

Teachers' Questioning Competencies Across Bloom's Taxonomy at Secondary and Tertiary Levels

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ABSTRACT

The aim of the proposed study was to define the role of questioning that leads to critical thinking in the analysis of lower and high order questions, and explanation of convergent and divergent questions in Secondary and Tertiary levels. The study had a population comprising of all the Secondary and Tertiary School teachers. Through the use of proportional allocation of population, a sample of 176 Secondary School teachers and 24 Tertiary level teachers were drawn in Peshawar, Kohat, D.I.Khan, Mansehra, Dir, Malakand and Swat through simple random sample technique (Walpole, 1968). The observation guide on Bloom taxonomy was used in order to achieve the objectives of the research. The observation sheet was then divided into categories with each question being pegged upon knowledge, comprehension, application, analysis, synthesis and evaluation. The findings in the study demonstrated that very weak, lower order and convergent questions by teachers were practiced in secondary level, did not significantly differ in asking them in Secondary level as compared to Tertiary level. The level of synthesis and evaluation is that in the application, the questions were scarcely asked by teachers. This is suggested to indicate that higher and lower thought provoking questions can be asked. The Taxonomy of Bloom should be trained to teachers and stimulation of students might be required.

Keywords: Bloom Taxonomy, Convergent, Divergent, Secondary, Tertiary.

BACKGROUND OF THE STUDY

This researcher has close to sixteen years of experience dealing with teaching school and college. The pollster was then taken to school where classrooms were annotated with the school principal. It was realized that questioning methods were profound teaching strategy exercised by the majority of the teachers, which were observed. In order to enable the students of the lesson to stir up their curiosity and to develop their thinking critically, half of their lesson time had to be wasted on asking questions to facilitate the active involvement of the learners in the lesson. It helped the researcher obtain the interest of the field since as a teacher has experienced a deep sense of fulfillment when learners have asked him questions and when he has been providing the correct answers. While was the asking question appropriate and were

teachers asking appropriate questions or not? Is it effective, since it happens that the questions can assist the students to attain better not only but also get them to think critically as well.

Nature of Questions

One of the aims of the teaching process is development of the skills necessary to make the right decision in life among the students. In this regard students must be taught to ensure that they become capable of solving the problems decided, being critical and becoming relaxed about them. Such capacity of thinking is obtained when they learn how to respond to the key questions. Asking the right question that may lead to critical thinking is a complicated task hence most of the teachers have not been trained to ask good questions (Cecil, 1995).

One of the important aspects of most classes is interrogation. The questions ask the teachers not only to monitor the degree of understanding among the students, but also to make the students talk about the material, relate it to the new knowledge, and imagine the ways of its application. Research either suggests that the teacher is supposed to pose more questions which means that the students are supposed to think and analyze the information and most of their questions are factual meaning that they can only cause a rote memorization of learning. The teachers also tend to hurry to give answers to the students without allowing them time to answer divergently and critically (Ryan and Cooper, 2010).

Teachers play the most significant role when it comes to questions. The teachers are supposed to be cautious of how they organize their queries since it is the key method of assisting the knowledge and comprehension of the students improve. Resound questioning on part of the teachers would enable students think both critically and independently. Each question is content based. The mastery of the contents by the teachers is possibly helpful to the teacher posing questions that would require the students to think deeper about the material and critically (Pagliaro, 2011).

In determining the level of understanding in the students, questions are applied. These questions are not just set to enable the students to learn some facts, or information reminding but to enable the students to more elevated thinking level that does not happen easily like reminiscence of the information. This would be through advanced preparing in view of using with the assistance of some organizational scheme such as the Bloom Taxonomy such that the questions would involve the students into creative and analytical processing (Fisher and Frey, 2007).

Blooms' Levels of Questions

When considering the development of thinking powers, it is preferable to mention Taxonomy provided by Bloom. An education professor Benjamin Bloom and a few others attempted to devise a system that will specify the way one would define and categorize the process of both thinking and learning. Recently published in 1956 the work *The Taxonomy of Educational Objectives: Handbook 1* by a collective led by Bloom is sometimes considered the Bloom Taxonomy (McDonald and Hershman, 2010). A team of educators attempted to release modified editions of the original taxonomy between 1995 and 2000 because of a need to revise the monetary knowledge of learning. Their publication came subsequently in the year 2001 (Sousa, 2009). In short, the taxonomy encourages that one cannot make judgment over that which he/she is not aware of the facts, knowing of the facts and application of the facts in addition to

dissecting the facts, putting together the facts planned out in a manner that forms a new-outlook (Morgan and Saxton, 2006).

The six questions that Bloom used may also be divided into three subgroups. The knowledge and comprehension constitute level one question. They can be categorized as lower level type questions that require the student to recall and data collection, but one which does not engage the nurse in deep thinking. Level two questions are the application and analysis questions. It is the type of questions that cause the students to begin to process information and include new information that they determine through the observations. The third level of questions is synthesis and evaluation level. The deeper nature of the enhanced level of thinking is based on these questions as the questions demand high level of mental activity (Cecil, 1995). All these interrogative modes of the Taxonomy levels of Bloom would be recommended with a view to build an argumentative and critical reasoning within the students. These questions can and are instilled by the teachers so that students are attracted into myriad activities of deep level thinking, behind such techniques, teachers have myriad purposes and conclusions. These may be realized practically by getting a spirit of motivation in a classroom which will involve the work of making the students actively involved with new experiences and with inquisitive mind that would facilitate him in acquiring the concept, and where he is in a position and capable of formulating the queries himself.

The students are participating in inquiry-thinking, feeling, discussing, arguing, philosophizing and others processes and the teacher is the one that is more involved in the majority of the activities (Morgan and Saxton, 2006).

According to Gall (1984) the teachers scarcely imposed higher questions of thinking (application, analysis, synthesis or evaluation). Teachers use questions on recalling facts. This is unfortunate because the higher order questions evoke critical thinking. However, the only category of questions posed by teachers should be higher order to achieve achievement. It is the combination of such questions which puts the students at the lower levels to higher levels of learning.

The issues are that in the absence of higher order, the learning process will be downgraded to memorizing (Cooper, 2013).

Different questions have a purpose of learning and teaching. And that is not the case that some types of questions should be given preference over others such as low cognitive over the high cognitive or the vice versa. The questions selected by the teachers should be related to the lesson objectives. That is, low cognitive types of questions should be posed in case of giving some general information about the concepts. The high cognitive questions are assumed to be used in case the purpose is to ask the students to analyze, evaluate or create new information (Hunt, Wiseman and Touzel, 2009).

CONVERGENT AND DIVERGENT QUESTIONS

When convergent question is asked, it means that he/she should answer one correctly and when divergent means that he/she should redirect in many directions. The use of divergent questions facilitates the critical thinking of issues. Teachers in most instances ask convergent questions without realizing the fact that convergent questions do give the students a chance to recall information (Althouse et al; 2003). The effectiveness of convergent questions can only exist in this case when the teachers would be required to establish what the students know about facts (Colburn, 2003).

WAIT TIME

Another of these related dynamics in regard to the questions posed by teachers is wait time. Mostly teachers take up to one minute to answer their own questions (Powell and Caseau, 2004). It takes time to make critical and creative decisions and cogitations. A teacher should employ a questioning methodology in a way that would enable the students to take time and offer an answer (Ryan and Cooper 2010). The wait period or duration of teachers? Recommendations and suggestions range between 3 to 5 seconds. It is known to be between 0.5 and 1.2 seconds (Blosser, 2000).

Teachers' question	Pause (wait time 1)	Student response	Pause (wait time 2)	Teacher reaction
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Wait time 1 (pausing after question) will enable the students to think on the question asked by the teacher and the ability to formulate a response. Wait time (wait time 2), which follows upon the response of a student, provides the students with the opportunity to add or perhaps to edit, or may be elucidating the response (Rowe, 1973).

Between the periods of lecturing or demonstrating, since the inception of classroom research (Stevens, 1912), teachers have been caught posing to a fair proportion of inquiries at a moderate pace during the span of a classroom hour, one or more questions a minute. It was recorded in amounts less than one second of time so as to create lapse between the teacher question and the terminative of the answer provided by the student. Majority of the questions are recall and recitation of previously learned or studied factual information; some questions are other cognitive manipulation of the information and rest are conversational in nature and objectives which are managerial (Shaunnessy, 2005).

POPULATION, SAMPLING AND PROCEDURE

157 state secondary schools in Khyber pukhtunkhwa with a total of 21965 teachers and 157 state universities with a population of 3000 teachers (<http://www.hec.gov.pk/ourinstitutes/>).

Sampling

The sample to be employed in the study was to be selected through the proportional allocation of population (Walpole, 1968) as 176 secondary school teachers and 24 tertiary level teachers in their classrooms when they were teaching. Simple random sample technique was used to conduct the study in Peshawar, Kohat, D.I.Khan, Mansehra, Dir, Malakand and Swat districts.

Research Instrument

Zepeda, in (2009) designed the study instrument, which is observation guide based on Bloom taxonomy and adjusted the same to achieve the study objectives, by Khan and Inamullah (2011).

Procedure

To accomplish this, observational sheet was used when observing a lesson conducted by a teacher. Some of the major lessons that were observed were one hundred and seventy six lessons in Secondary Level and twenty four lessons in Tertiary Level. The two levels made two hundred observations. During observation,

the researcher would take notes of questions that the teacher asked. The observations that were based on the following were then grouped to the observation sheet as knowledge, comprehension, application, analysis, synthesis and evaluation. (Shaunessy, 2005).

COMPREHENSIVE TABLES OF SECONDARY LEVEL DATA

Table #1 percentage of total questions asked in each category

Obs	Time	N.B.Q	K	C	App	Analy	Synt	Eva
1	0:15:00	19	11	4	3	1	0	0
2	0:25:00	11	9	2	0	0	0	0
3	0:15:00	10	5	5	0	0	0	0
4	0:15:00	10	9	1	0	0	0	0
5	0:25:00	26	20	2	3	1	0	0
6	0:20:00	7	4	3	0	0	0	0
7	0:30:00	19	12	7	0	0	0	0
8	0:20:00	9	3	5	0	0	1	0
9	0:30:00	17	11	6	0	0	0	0
10	0:25:00	10	8	2	0	0	0	0
11	0:15:00	10	8	2	0	0	0	0
12	0:40:00	7	6	0	0	1	0	0
13	0:45:00	8	8	0	0	0	0	0
14	0:35:00	6	5	1	0	0	0	0
15	0:40:00	6	5	1	0	0	0	0
16	0:45:00	5	4	1	0	0	0	0
17	0:40:00	5	3	1	1	0	0	0
18	0:35:00	7	3	1	0	0	2	1
19	0:40:00	7	5	2	0	0	0	0
20	0:35:00	1	1	0	0	0	0	0
21	0:30:00	2	1	0	0	1	0	0
22	0:35:00	6	5	0	1	0	0	0
23	0:30:00	2	0	1	0	1	0	0
24	0:30:00	11	9	2	0	0	0	0
25	0:20:00	11	3	8	0	0	0	0
26	0:20:00	5	4	1	0	0	0	0
27	0:15:00	9	4	4	0	1	0	0
28	0:20:00	13	7	2	4	0	0	0
29	0:30:00	9	9	0	0	0	0	0
30	0:30:00	19	10	7	2	0	0	0
31	0:30:00	18	12	0	4	1	1	0
32	0:40:00	2	1	1	0	0	0	0
33	0:30:00	4	3	0	1	0	0	0
34	0:35:00	2	0	2	0	0	0	0
35	0:25:00	4	3	0	0	1	0	0
36	0:30:00	2	0	2	0	0	0	0
37	0:30:00	2	1	1	0	0	0	0

38	0:30:00	4	4	0	0	0	0	0
39	0:35:00	2	0	1	1	0	0	0
40	0:35:00	10	10	0	0	0	0	0
41	0:30:00	2	2	0	0	0	0	0
42	0:35:00	4	2	1	1	0	0	0
43	0:35:00	5	3	0	1	1	0	0
44	0:35:00	5	3	0	1	1	0	0
45	0:40:00	0	0	0	0	0	0	0
46	0:35:00	3	2	0	1	0	0	0
47	0:35:00	3	2	1	0	0	0	0
48	0:40:00	4	3	1	0	0	0	0
49	0:35:00	3	2	1	0	0	0	0
50	0:35:00	3	2	1	0	0	0	0
51	0:40:00	4	3	1	0	0	0	0
52	0:40:00	7	5	2	0	0	0	0
53	0:40:00	4	4	0	0	0	0	0
54	0:40:00	6	5	1	0	0	0	0
55	0:40:00	9	6	1	2	0	0	0
56	0:40:00	5	3	0	0	2	0	0
57	0:40:00	5	5	0	0	0	0	0
58	0:40:00	6	6	0	0	0	0	0
59	0:35:00	2	1	0	1	0	0	0
60	0:35:00	4	1	1	1	1	0	0
61	0:35:00	6	4	1	1	0	0	0
62	0:35:00	7	1	0	2	3	1	0
63	0:35:00	3	2	0	1	0	0	0
64	0:25:00	16	7	4	4	1	0	0
65	0:35:00	12	4	6	2	0	0	0
66	0:40:00	6	2	1	2	1	0	0
67	0:35:00	8	1	2	1	4	0	0
68	0:40:00	4	1	2	0	1	0	0
69	0:35:00	5	0	2	3	0	0	0
70	0:30:00	4	3	0	0	1	0	0
71	0:45:00	9	4	1	2	2	0	0
72	0:15:00	4	2	0	1	1	0	0
73	0:30:00	4	1	1	1	1	0	0
74	0:40:00	3	1	1	1	0	0	0
75	0:40:00	6	4	0	1	1	0	0
76	0:30:00	3	1	0	1	1	0	0
77	0:35:00	6	3	2	0	1	0	0

78	0:35:00	2	2	0	0	0	0	0
79	0:35:00	8	6	1	1	0	0	0
80	0:35:00	4	2	0	1	1	0	0
81	0:35:00	6	3	3	0	0	0	0
82	0:35:00	4	2	0	0	2	0	0
83	0:35:00	10	7	1	1	1	0	0
84	0:40:00	10	4	3	2	0	1	0
85	0:30:00	5	2	2	0	1	0	0
86	0:25:00	11	6	5	0	0	0	0
87	0:35:00	8	2	4	2	0	0	0
88	0:40:00	17	4	5	3	2	1	2
89	0:30:00	9	8	1	0	0	0	0
90	0:40:00	3	3	0	0	0	0	0
91	0:30:00	4	2	0	2	0	0	0
92	0:25:00	12	6	3	0	2	1	0
93	0:20:00	0	0	0	0	0	0	0
94	0:35:00	7	4	3	0	0	0	0
95	0:35:00	15	6	3	3	0	2	1
96	0:40:00	20	11	3	1	3	0	2
97	0:30:00	6	2	3	1	0	0	0
98	0:20:00	3	3	0	0	0	0	0
99	0:35:00	13	6	6	0	0	1	0
100	0:35:00	18	7	4	4	2	0	1
101	0:40:00	8	2	1	5	0	0	0
102	0:40:00	12	8	2	1	1	0	0
103	0:35:00	10	4	5	0	1	0	0
104	0:30:00	4	3	1	0	0	0	0
105	0:40:00	10	6	4	0	0	0	0
106	0:25:00	4	2	0	1	1	0	0
107	0:35:00	6	3	1	1	0	1	0
108	0:35:00	4	2	1	1	0	0	0
109	0:40:00	5	2	2	1	0	0	0
110	0:45:00	10	4	2	2	1	0	1
111	0:30:00	2	0	2	0	0	0	0
112	0:30:00	2	0	2	0	0	0	0
113	0:45:00	4	3	1	0	0	0	0
114	0:40:00	4	2	2	0	0	0	0
115	0:45:00	10	6	4	0	0	0	0

116	0:30:00	15	6	7	0	2	0	0
117	0:40:00	5	2	3	0	0	0	0
118	0:35:00	12	8	4	0	0	0	0
119	0:45:00	8	2	4	2	0	0	0
120	0:45:00	5	1	3	1	0	0	0
121	0:45:00	6	3	0	1	1	1	0
122	0:45:00	6	3	0	2	1	0	0
123	0:25:00	4	2	0	1	1	0	0
124	0:20:00	8	5	2	1	0	0	0
125	0:30:00	3	3	0	0	0	0	0
126	0:25:00	3	1	2	0	0	0	0
127	0:35:00	2	0	1	0	1	0	0
128	0:30:00	2	2	0	0	0	0	0
129	0:35:00	11	5	2	2	2	0	0
130	0:30:00	10	1	4	2	3	0	0
131	0:40:00	4	2	2	0	0	0	0
132	0:45:00	4	3	0	0	1	0	0
133	0:35:00	6	1	2	1	2	0	0
134	0:40:00	4	2	1	0	1	0	0
135	0:40:00	14	8	5	1	0	0	0
136	0:45:00	13	4	9	0	0	0	0
137	0:40:00	5	4	1	0	0	0	0
138	0:25:00	5	1	1	3	0	0	0
139	0:45:00	19	7	6	5	1	0	0
140	0:25:00	3	2	1	0	0	0	0
141	0:40:00	9	5	2	2	0	0	0
142	0:35:00	3	1	1	0	1	0	0
143	0:25:00	4	1	0	1	2	0	0
144	0:45:00	3	2	0	1	0	0	0
145	0:45:00	4	3	1	0	0	0	0
146	0:45:00	4	3	0	1	0	0	0
147	0:40:00	8	4	3	1	0	0	0
148	0:35:00	7	7	0	0	0	0	0
149	0:35:00	19	17	2	0	0	0	0
150	0:25:00	2	1	0	0	1	0	0
151	0:25:00	3	2	0	1	0	0	0
152	0:25:00	3	3	0	0	0	0	0
153	0:35:00	3	1	0	0	2	0	0

154	0:20:00	4	0	3	1	0	0	0
155	0:30:00	4	0	2	1	1	0	0
156	0:30:00	6	3	2	0	1	0	0
157	0:20:00	3	2	0	0	0	1	0
158	0:40:00	3	2	0	1	0	0	0
159	0:35:00	3	3	0	0	0	0	0
160	0:45:00	4	0	2	1	1	0	0
161	0:30:00	4	1	3	0	0	0	0
162	0:25:00	3	1	2	0	0	0	0
163	0:30:00	3	2	1	0	0	0	0
164	0:35:00	3	0	2	1	0	0	0
165	0:35:00	3	1	1	0	1	0	0
167	0:35:00	3	2	0	0	1	0	0
168	0:40:00	4	4	0	0	0	0	0
169	0:35:00	5	2	1	1	1	0	0
170	0:25:00	2	1	0	1	0	0	0
171	0:20:00	4	4	0	0	0	0	0
172	0:25:00	3	1	1	1	0	0	0
173	0:35:00	3	2	1	0	0	0	0
174	0:25:00	3	1	1	1	0	0	0
175	0:30:00	3	2	1	0	0	0	0
176	0:30:00	11	4	4	3	0	0	0
Total	97:05:00	1150	638	288	125	77	14	8
%			55.47%	25.04%	10.87%	6.70%	1.22%	0.70%

The given table indicated that, the cumulative time of observation observed during the session with 176 observations and Secondary Level was 97 hours and 5 minutes with observation of 1150 questions. The result of the research brought about the observation that the teachers were raising questions during the instruction. Ratio of the total questions answered in 5825 minutes was 20 percent. The combination of the question count was poor and it was also poor in most of the classes. The number of questions that are knowledge based, comprehension based, application based, analysis based, synthesis based and evaluation based amounted to 55.47 percent, 25.04 percent, 10.87 percent, 6.70 percent, 1.22 percent and 0.70 percent respectively. The majority of the questions in the category of knowledge were related on knowledge of specifics and terminology, theories and structures, and trend and sequences. Most of the questions that were asked under the comprehension category dealt with interpretation and extrapolation questions. The questions in the application category were either demonstration or manipulation. Elements and relation are the questions asked in the category of analysis, and this was generally in analysis. Questions of the synthesis and evaluation level were not high..

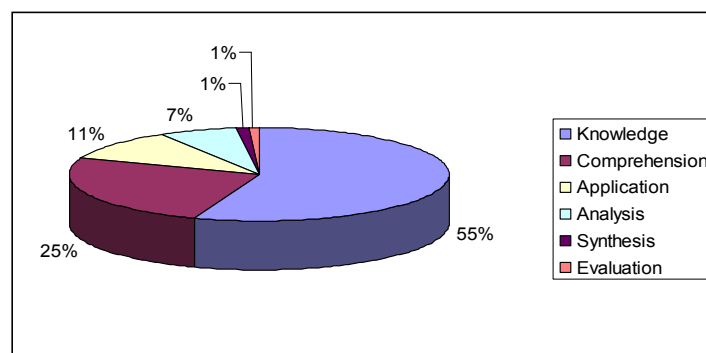


Fig: 1 Graphic representation of secondary level data

Table #2 Time versus type of questions (Secondary level Data)

Time V.S Type of Questions	Know	Comp	App	Ana	Syn	Eva	Total
0:15:00	39	16	4	3	0	0	62
0:20:00	35	24	6	0	2	0	67
0:25:00	78	26	17	10	1	0	132
0:30:00	120	62	18	14	1	0	215
0:35:00	163	72	37	29	7	3	311
0:40:00	143	54	25	13	2	4	241
0:45:00	60	34	18	8	1	1	122
Total	638	288	125	77	14	8	1150

The number of questions to be answered in total time of one half hour (15 minutes) of the day as it applies to the subject of the investigation was 62 as indicated in the table above. This question represented the 67th in a 20 minutes lesson in the classroom. The number of questions in 25 minimum period of classes was 132, the number of questions in 30 minutes period of classes was 215 and the number of questions in 35 minutes period of classes was 311. In 40 minutes period of class, the number of questions was 241 and in the 45 minutes period, the count of questions was 122.

Table #3 Time versus type of questions (Secondary level Data)

Time V.S Type of Questions	Know	Comp	App	Ana	Syn	Eva	Total
<= 0:30:00	486	222	27	13	3	0	751
>0:30:00	152	66	98	64	11	8	399
Total	638	288	125	77	14	8	1150

It is seen that in test duration that is less than and equal to 30 minutes the number of questions were 751; test duration that is between 30 and less than 60 minutes the number of questions were 399 as compared to above, the number of questions asked in knowledge category was 638 as compared to above, in comprehension category was 288, in application category was 125, in analysis category was 77, in synthesis category was 14 and 8 questions were asked under evaluation category of the Bloom Taxonomy.

Table#4 Time versus knowledge, comprehension and application as (lower order questions) for Secondary Data

Time V.S Type of Questions	Know	Comp	App	Total
<= 0:30:00	486	222	27	735
> 0:30:00	152	66	98	316
Total	638	288	125	1051
Percentage	55.47%	25.04%	10.87%	91.38%

This occurred on the table above since a majority of the questions that the teachers asked at the Secondary Level were lower order and factual in the knowledge, comprehension and application of Bloom Taxonomy. The sum total of questions that are asked in the knowledge category is 55.47 percent and the outlay in the comprehension category is 25.04 percent. There is a total of 10.87 percent number of questions posed under the category application. Lower order question percentage of total, at Secondary Level was 91.38.

Table#5 Time V.S analysis, synthesis and evaluation as (higher order questions) for Secondary Data

Time V.S Type of Questions	Ana	Syn	Eva	Total
<= 0:30:00	13	3	0	16
>0:30:00	64	11	8	83
Total	77	14	8	99
Percentage	6.70%	1.22%	0.70%	8.62%

In the above table, it was revealed that the level of analysis, synthesis and evaluation, according to Bloom taxonomy has very small numbers of questions that were posed. Higher order questions were asked by the teachers in Thirday Level and the numbers were very low. The questions that were asked in the analysis category were 6.70, synthesis category 1.22, and evaluation category 0.70. The Secondary Level had a population of higher order questions percentage of 8.62.

COMPREHENSIVE TABLES OF TERTIARY LEVEL DATA

Table #6 shows percentage of total questions asked in each category

Obs	Time	N.O.Q	K	C	App	Ana	Synth	Eval
1	1:30:00	8	2	1	5	0	0	0
2	1:00:00	12	8	2	1	1	0	0
3	1:00:00	10	4	5	0	1	0	0
4	1:30:00	4	3	1	0	0	0	0
5	3:00:00	3	0	2	0	1	0	0
6	1:30:00	4	2	1	1	0	0	0
7	1:00:00	6	3	1	1	0	1	0
8	1:00:00	4	2	1	1	0	0	0
9	1:30:00	3	2	1	0	0	0	0
10	2:00:00	10	4	2	2	1	0	1
11	1:30:00	2	0	2	0	0	0	0

12	1:30:00	5	1	2	1	1	0	0
13	1:30:00	3	1	0	1	1	0	0
14	3:00:00	2	1	1	0	0	0	0
15	1:30:00	10	6	4	0	0	0	0
16	1:30:00	15	6	7	0	2	0	0
17	2:00:00	5	2	3	0	0	0	0
18	1:30:00	2	1	0	1	0	0	0
19	1:45:00	8	2	4	2	0	0	0
21	1:45:00	6	3	0	1	1	1	0
22	1:45:00	6	3	0	2	1	0	0
23	1:30:00	4	2	0	1	1	0	0
24	3:00:00	4	0	3	1	0	0	0
Total	38:45:00	136	58	43	21	11	2	1
%			42.65%	31.62%	15.44%	8.09%	1.47%	0.74%

As illustrated above, the observation time was 38 hours and 45 minutes on 24 observations session in the tertiary level and the number of questions that were observed was 136. Findings of the research demonstrated that it was the teachers who asked questions as part of the teaching process. It recorded low percentages of questions in 2325 minutes at 6 percent. The sum of the number of questions was not commendable and almost the same figure of all the classes perceived, very low with regard to questions. They have found out that, during this level questions introduced by the teachers were very infrequent and they were really obsessed whenever they desired to give lectures. The level of knowledge based questions was 42.65, comprehension based was 31.62, application based was 15.44, analysis based was 8.09, synthesis based 1.47 and evaluation based 0.74. Questions falling under knowledge category were those that mostly dealt with knowledge of specifications and terminologies, theories and structures, and of trend and sequences. Most of the questions that were posed in the category of comprehension were based on the interpretation and extrapolation. These were the questions of the application category that were either manipulative or demonstrative. The queries that were asked in the analysis sector were significantly associated with the analysis of elements and relationship. Questions at the synthesis level and evaluation level were too low.

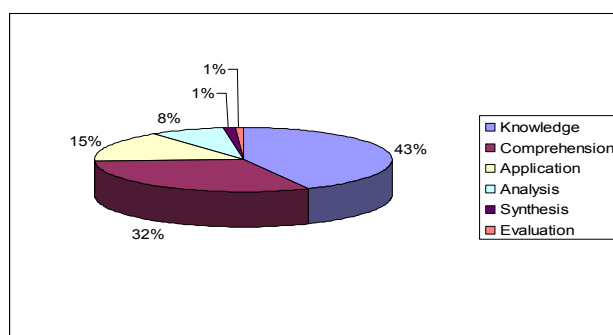


Fig: 2 Graphic representation of tertiary level data

Table#7 Time versus type of questions (Tertiary level Data)

Time V.S Type of Questions	Know	Comp	App	Ana	Syn	Eva	Total
1:00:00	17	9	3	2	1	0	32
1:30:00	26	19	10	5	0	0	60
1:45:00	8	4	5	2	1	0	20
2:00:00	6	5	2	1	0	1	15
3:00:00	1	6	1	1	0	0	9
Total	58	43	21	11	2	1	136

According to the table above, a total of the questions was 32 in all one-hour class periods. The question numbers were 60 during the 30 minutes which was the period of classes. Section period: There was 1 hour, 45 minutes with 20 number of questions in the classroom, 2 hours with 15 number of questions in the classroom and 3 hours with 9 questions in the classroom. Nonetheless, at Tertiary Level, 136 questions were given of different durations of time indicated.

Table#8 Time versus type of questions (Tertiary level Data)

Time V.S Type of Questions	Know	Comp	App	Ana	Syn	Eva	Total
<= 2:00:00	7	32	3	2	0	1	45
>2:00:00	51	11	18	9	2	0	91
Total	58	43	21	11	2	1	136

The above table shows that, in an hour exceeding and the same as the 2-hour lesson in the training of the questions were 45 as compared to less than 2 hours of lesson, in the knowledge segment, the questions were 45 and 21 in the application segment, respectively, in the analysis segment the questions were 2 and in the synthesis segment the questions were 1 as compared to the evaluation segment (Bloom Taxonomies).

Table#9 Time versus knowledge, comprehension and application as (lower order questions) for Tertiary Data

Time V.S Type of Questions	Know	Comp	App	Total
<= 2:00:00	7	32	3	42
>2:00:00	51	11	18	80
Total	58	43	21	122
Percentage	42.65%	31.62%	15.44%	89.71%

The above table indicated that the questions asked by the teachers in Tertiary Level were quite factual and low level of order with respect to the level of knowledge, comprehension and application of the Bloom Taxonomy. It was observed that, total of 42.65 percentage questions were posed under the knowledge category, 31.62 percentage questions posed under the comprehension category and 15.44 percentage questions posed under the application category. Lower order questions of Tertiary Level constituted 89.71.

Table#10 Time versus analysis, synthesis and evaluation as (higher order questions)

Time V.S Type of Questions	Ana	Synt	Eva	Total
<= 2:00:00	2	0	1	3
>2:00:00	9	2	0	11
Total	11	2	1	14
Percentage	8.09%	1.47%	0.74%	10.3%

The table above meant that at analysis, synthesis, and evaluation levels, there is a very low number of questions that were posed in taxonomy as specified by Bloom. There was a very low attempt to ask higher order questions among the teachers in Tertiary Level. One question was asked and it fell under analysis category, 8.09 percent, synthesis category, 1.47 percent and evaluation category, 0.74 percent. The overall percentage percentage of higher order questions was also 10.3 at Secondary Level.

The null and alternative hypothesis

- **H0:** The Level difference in the types of questions is not considerable both in the Levels.
- **H1:** There is significance difference between the types of questions of both the Levels.
- The significance level at $\alpha = 0.05$

Table#11 Comparison of the type of Questions at Secondary and Tertiary Level

Levels Time	Type/Nature of questions						Total	χ^2
Secondary Level Data 97:05:00	K	Comp	App	Ana	Syn	Eva	1150	2.873
	638	288	125	77	14	8		
Tertiary Level Data 38:45:00	58	43	21	11	2	1	136	7.504
Total	696	331	146	88	16	9	1286	10.377

df= 5

Table value= 11.07

Value of natural (2 calculated) =10.377 and value of natural (2 at 5 degrees of freedom in table is 11.07 at 5 percent of significance. We thus reject the difference between the types of questions that teachers use in secondary and tertiary level as significant and we accept the null hypothesis.

As shown in the table overall questions at Secondary Level was 1150 in the time period of 97 hours 05 minutes and the overall questions in tertiary level were 136 in the time period of 38 hours 45 minutes. The questions that were asked on the majority are lower order questions at Secondary and Tertiary Level.

DISCUSSION

According to the study result, most of the teachers teaching at the secondary level were employing lower order and convergent questions and even percentage of higher and divergent question was very small. The

results are in accordance with the results provided by Gall (1984) that teacher rarely ask questions of higher order thinking. This can be due to the fact that the teachers have not been trained on how to pose the right questions as Cecil (1995) has noted. The observation has equally been strengthened by the discovery produced by Ciardiello (1998) who found out that at the post secondary level, the teachers were not exposing the learners to high level divergent questions in the classroom. In the same manner, Hussin (2006) also performed a research concerning the question dimensions in Malaysia and has found that the national curriculum of Malaysia anticipates learners to be critical thinkers but the pedagogues on the ground instruct with low level and factual questions and discourage the learner to think critically. Critelli and Tritapoe (2010) analyzed the methods of effective questioning with the view of enhancing attendance during the lesson.

The most common type of questions were the knowledge based questions in secondary level and in the tertiary level and then comprehension, application, analysis, synthesis and evaluation. The outcome of the study is consistent with the works by Dumteeb (2009) who investigated the question on the dominance of knowledge. This was because of lesson domination and classroom atmosphere relying on the direction the lesson was conducted.

Another issue that has been addressed is that the questions posed in the two levels were very low. The frequency of queries on the secondary level to sum 5825 minutes was just 20 percent and in tertiary level the researcher visited twenty four courses of the universities lecturers and professors and discovered that the percentage of queries in 2325 minutes was just 6 percent. This is not compatible with the findings of Brown and Wragg, (1993) who cites to the research study conducted by Stevens (1912) which showed that it can be said on average that a teacher will pose 400 questions to a student in a day. Additionally, Johnston (1990) referred to by Ellis, (1994) in conducting their research found out that they too took a tally of 522 questions of any category in three hours of teaching.

It has also been noted that the teachers failed to give the students time to respond after asking questions to them. These findings are confirming the study by Powell and Caseau (2004), Hastings (2006) that the teachers have very little time to dedicate average of one minute to respond to their questions. One of the conclusion made relative to this was by Rowe (1974) who concluded that a teacher would wait up to 0.9 seconds before they got the students to respond to a question.

The study findings depicted that the teachers posed more convergent as opposed to the divergent questions. The explanation why a study by Borich (2000) tends to support the findings is due to the fact that the proportion of convergent questions which were asked in a classroom is by far higher than the divergent ones.

The researcher also noted that the educators in both the levels lacked the ability to ask the appropriate kind of questions. The strength of the observation became clear when Tritapoe (2010) was observed and was identified to lack the skill of posing the right questions to the teachers.

The findings of the research could also underline the step in which the study by Sulaiman and Noordin (2005) takes to examine the degree to which teachers can employ six levels of questions of the Bloom Taxonomy in instructing investigation abilities. They discovered that during most cases, teachers pose knowledge questions and then proceed to analysis and comprehension levels of question.

The Pakistani teachers are familiar with little in terms of Bloom taxonomy of questions. The major concerns aired by the teachers are primarily on the syllabus completion as opposed to plan that would lead to critical thinking.

CONCLUSION

According to findings and discussion the following conclusions are made.

Juridically, the study has shown that weak asking questions practice has been exhibited by most teachers with majority posing mostly low order and convergent questions at secondary level which was unable to assist in developing ability of critical thinking among students at secondary level.

The time taken by the teachers in the secondary and tertiary level to hand submit students is minimal. Teachers were not aware of the positive influence of wait time increment and divergent responses. Another conclusion was made as one of the findings but it showed no significant difference in questions of the type of teachers at secondary and tertiary level.

The study observation revealed that the same manner of questioning strategy was used almost equally in both secondary level and tertiary level as the teachers taught to make the student comprehend what has been taught. The research questions included some questions which indicated that lower order questions and convert questions elicited the highest response levels of the students. Uncertainties When it comes to analysis, synthesis and evaluation level questions, the use of questionable questions was not prevalent. Practically the use of these three levels was not reached.

RECOMMENDATIONS

The following recommendations have been given in the light of findings and conclusion

1. It is shown according to the outcome of the findings that the secondary and tertiary level teachers asked low level inquiry questions in the majority of cases but it is indicated that a combination of lower and higher level questions ought to be used to promote student learning and achievement.
2. The questions offered by the teachers were quite factual, but the teaching goal probably was the promotion of the higher order of thinking. It is therefore recommendable that when pursuing a great goal of only knowing or learning the basic learning or handling the skill only, the teachers ought to query facts. Higher cognitive questions come in handy in case of a necessity to think more independently and because it is wished that higher level of thinking should be promoted by teaching.
3. During the observations, it was observed that teachers in classrooms at secondary and tertiary level did not pose good number of questions. Question culture was not present in the classes. It requires inculcating a culture of thinking where questions are posed in the classrooms to introduce the critical way of thinking among the students.
4. It was also found that the questions which were asked by the teachers were mostly convergent as compared to the divergent questions. The students should be asked divergent questions that should be open ended. The teachers should use more convergent questions to teach facts, rules, sequence of actions and use divergent questions to teach concepts, pattern and abstractions.

5. Based on the observations carried out in the course of the research it was discovered that teachers could not provide sufficient wait time to the student following the enquiry of a question in the secondary and tertiary level. It would therefore be recommendable that students should have sufficient time where they should be allowed to find and validate answers.
6. It was noted that the nature of the climate in most of the Pakistani classrooms does not encourage the students to ask and answer questions. The most significant aspect of these classrooms was silence and order and strict compliance with the rules imposed by the teacher was responsibly followed. In this kind of situation student minds were not developing and never fully indulged themselves in learning. A positive environment should be encouraged in order to ensure that all hands are up.
7. In its research, observations showed that there was no proper planning of how to ask the right questions. It is thus proposed that good preparation and planning will help the teachers to formulate better questions in erudition of giving priority to the ability of students to think critically.
8. Most of the teachers did not have a clue regarding the use of questioning technique in the classroom. Thus, it is suggested that special training to teachers is provided and six levels of question proposed by Bloom Taxonomy (1956) can be presented in all levels of teacher education programme.
9. On this essential issue, teachers training programmes such as workshops, symposium, and refresher courses are supposed to be done to acquaint the teachers with the various levels of questions in the Taxonomy of Blooms.
10. The observation exercise in the classrooms was done by the researcher himself. The number of observers used in the future studies should increase to one or more so as to achieve more genuine and dependable findings.

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