QUESTIONS ANALYSIS WITH BLOOM'S TAXONOMY: A STUDY ON THE DEPARTMENT OF BUSINESS ADMINISTRATION

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Abstract: *The purpose of tertiary level education is to improve student's thinking ability from Lower Order Cognitive (LOC) to Higher Order Cognitive (HOC) levels of Bloom's Taxonomy. The question papers are examined based on Bloom's Taxonomy (BT) to evaluate the confidence and skill levels of the learner. According to Bloom's Taxonomy, recall, understand and apply are the LOC whereas analyze, evaluate and creative are the HOC. In this study, question papers of examination of the Department of Business Administration (DBA) of a private university were analyzed to find the skill levels of the learner. The data were considered from mark distribution process of question papers. The question papers were evaluated based on keywords and marks were allocated to different level of Bloom's Taxonomy. The research question for this study in "Is teaching-learning of tertiary level education following standard". To answer this question, the following hypotheses should set to test: (i) mark distribution is increasing from LOC to HOC levels as academic year is increased and (ii) pattern of mark distribution are not same in terms of LOC and HOC levels in courses. The results showed that almost 30% questions were from understand level, whereas 7% and 12% questions were from evaluate and create level of Bloom's taxonomy. There is significant difference of mark distribution between LOC and HOC levels and mark from LOC domain is higher than that of HOC domain in the questions. To improve students thinking ability, more questions should be included from HOC in the questions.*

Keywords: *Bloom's Taxonomy (BT); Tertiary level education; Lower Order Cognitive (LOC); Higher Order Cognitive (HOC)*

Introduction :

It is very much important to improve the quality of tertiary level of education system to produce skill graduate also survival of the existence. There is no specific standard and framework for the higher study in Bangladesh to ensure the educational quality compare to the global perspective. This is why the Bangladesh Government currently has been taken the initiative and established Institutional Quality Assurance Cell (IQAC) both in private and public university to maintain the quality education. The IQAC is working in three different phases namely: i) Academic Audit through self-assessment process; ii) Development & iii) Implementation.

The study of research is given the importance to Bloom's Taxonomy (BT) how it can help to improve the confidence & skill levels of the learner specifically in the tertiary

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level education. The main objective of tertiary level education should be improved student's thinking ability from Lower Order Cognitive (LOC) to Higher Order Cognitive (HOC) levels to follow BT.

The universal purpose of the education is to provide standard or quality learning which will be stable and improve the thinking capability to enhance the skill levels of the student (Saunders & Shepardon, 1987). There is a question that how anyone can measure the improvement of thinking capability and quality learning. A standard question set is a key way to determine whether the purpose of study is achieved or not by the education process.

Literature Review :

The Bloom's taxonomy (Bloom, 1956) devised in the 1950s as a generic instrument for dividing the cognitive aspects of learning which has six level of cognitive domain to extent the thinking skill (Cepni, 2003; Cepni at al., 2007). Thinking capability of student might be at different cognitive levels (Çepni (2003) and Çepni & Azar (1998)) and questions of examination contribute to examine thinking capability and criticism ability of student (Ormall, 1974).Bloom's Taxonomy is complex to analysis (Krietzer & Madaus (1994), Clark (2015)) and Anderson and Krathwohl (2001) propose a simplify the taxonomy to resolve the problem of analysis. (Figure 1).
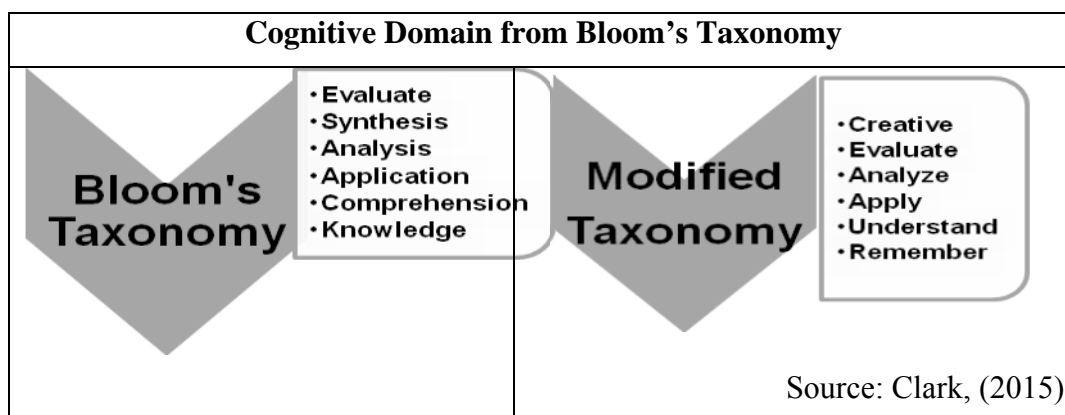

Source: Clark, (2015)

Figure 1: Bloom's Taxonomy and Modified Taxonomy of Cognitive Domain

Kocakaya, & Gönen (2010) have analyzed the questions asked at high school physics exams and university entrance of Turkey according to Bloom's taxonomy. Aziz (2011) examined the level of Bloom's taxonomy in the questions of social science at secondary level of Bangladesh. Bhyanand Khan (2014) described a method for teaching a numerical analysis course in the cognitive domain of Bloom's taxonomy. It is difficult to find a literature in which question of tertiary level has been analyzed to examine the level of Bloom's taxonomy is examined. In other word, there is gap to evaluate the questions of tertiary level education of Bangladesh. In this study, questions of a private university have been evaluated according to Bloom's taxonomy as well as it is checked whether the levels follow standard or not.

Research Methodology :

This research has been considered question papers of the department of business administration as a primary data source and also considered different statistical methods for analysis those data.

- The primary data has been considered the question paper of spring 2016 of BBA and MBA programs of Daffodil International University (DIU)

- The following statistical methods have been considered for analysis the data:
    - Descriptive statistics
    - Independent t-test
    - One way ANOVA
    - The study has also given sample questions based on OBTL in the Appendix.

Results and Discussions :

Table 1 presents summary statistics of mark distribution in questions of all courses from 1st year to 4th year of business graduates of DIU. It is found that in a question paper on average 42.04% marks are from Higher Order of Cognitive (HOC) with standard deviation 19.18 whereas 57.06% marks are from Lower Order of Cognitive (LOC) with standard deviation 20.69. In some cases, it is found that all the six levels of Blooms Taxonomy are not involved to prepare the questions. however, in some cases about 90% marks are distributed to prepare questions from same level of the taxonomy.

Table 1: Descriptive Statistics of Mark Distribution

	Minimum	Maximum	Mean	Std. Deviation
Remember	0	32%	7.71%	8.35
Understand	0	89%	29.33%	21.64
Apply	0	87%	20.02%	21.38
Analysis	0	63%	23.28%	14.38
Evaluate	0	43%	6.67%	9.42
Creative	0	90%	12.09%	18.81
LOC	2.22%	97.83%	57.06%	20.69
HOC	2.17%	90.00%	42.04%	19.18

(Source : Authors')

Figure 1 shows the average mark distribution in the questions of DBA, DIU according to level of cognitive domain of Bloom's Taxonomy. The minimum average is found for the level of "evaluate" which is followed by "recall" and "creative" whereas maximum average is found for the level of "understand" which is followed by "analysis" and "apply".
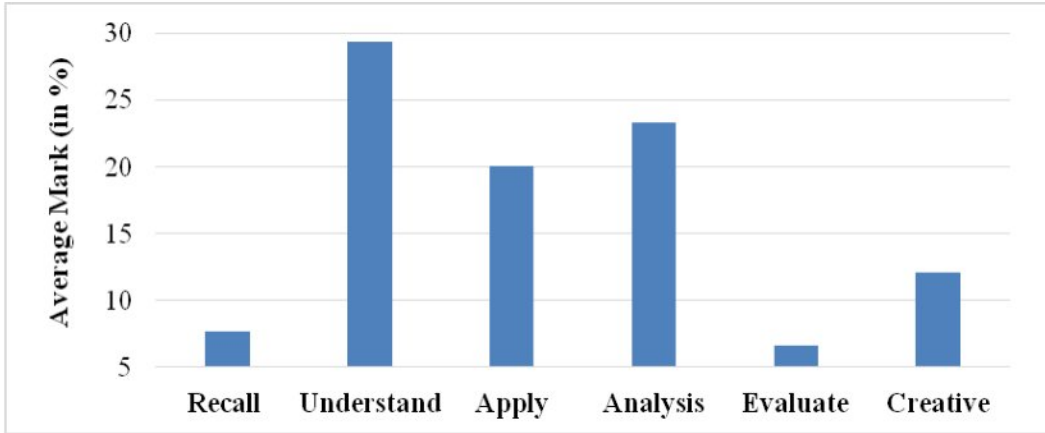
Figure 1: Average Mark Distribution in Cognitive Domain

Figure 2 presents the pattern of mark distribution of the academic year for business graduate. There is almost no change in mark distribution over time for the level of "recall", "analysis" and "evaluate" whereas mark distribution has increase for the level "understand" and "creative" and declaim for the level "apply".
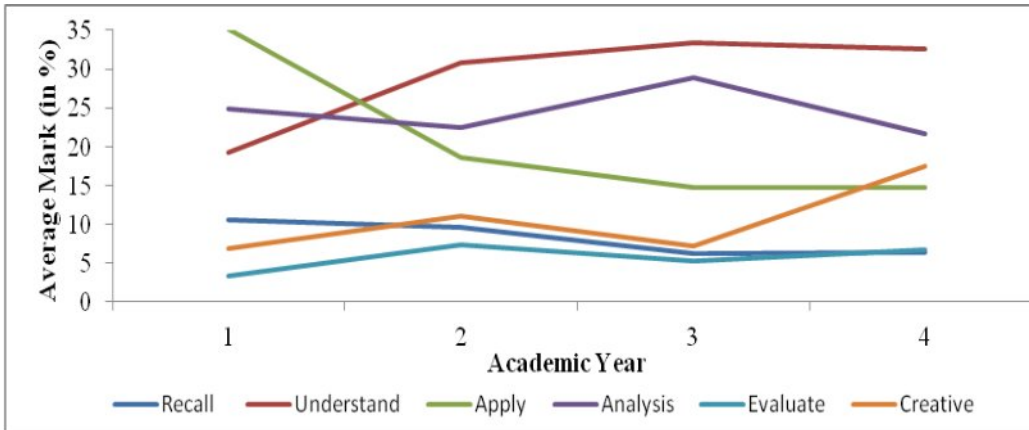

Figure 2: Pattern of Mark Distribution according to Academic Year

We set the following null hypothesis to test the difference of mark distribution from HOC and LOC

H_{10}: Mark distribution from HOC is same as from LOC in all questions

H_{11}: Mark distribution from HOC is not same as from LOC in all questions

Table 2 represents the result of the test and the test shows that there is significant difference between LOC and HOC at 1% level of significance.

Table 2: Comparison of Mark Distribution between LOC and HOC

	Mean Difference	Standard Deviation	Std. Error Mean	95% CI		t Statistic
				Lower	Upper	
Difference between LOC and HOC	15.02	38.89	5.34	4.30	25.74	2.81***

*** indicates 1% level of significance (Estimated)

We set the following null hypothesis to test the difference of mark distribution in all the courses

H_{20}: All the courses follow same pattern of Mark distribution

H_{21}: All the courses do not follow same pattern of Mark distribution

In Table 3, the result presents that all courses are following same pattern of mark distribution.

Table 3: One-way ANOVA to compare level among the Courses

		Sum of Squares	df	Mean Square	F Statistics
Lower Order	Between Groups	2517.48	4	629.37	1.81
	Within Groups	12171.39	35	347.75	
	Total	14688.87	39		
Higher Order	Between Groups	2860.49	4	715.12	1.95
	Within Groups	12801.32	35	365.75	
	Total	15661.82	39		

(Source : Authors')

Conclusion and Implications :

This paper investigates and analyzes the question papers of the Department of Business Administration by considering six levels (LOC: Remember, Understanding & Apply and HOC: Analyze, Evaluate & Creative) of Blooms's Taxonomy. Data has collected from the mark distribution of question papers of all academic years of Spring 2016 and t-test & ANOVA is used for analysis of the data.

This study found that the marks distribution of question paper not followed the pattern as it should increase from LOC to HOC over time. As a result the the thinking capability of student is not exploring. It should also be mentioned here that most of the questions focused on understanding level of BT which is LOC. Therefore the mark distribution from LOC is significantly higher than that of HOC.

This study suggests to keep more concentration whenever prepare the question papers need to introduce more questions related with HOC which will improve the thinking and analytical capability of the student. And it will help to produce skill graduates for local & global job market which is the objective of the tertiary level education.

It is important to mention here that this study consider only one semester question papers however, in near future more semester will be included for the better understanding of question level. Sometime, it is difficult to classify the mark to levels of BT because of similar key words for different levels. It is also recommended to follow the rubric methods during prepare the questions.

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Appendix:

The three different courses questions have been enclosed herewith for the better understanding of the reader or researchers.

A. MGT-305: Strategic Management

1. Suppose, you are a senior manager of a fast-growing ready-made garments company in Bangladesh. In the past 5 years, your company has gone from being a start-up enterprise with 50 employees and no revenues to a company with 2500 employees and revenues of Tk. 700 lac. It has been growing so rapidly that you have not had time to create a strategic plan, but now members of the board of directors are telling you that they want to see a plan, and they want the plan to drive decision making and resource allocation at the company. They request you to design a planning process that will have the following attributes:
   o It will involve as many key employees as possible in the process;
   o It will help to build a sense of shared vision within the company ;
   o It will lead to   five key strategies for the company.

Design a planning process to present to the board of directors of the company. Who should be included in this process? Outline the strength and weaknesses of the approach. 6.25 Marks

2. i. Explain following statement for a business organization: "All men can see these tactics whereby I conquer but what none can see is the strategy out of which victory evolves." 3.25 Marks

   ii."We built our company by focusing upon a pretty simple, but focused premise of Quality, Service, Cleanliness, and Value."-Do you agree with the statment? If so,how? If not, why? 3 Marks

B. ECO-304: International Economics

1. "Japan International Cooperation Agency (JICA) supports the vitalization of economic activities in Bangladesh"- discuss with the light of **Metro Rail** project in Bangladesh. 8 Marks

2. In the light of recent issue BREXIT, explain its affects on international trade as well as developing countries. 8 Marks

C. HRM-508 : Organizational Conflict management

1. Case study: To create a footprint in the telecommunication Business & Operation Support System (BSS and OSS) a well known fortune 500 company, Olite (name changed) , acquired a leading software company in the billing and revenue management sector named PTL (name changed) in the year 2004. Olite is a multinational company with its headquarters in USA. This acquisition was consolidated at Olite, under the Telecommunication Business Unit (TBU). To utilize the cost advantage and the technical expertise, Olite started its TBU division activities at the India development center (IDC). Olite also maintained a group (here after referred to as HQ team) at its headquarters, which focused on R & D activities and for supporting a few key customers. Most of the

employees who were part of TBU division came from PTL software. The main responsibilities of the IDC group were to provide support to the existing customers and provide minor enhancement to the existing product. The growth of the TBU's engineering division at IDC and the challenges it faced while dealing with the needs of the employees, aspirations of its leaders and the effects and challenges it created to the group at its HQ division and the HQ group heads reaction to it. Directors were leading the customer support activities. They wanted a break from the routine work. The division can no longer handle the support activities and the HQ team needs to pitch in to complete this work. Finally, the upper management agreed and the critical customer support activity was moved to the HQ division. The job security concern of the HQ division vanished as they started playing a key role in support as well as in R & D activities.

Discuss following points based on the aforesaid case study: 6.25

i) Personality type

ii) Conflict between individuals

iii) Organizational politics