category includes performing without hesitation, and automatic performance. The sixth level is *adaptation* in which the skills are well developed and the individual can modify movement patterns to fit special requirements. The seventh and last level is *origination* in which creativity is clear. At this level, creating new movement patterns to fit a particular situation or specific problem is apparent. Learning outcomes emphasize creativity based upon highly developed skills.

2.2. Bloom's Taxonomy Revised

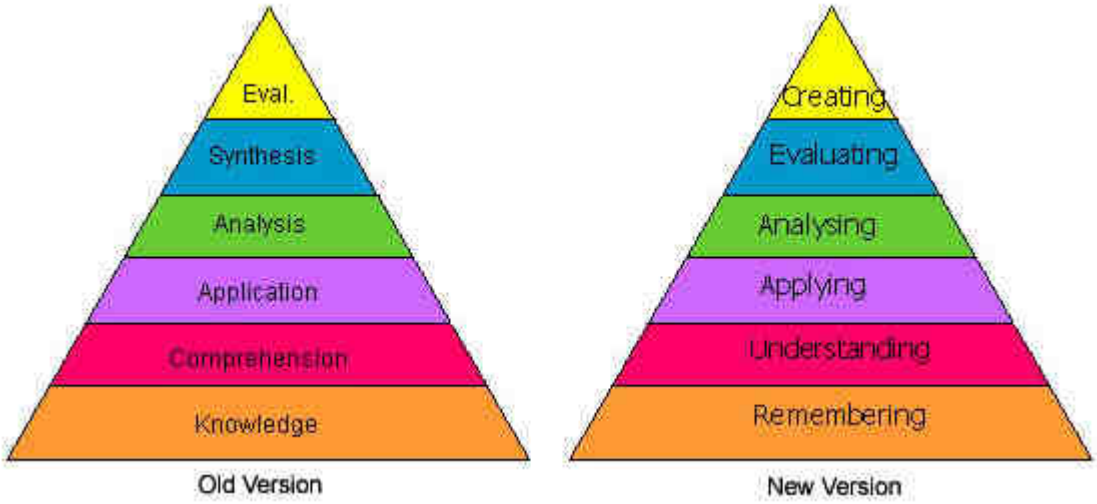


Figure 4Terminology changes (Bloom's taxonomy, 2014)

Figure 5: The difference between the old version and the new revised version of Bloom's taxonomy on the cognitive domain

As demonstrated above in the acknowledgement with Bloom's taxonomy that Benjamin Bloom (1956) "headed a group of educational psychologists who developed a classification of levels of intellectual behavior important in learning. During the 1990's a new group of cognitive psychologists, led by Lorin Anderson (a former student of Bloom), updated the taxonomy to reflect relevance to 21st century work. The two graphics show the revised and original Taxonomy. Note the change from nouns to verbs associated with each level." (Schultz, 2014).

We also observe that in the new revised taxonomy , the nouns are not only changed into action verbs, which reflects more active thinking, but also the order of the final two levels have been exchanged. Many psychologists therefore, think that the new taxonomy improved the usability of the original taxonomy and made it more accurate. In Krathwohl and Anderson's revised taxonomy, (Anderson L. K., 2014) "the authors combine the cognitive processes with the above three levels of knowledge to form a matrix. In addition they added another level of knowledge – metacognition" and then metacognition is defined as "Knowledge of cognition in general, as well as awareness and knowledge of one's own cognition." (ibid.)

3. Part2: Application

In this part of the study application on the selected data is presented with accompanying analysis both for exam questions and results.

3.1. Methodology

The current study is based on the descriptive method in which the researcher describes the results of applying Bloom's taxonomy on the given sample of exam questions. The results will be described both on the quantitative level and qualitative level . A thematic analysis will be employed too. According to the online dictionary of social sciences, qualitative data is defined as:

"Research using methods such as participant observation or case studies which result in a narrative, descriptive account of a setting or practice. Sociologists using these methods typically reject positivism and adopt a form of interpretive sociology"

Nkwi, Nyamongo, and Ryan (2001) submit a clearer definition of qualitative research that it "involves any research that uses data that do not indicate ordinal values". On the other hand quantitative research , according to Bernard (1996) , includes interpretation of patterns in numeric data while qualitative research includes interpretation of meaning in text or images. In the current study, quantitative data is to be used based on qualitative analysis. This side of qualitative analysis is not explicit in the definitions to qualitative analysis. According to Neuendorf (2001), qualitative research analysis has two approaches; the explanatory approach, which is content-driven and the confirmatory approach which is hypothesis driven.

In the present study , the researcher focuses on the inductive analyses, which primarily have a descriptive and explanatory orientation and not with a hypothetical nature. This approach answers the research question out of the analysis of the content given. It deserves mentioning that a descriptive analysis is primarily explanatory and it allows the researcher to dive deeply in the problem , try to find out the underlying reasons and opinions and it also "provides insights into the problem or helps to develop ideas or hypotheses for potential quantitative research" (Wyse, 2011). Qualitative data collection methods also "vary using unstructured or semi-structured

techniques" and Some common methods include focus groups (group discussions), individual interviews, and participation/observations (ibid.). In the present study, the exam questions are the data that represents the text required to be read and reread in order to be classified into a specific cognitive level by means of Bloom's taxonomy. Then, the number of questions in each level for each major are given the equivalent percentage. Then comparison between the variety of levels takes place to evaluate the cognitive levels for each category of exam questions.

Methods typically reject positivism and adopt a form of interpretive sociology .Bernard and Ryan (1998) provide a useful typology for understanding the range of qualitative data and the first branch of the tree, data are divided into three basic types — text, images, and sound. In the current study, text representing exam questions are used as a sample for application.

3.2.Data and Sample collected for Application

The data employed for the purpose of the present study includes the exam questions of Taif University lecturers for a whole academic year in two semesters and they are categorized in the following way:

a- Linguistics exam questions (i.e. exam questions for courses such as: phonology, morphology, Syntax, Grammar, Reading, Writing, Discussion, Topics from the internet, Advanced writing, Essay writing…etc.)

b- Literature exam questions (i.e. Shakespearean Tragedy, Shakespearean comedy, Literary Terms, Short Story, Novel, Drama…

c- Translation exam questions (i.e. Introduction to translation, Theories of translation, types of translation, Translation into English, Translation into Arabic, Machine Translation into Arabic Machine Translation into English…etc.)

4. Results and Recommendations

This part of the study is specified to present results relevant to classifying exam questions into their equivalent cognitive levels according to Bloom's taxonomy. This part also present an analysis of students' results for the same exam questions.

4.1. Results achieved by the study

In this part of the study, exam questions are classified into three categories (i.e. Translation, Linguistics and Literature) and the exam questions in each categories are also categorized into the cognitive levels they represent. The researcher reads each and every question and classifies it according to its cognitive level. Then the number of questions in each cognitive level have been calculated and the percentage of each cognitive level for each of the three categories has also been calculated. Then the variety of percentages for each level for each categories are compared.

4.1.1.Analysis of exam questions according to Bloom's cognitive taxonomy

a- Translation courses category

Cognitive level	**1.Knowledge**	**2.Comprehension**	**3.Application**	**4.Analysis**	**5.Synthesis**	**6.Evaluation**	**TOTAL**
No. of questions	40	15	35	10	5	ZERO	105
Percentage	38%	14.3%	33.3%	9.5%	4.9%	ZERO%	100%

Table 1:Cogintive levels in Translation courses exam questions

The following table shows model exam question roots already represented by some courses

Cognitive level	1.Knowledge	2.Comprehension	3.Application	4.Analysis	5.Synthesis	6.Evaluation
Model question	-write short notes on… -give the equivalent of the following terms /expression into Arabic -write the missing words in the following statements -define (FIVE) only of the following terminologies -fill in the following table with suitable translations	-mention the strategies used by the professional translators for non-equivalence -match each item in column (A) with the suitable item in column (B) ……. -write (True) in the front of correct statements and (False) in front of the wrong statements -correct the following false statements	-translate the following into Arabic -translate the following into English	-read the sentences of the following paragraph to correct their grammatical , spelling and punctuation mistakes	- Read the following MT and edit into correct text	

Table 2: Model exam questions in Translation courses.

b- **Linguistics courses category**

Cognitive level	1.Knowledge	2.Comprehension	3.Application	4.Analysis	5.Synthesis	6.Evaluation	TOTAL
No. of questions	87	93	65	52	45	8	350
Percentage	24.9%	26.6%	18.6%	14.9%	12.8%	2.2%	100%

Table 3: Cognitive levels in Linguistics courses exam questions

The following table shows model exam question roots already represented by some courses
Model questions in linguistics courses:

Cognitive level	1.Knowledge	2.Comprehension	3.Application	4.Analysis	5.Synthesis	6.Evaluation
Model question	Complete the following sentences -define inaudible plosion and then transcribe these words to show the inaudible plosion -write the missing words in order to complete the following sentences -what is traditional grammar? -match these statements with their completions	True or false :correct the false statement -fill in the blanks with the correct answers -discuss the difference in meaning in the sentence below -complete the sentences with appropriate pronouns . -circle the letter of the correct completion for the following sentences Indicate the terms associated with these meanings	-underline verb that agrees with the subject in each sentence -complete the sentence with……. -change these active sentences to passive -use the form of passive specified in parentheses -write the plural form of each noun in parentheses -make the italicized nouns possessive by adding apostrophe…… -write ONE example for the followings -read the paragraph below 6and	Use the bracketed analysis to analyze the following structure -break down the words below into basic morphemes -identify six different functional morphemes	Change the sentences below the polite requests using the words in parentheses -use a form of other to complete the sentence -complete the sentences using the italicized noun as a modifier -provide the information for the following issues	

Table 4: Model exam questions in Linguistics courses.

b-

c- Literature courses category

Cognitive level	1.Knowledge	2.Comprehension	3.Application	4.Analysis	5.Synthesis	6.Evaluation	TOTAL
No. of questions	161	199	16	42	18	ZERO	436
Percentage	36.9%	45.6%	3.8%	9.8%	4.1%	ZERO%	100%

Table 5: Cognitive levels in Literature courses exam questions.

The following table shows model exam question roots already represented by some courses
Model questions on literature courses:

cognitive level	1.Knowledge	2.Comprehension	3.Application	4.Analysis	5.Synthesis	6.Evaluation
Model questions	-write briefly on only ONE of the following… -write a short note on One of the following… -define only FIVE of the following terms -complete the following sentences about MLA documentation -insert the suitable literary terms -mention the trends of restoration drama	-say whether these statements are true (T) or false (F) . Correct the mistakes ! -read the following quotations carefully and then answer the questions below -discuss the major characteristics of …… -answer the following questions briefly	-choose the right answer -describe the dramatic technique of the three unities as employed by Oliver goldsmith in the she stops the conquer -use quotation marks and underlining in the following titles…	-examine the following examples, then mention the terms they are referring to… -trace the changes in the character of……. -identify the required points in the following scholarly journal Draw the comparison between ……	-write a well - organized essay on one of the following ….. ? -use the following information to cite the books -comment on the following extracts	

Table 6: Model exam questions in Literature courses.

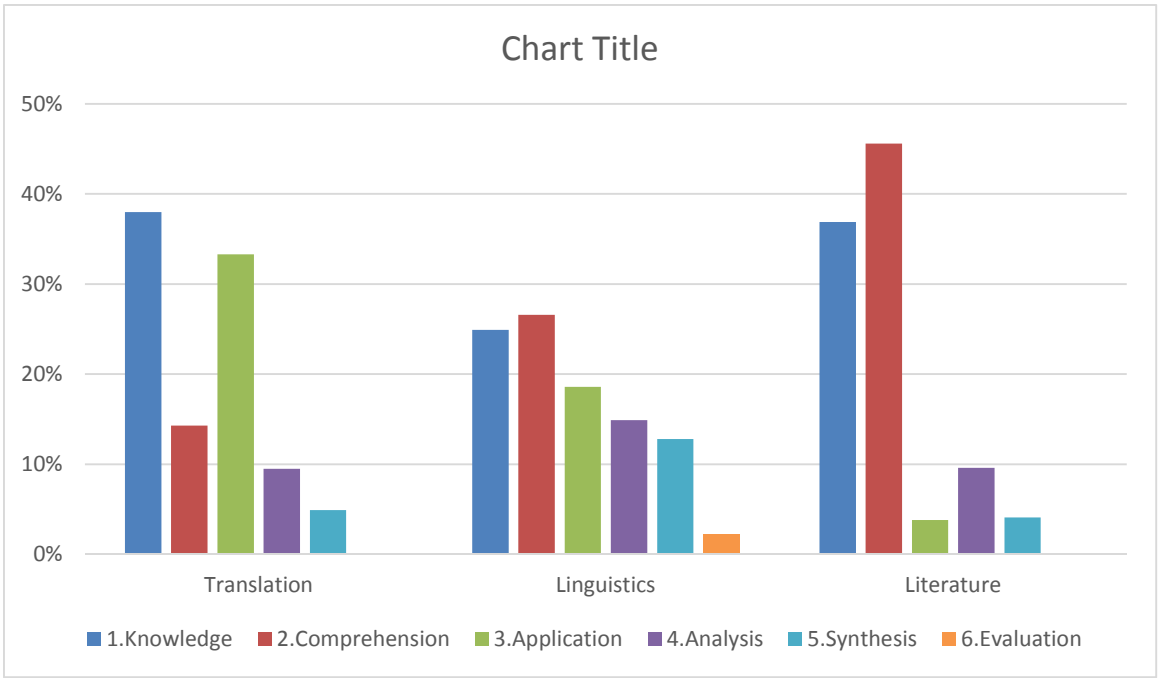


Figure 6: Cognitive levels of exam questions represented and compared

The preceding graph represents the variant cognitive levels in the three categories (i.e. Linguistics, Translation and Literature.) . This graph together with the preceding tables are useful in concluding the following results

- **In translation courses** it seems from the percentages represented on the graph that the knowledge level is the highest since it is 38%. By interviewing translation lecturers they admit that this level is clearly high because they are represented in questions relevant to the knowledge of the theoretical part in translation courses that depends more on recalling the definitions of translations types, the role of a translator, the definition of translation as a process…etc. They require memorization rather than paraphrasing or presentation. They also consider the theoretical part with a minor role for translation courses so they do not give it such interest and they focus more on translating texts practice.
- On the other hand, the second cognitive level that reflects students' understanding of they have studied seems lower than half the first level (14.3%).
- In translation courses also, the third level that shows *application* is relatively high (33.3%) because translation depend more on applying translation theories on new texts. Here , we can say that the nature of the course governs the type and cognitive levels in the majority of exam questions.
- The fourth cognitive level, the analysis level and the fifth, the synthesis level are relatively low although some questions in translation courses requires analysis of mistaken translations.
- It is clear that in translation courses, the (LOTs) or low order thinking skills questions are more than (HOTs) or high order thinking skills. Moreover, the highest thinking skill , the evaluation level has 0% in translation courses because there are no such questions that arise creative thinking for students such as asking for their opinion in open-ended questions or asking them for a solution for a specific translation problem in which a student may guess alternative solutions for the problems.
- **In Linguistics courses:** The results seem different as the difference between the variant cognitive levels is relatively low that they look as being gradual.
- The highest cognitive levels in linguistics courses are the first(knowledge) and second (comprehension).
- The third cognitive level(application) and the fourth (analysis) are lower than the first two levels.
- The fifth level (synthesis) is very low (12.8%) compared to the percentages of the other levels. However, it is higher than the synthesis level in the other categories (i.e. Translation and literature courses)
- Although evaluation level is too low (2.2%) in comparison to the other cognitive levels, it exists in linguistics courses where it does not exist in the other courses of literature or translation.

- **Literature courses**: in literature courses it is clear that both knowledge and comprehension levels represent the highest number of exam questions. The difference between them is not that large in percentage; knowledge level has (36.9%) and comprehension level has (45.9%)
- On the other hand: Application level is critically low (3.8%). The reason may be assigned to the nature

of literature courses since it has no theories for application in new situations like grammar or translation for instance.

- In literature courses it seems that analysis level is a little bit higher than applications because some exam questions require analyzing characters and some plots for instance.
- The synthesis level is relatively low also (4.1%)
- It seems also that the evaluation level never exists in literature courses like translation courses (0%) although it is useful for a student to evaluate the symptoms of a specific character or to have such open-ended questions that pose a problem and allow alternative options to solve such problem.
- Hence, we conclude that all the courses in the three categories (Translation, linguistics and literature) use (LOTs) in the majority of their exam questions. Meantime, both translation courses and literature courses never use exam questions that encompass evaluation.
- Some translation and literature courses use (HOTs) in their exam questions although not many.
- Linguistics courses are the only category that uses exam question of evaluation nature, which represents the highest cognitive level.

The following tables show the courses that use higher cognitive levels in some of their questions and it seems that most of the courses use higher cognitive levels although not all of them use all the (HOTs). Their usage of higher cognitive levels is limited to Analysis and Synthesis. However a few number of courses use Evaluation level in their exam questions and this is in Linguistics category.

Table 7: Translation courses Using higher cognitive levels in some of their exam questions

Higher level cognitive level	**4.Analysis**	**5.Synthesis**	**6.Evaluation**
Courses included	-Translation into English Translation into Arabic	-Translation into English MT into Arabic MT into English	
Courses included	-introduction to literature -romantic literature - Shakespearean tragedy -modern drama -drama in cinema -modern property -modern novel -19th century of American novel	-romantic literature -literary essay -19th century of drama -drama in cinema -introduction to literature -Victorian poetry	

Table 8 Literature courses Using higher cognitive levels in some of their exam questions.

Higher level cognitive level	**4.Analysis**	**5.Synthesis**	6.**Evaluation**
Courses included	-Debate -Grammar -study skills -media English -reading skills -reading techniques -discussion in English -situational language -basics of writing -advanced writing -paragraph writing -morphology -essay writing -preparation of international tests -introduction to linguistics -advanced reading	-study skills -discussion in English -English language vocabulary -situational language -basics of writing -reading skills -English phonetics -basic grammar -advanced writing -paragraph writing -morphology -Debate & discussion -essay writing -history of the English language -sociolinguistics -preparation of international tests -grammar	-debate -reading skills -situational language -advanced writing -paragraph writing

Table 9: Linguistic courses using higher cognitive levels in some of their exam questions.

4.1.2. Analysis of exam questions results

As a part and parcel of submitting objective and valid results to the research, students' results are submitted. The following results are obtained from the documents of Foreign Languages Department to give such valid result analysis specially because they represent students results relevant to the very exam questions analyzed in the preceding section. Results analysis is vital and considered to be complementary to exam questions cognitive levels analysis because results reflect what students have achieved from the learning outcomes submitted in addition to their being a representation of the exam questions levels which is the focus of the present study. Hence, they can be represented in the following way:

a- Linguistics

1-**semantics**

Total students no.	Success	F	D	C	B	A	Value
	100-60	59-0	69-60	79-70	89-80	100-90	Grades
53	36	17	11	7	14	4	Students no.
	76%	32%	21%	13%	26%	8%	percentage

Table 8:grade range in semantics course

In linguistics category, semantics course is one of the courses that has high level of failure (32%) which may be a result of assigning high cognitive level questions. The percentage of Excellent is only (8%).

2- Essay Writing

Total students no.	Success	F	D	C	B	A	Value
	60-100	59-0	69-60	79-70	89-80	100-90	grades
109	98	11	48	29	16	5	Students no.
	90%	10%	44%	27%	15%	5%	percentage

Table 9: Grades range in Essay Writing course

Although essay writing requires higher cognitive level in which a student is able to synthesize new ideas in new topics in his own style, the percentage of success is relatively high (90%) although the excellent rate is only (5%).

3- Paragraph Writing

Total students no.	Success	F	D	C	B	A	Value
	100-60	59-0	69-60	79-70	89-80	100-90	Grades
138	76	62	39	25	10	2	Students no.
	55%	45%	28%	18%	7%	1%	percentage

Table 10: Grades range in paragraph writing course

Out of the percentages of 'Paragraph Writing' course results, it is clear that the level of failure is relatively high (45%) and the percentage of excellent is too low (1%) . This may be a result of using higher cognitive levels in 'Paragraph Writing' exam questions without training students on such type of questions. It is also clear that the percentage of results between 80% and 90% is also low (7%)

4- Linguistic Terms

Total students no.	Success	F	D	C	B	A	Value
	100-60	59-0	69-60	79-70	89-80	100-90	Grades
116	78	38	52	16	6	4	Students no.
	67%	33%	45%	14%	5%	3%	percentage

Table 11: Grades range in Linguistics course

In 'Linguistic Terms' course students' results, it is clear that failure percentage is relatively high (33%) and the excellent percentage is also low (3%) which may also be a result of using higher cognitive level exam questions. It is clear also that the percentage of results between 80% and 90% is also low which confirms this conclusion.

5- **Advanced Writing**

Total students no.	Success	F	D	C	B	A	Value
	100-60	59-0	69-60	79-70	89-80	100-90	Grades
51	46	5	19	15	4	8	Students no.
	90%	10%	37%	29%	8%	16%	percentage

Table 12:Grades Range in Advanced Writing course.

It seems that Advanced Writing course has a very high success percentage (90%) as well as relatively high Excellent percentage (16%) although this course is more advanced and more difficult than paragraph writing course. This may be explained by giving students a wide range of options in the exam paper or limiting the topics before exam.

6- English Grammar

Total students no.	Success	F	D	C	B	A	Value
	100-60	59-0	69-60	79-70	89-80	100-90	grades
41	41	0	18	20	3	0	Students no.
	100%	0%	44%	49%	7%	0%	percentage

Table 15:Grades range in English Grammar course.

In 'English Grammar' course, although the success percentage is (100%) , the Excellent percentage is (0%) and the results between 80 and 90 is only (7%). This shows that most of the students achieved an average level of cognitive levels. In other words, they were unable to reach the higher cognitive levels. This may also leads to the conclusion that the higher cognitive levels already present in exam questions but students could not achieve them because they were not trained on such types of questions or because the students' level may be that low. In fact the students' low grades in 'Grammar' is also relevant to their low grades in 'Writing' courses.

7- Syntax

Total students no.	Success	F	D	C	B	A	Value
	60-100	59-0	69-60	79-70	89-80	100-90	Grades
101	88	13	25	29	29	15	Students no.
	87%	13%	25%	29%	29%	15%	percentage

Table 1613:Grades range in Syntax course

In 'Syntax' course although the success percentage is 87%, the Excellent percentage is relatively high (15%). The percentage of the results between 80% and 90% is relatively high (29%). The percentage of failure is also not that low (13%). This may refer to the individual differences between students.

9- Discussion

Total students no.	Success	F	D	C	B	A	value
	100-60	59-0	69-60	79-70	89-80	100-90	grades
68	62	6	26	17	15	4	Students no.
	91%	9%	38%	25%	22%	6%	percentage

Table17:Grades range in Discussion course

In 'Discussion' course, the success percentage is very high (91%) against (9%) of Failure percentage. There is also (6%) percent of Excellent as well as (9%) of failure. Most of the students; grades are in the average area. This may be a result of the nature of the course itself which requires a considerable level of communication and interaction with oral expression more than any other course.

b- Literature

1- Modern English Drama

Total students no.	Success	F	D	C	B	A	Value
	60-100	59-0	69-60	79-70	89-80	100-90	grades
117	79	38	45	22	7	5	Students no.
	68%	32%	38%	19%	6%	4%	percentage

Table 14:Grades range in Modern English Drama course

In 'Modern English Drama' course, it is clear from the percentages that the Failure level is relatively high against the Success level (79%). The Excellent percentage is relatively low (4%) as well as the (6%) of the grades between 80% and 90%. This is the result of this course although exam questions in this level does not a lot of high cognitive level questions. This may refer to the average level of the majority of students as well as the average cognitive level represented by exam questions.

2- Literary Terms

Total students no.	Success	F	D	C	B	A	value
	100-60	59-0	69-60	79-70	89-80	100-90	grades
17	5	12	2	1	1	1	Students no.
	29%	71%	12%	6%	6%	6%	percentage

Table 1915:Grades range in Literary Terms course.

In 'Literary Terms' course, the results show a very high level of Failure (71%) which exceeds the success percentage (29%) . This refers to the exam questions' being higher than the level of students. The results of this course may refer to the possibility of having exam questions representing such cognitive levels which may or may not be high but the problem lies in the possibility of lack of practice on the side of students even on (LOTs).

3- Drama in Film

Total students no.	Success	F	D	C	B	A	value
	100-60	59-0	69-60	79-70	89-80	100-90	grades
14	14	0	11	3	0	0	Students no.
	100%	0%	79%	21%	0%	0%	percentage

Table 2016:Grades range in Drama in Film course

In "Drama in Film' course, although the Success percentage is (100%) the grades are relatively low and most of the grades lie in the average level. This may refer to the exam questions' being graded in cognitive levels and the students' ability to carry out only (LOTs).

4- American Literature in the 20th century

Total students no.	Success	F	D	C	B	A	value
	100-60	59-0	69-60	79-70	89-80	100-90	grades
108	106	2	23	36	27	22	Students no.
100	98%	2%	21%	33%	25%	20%	percentage

Table 17: American Literature in the 18th Century.

In 'American Literature in the 20th century' course, the Success percentage is very high (98%) against low Failure percentage (2%). It is also clear that the Excellent percentage is relatively high (22%) and the grades between 80% and 90% is also high (25%). This refers to the high probability of including lower cognitive levels and (LOTs) exam questions. This is a logical result for a course that submits lower cognitive level exam questions. It deserves mentioning that the same students obtained much lower grades in other Literature and Linguistics courses.

5- World Literature

Total students no.	Success	F	D	C	B	A	value
	100-60	59-0	69-60	79-70	89-80	100-90	grades
140	139	1	23	46	49	21	Students no.
100	99%	1%	16%	33%	35%	15%	percentage

Table 18: Grades range in World Literature course.

"World Literature' course seems to have similar students results like the preceding course which may lead to the same conclusions. The Success percentage is (99%) and the Excellent percentage is (15%) as well as (35%) for the grades between 80% and 90%.

6- Medieval Literature

Total students no.	Success	F	D	C	B	A	value
	100-60	59-0	69-60	79-70	89-80	100-90	grades
68	59	9	17	8	10	24	Students no.
	87%	13%	25%	12%	15%	35%	percentage

Table 19Grades range in Medieval Literature.

In the 'Medieval Literature' course, although the Success percentage is not that high (87%) against (13%) of Failure percentage, the Excellent percentage is relatively high (35%). This may be referred to the ability of a group of students to carry out higher cognitive levels which do not exceed application and synthesis levels in Literature courses. Students seem to be trained on the cognitive levels existing in such exam questions.

c- Translation

1- MT into English

Total students no.	Success	F	D	C	B	A	value
	60-100	59-0	69-60	79-70	89-80	100-90	grades
109	106	3	28	25	29	19	Students no.
	97%	3%	26%	23%	27%	17%	percentage

Table 20: Grades range in Machine Translation into English Course.

In 'MT into English' course, although the course is advanced in its major part, the success percentage is very high (97%) and the excellent percentage is (17%) as well as (27%) for the grades between 80% and 90%. The reason may be referred either to simplifying the questions to the students too much because of the course's inherent difficulty and complexity. This type of results may be a result of changing the nature of high level cognitive questions into lower level cognitive level questions when the lecturer interferes by determining or limiting the topics to be submitted by exam questions. Therefore, instead of surprising the students with brand new situations for application on the Application level and instead of asking the students to synthesize a new projects, the teacher may facilitate the process by giving students a background idea about the topics to be submitted in the exam questions. Hence, the higher levels such as Application and Synthesis are transformed into lower cognitive levels such as memorization.

2- Types of Translation

Total students no.	Success	F	D	C	B	A	value
	100-60	59-0	69-60	79-70	89-80	100-90	grades
62	55	7	23	19	11	2	Students no.
	89%	11%	38%	30%	17%	4%	percentage

Table 21: Grades range in Types of Translation course.

The results of 'Types of Translation' course seem considerable in comparison to the results of the preceding course. The nature of this course is not that difficult such as 'MT into English'. The Success percentage is not very high (89%) against (11%) Failure. It is observed that most of the success percentage lies in the average area. The Excellent percentage is very low (2%) which refers to the existence of higher cognitive levels in exam questions and the capability of few students to carry out (HOTs).

3- MT into Arabic

Total students no.	Success	F	D	C	B	A	value
	100-60	59-0	69-60	79-70	89-80	100-90	grades
123	114	9	33	26	33	22	Students no.
	92%	7%	27%	21%	27%	18%	percentage

Table 22: Grades range in Machine Translation into English course.

In 'MT into Arabic' course, the percentages seem to be similar to the percentages of 'MT into English' course which is also considered one of the advanced courses among translation courses. We assume that the lecturer tend to facilitate the process to students like 'MT into English' course. The Success percentage is very high (92%) against (7%) Failure. Moreover, the Excellent percentage is (18%) and the grades between 80% and 90% is also relatively high (27%). Therefore, these results can be given the same conclusions of 'MT into English' course.

4- Introduction to Translation

Total students no.	Success	F	D	C	B	A	value
	100-60	59-0	69-60	79-70	89-80	100-90	grades
16	12	4	7	2	3	0	Students no.
	75%	25%	44%	12%	19%	0%	percentage

Table 27:Grades range in Introduction to Translation course.

In 'Introduction' to Translation' course results, although the course is relatively simple because it is to be studied by beginners in the primary levels and it submits simple theoretical background as well as simple texts for applying translation into Arabic and translation into English, the results are not that high. For example, the Success percentage is not that high (75%) against (25%) Failure percentage. The percentage of the grades between 80% and 90% is not that high also (19%). This can be explained either by the exam questions' inclusion of higher cognitive levels or the low academic level of students which makes most of them incapable of carrying

out (HOTs) or even (LOTs)'s three cognitive levels.

4.2. Discussion of Results

As a teacher is assigned to teach a specific course relevant to his major, he should determine general learning outcomes for the whole course as well as to each lecture. Learning out comes accurately determine the required cognitive levels and the required cognitive ability to carry out the assigned course. Students' performance reflects their cognitive ability as well as the very cognitive levels they have reached to. Hence examination is considered the universal tool to assess students' performance and whether or not examination questions are capable of assessing students' performance , represented in the cognitive levels they reached, depends mainly on the exam questions presented in the exam paper (Jones, Sch. of Eng., Harland, Reid, & Bartlett, 2009).

Therefore, Bloom's taxonomy on the cognitive level is employed in this study to measure the size of cognitive levels in exam papers ,which in turn reflects the learning outcomes designed by thelecturer. Action verbs in each exam question is considered the keyword to the cognitive level it represents. Hence, Bloom's taxonomy, in its six cognitive levels, is used as a tool to classify exam questions into six categories according to the six cognitive levels. Hence, the size of each cognitive level in exams is determined easily and this in turn facilitates its description and comparison between the variant levels in the variety of courses. Therefore, using the descriptive explanatory approach is useful which is based on observation of facts and not hypothesis. Exam results of the same questions are also described as a reflection to students' achievement of both learning outcome and cognitive levels.

In this study it is observed that the Knowledge and Comprehension cognitive levels are the commonest levels existing in all exam questions. It is essential to use them in all courses because they are considered as a background for all the following levels. On the other hand, their existence is important for students whose capacities are limited or unable to achieve higher levels. Hence, they are important to satisfy individual differences among students. If we assume that most of the exam questions include higher order thinking skills (HOTs) and ignoring lower order thinking skills (LOTs), a considerable number of students with limited capacities may suffer and fail in most of the courses. The problem arises when specific courses do not include higher cognitive plan in their learning outcomes. This results in lack of training to students on (HOTs) who become satisfied only with (LOTs). This is normally reflected in exam questions which will never cover higher level cognitive levels. For such courses, the results may be very high in spite of the complexity of the courses in general.

Another problem which is observed is the existence of higher level cognitive levels represented by some questions which are in fact reflecting knowledge only. This happens when the students are given a background idea about the topics to be submitted in Writing courses for example or when the Translation questions which requires higher cognitive levels in criticizing faulty target text (TT) or synthesizing a correct one, are seen or translated previously in class. This directly transforms the status of exam question from (HOTs) to (LOTs) which is not recommended for valid exam results. In other words, some questions seem as if advanced and including higher cognitive levels from their action verbs, but in fact, they are seen by students. The problem of this type of questions is that they do not distinguish students who can think in a creative way and can achieve higher cognitive levels because the very questions require only (LOTs) or even the very basic level (i.e. Knowledge).

If we compare the three categories representing Foreign Languages Department exam questions, we conclude that sometimes the nature of the course governs the type and cognitive level of exam questions. All Linguistics courses for examples include higher cognitive levels in a considerable number of their exam questions because they encompass applications on rules in courses such as Grammar, Syntax, Phonetics and Phonology…etc. Therefore, any Linguistics course includes at least the first four cognitive levels. The nature of Literature courses on the other hand makes them focus more on memorizing and tracing facts. However, they can include higher cognitive levels for analyzing characters and their behaviours as well as comparing them. As for Translation courses, they are of 'application' nature. They should include application , which is the first of the three higher cognitive levels. The question that asks students to translate is a basic question in all translation courses which leads to higher cognitive levels because students start with interpretation of the message of the ST then transforming it into another language which includes synthesis. Moreover, translation courses questions which require criticizing faulty TTs or machine translation texts into Arabic or into English may also require the highest cognitive levels of evaluation by finding out the mistakes and explain their origin as well as formulating a new correct target text. In fact questions of criticism are rare in Translation courses.

Hence, the researcher did her best in applying Bloom's taxonomy and concluding the results by classifying exam questions according to the six cognitive levels. In this study, it was a useful tool to help each lecturer know where he is and what exactly the actual cognitive levels represented by his exam questions. This helps each lecturer to revise and modify the learning objectives he designed before teaching. He may formulate such learning objectives which allow for more practice and creativity in which students can use higher level thinking skills. This in turn leads to designing such exam questions that encompass higher cognitive levels. Therefore, a teacher can submit such exam questions that satisfy all cognitive levels in order to distinguish creative thinkers

and help others to be inspired by their colleagues.

However, the results obtained in classifying exam questions and their reflection in students exam results, there are other external factors that may affect the accuracy and validity of students' results. These factors may be relevant to other social or educational roots. One of the reasons that may interrupt students' comprehensive achievement of higher cognitive levels may be his /or her repetitive absence or being always late to lectures. Another reason is the lack of motivation when a student is ignorant to the general purpose of his study and its importance in business market. Other reasons may be of environmental or financial nature such as his home's being too far from the University campus and wasting a lot of time in the way going and coming. This may result in exhausted students who are incapable of creative thinking. Financial reasons are also effective when a student is incapable of obtaining specific materials for study such as internet as well as other facilities. Although these reasons are not the main focus of this study, but the lecturer should put them in mind while planning for his learning objectives and exam questions. This gives him a comprehensive visions for all the factors affecting the learning process and hence he can do his best to satisfy the variety of individual differences in the learning activities, assignments, projects, exam questions…etc.

4.3.Recommendations for better Exam quality

Out of the preceding analysis of exam questions and students' results in the courses taught in Foreign Languages Department by means of a powerful scientific tool which is Bloom's Taxonomy on the cognitive level, the following recommendations are briefly suggested:

- A lecturer is recommended to focus on designing **effective learning objectives** before teaching. They should encompass what should students do in addition to what they should know starting from the basic cognitive levels and ending with the higher cognitive levels. In other words, his learning objectives should not be that imaginary that he cannot carry them out in his class. On the other hand, they are recommended to be realistic , considerable and consistent with students' capacities and the time allocated.
- It is recommended that the lecturer determines learning outcomes and activities for each lecture before teaching. This is useful to help students acknowledge the purpose of each topic they study and to focus on what they should know and do.
- Exam questions are recommended to satisfy all individual differences by submitting a variety of questions representing all the six cognitive levels.
- A lecturer is recommended not to focus only on (LOTs) for example because of the students' lack of capacity to learn or lack of considerable educational background in some courses such as in Grammar courses which may affect other courses such as Writing. The lecturer cannot justify his usage of limited cognitive levels for this reason.
- A lecturer is recommended to include all cognitive levels in his exam questions even the highest levels which require higher level thinking skills provided that he has trained students on how to think this way.
- Higher order thinking skills (HOTs) and higher cognitive levels should not be transformed into lower by allowing students to know the topics that they will be tested in. In other words, it is not recommended to test students in a seen translation or seen topics of paragraph or Essay Writing for example.
- The existence of lower cognitive levels exam questions is not that bad. It is rather essential as a basic knowledge background for higher cognitive levels and it is also important to give the chance for students with limited academic abilities to submit considerable answers to succeed.
- A lecturer should not let himself/herself a victim for time pressure that may governs the type of his exam questions. For example he may resort merely to questions such as : True-false, choose the correct answer, complete, matching. These type of questions, however easy to be scored, they take more time to be designed and they rarely measure higher cognitive levels.
- A lecturer is recommended not to avoid essay questions for specific reasons such as their being time – consuming to score and difficult to identify reliable criteria for scoring. Instead, he can write questions that require brief answer or opinion.
- It is recommended then to design such exam questions in a balanced way by using some art relevant to the testable knowledge included in each question. Hence, a lecturer can skillfully make multiple choice questions measure higher cognitive levels and increase the distractors in order to diminish the guesses. Similarly, he can do the same in matching questions by increasing the number of items in the answer column. Moreover, he can make true-false questions measure higher cognitive levels and not a matter for guessing if he added in the question instruction to justify the answer.
- A lecturer should always remember that the questions which are easy to write are difficult to grade and the questions which are time-consuming in writing are easier to grade. Hence, he/or she should balance between his allocated time and the testable knowledge.
-A lecturer is recommended to make the stem of exam questions Include "only the information needed to make the problem clear and specific and "avoid the use of negatives in the stem " (Piontek, 2008) and use only when

he is measuring whether the respondent knows the exception to a rule or can detect errors.
- Because Foreign Languages exam questions lack higher cognitive level for the majority of courses to be studied , so it is useful to suggest simple ways to include such higher cognitive level questions. For example, the most famous stem questions for higher cognitive levels such as Analysis is to ask the students in the question root to find the errors (i.e. in style, Grammar, Syntax…etc) in a specific paragraph or passage. At the Synthesis level for example this can be carried out by asking students to make a plan of his own for providing a specific idea or concept. As for the Evaluation level, a lecturer can simply ask the students, in the exam questions stem to determine the weakness points and strength points for a specific idea or project or suggest alternative solutions for specific proposed problems.

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