THE SPARK

THE APPLICATION OF BLOOM TAXONOMY FOR THE AMELIORATION OF EXAMINATION SYSTEM- A QUALITATIVE STUDY AT HSSC LEVEL IN KHYBER PAKHTUNKHWA, PAKISTAN

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ABSTRACT

Background: This qualitative study was aimed to apply Bloom Taxonomy for the improvement of examination system at Higher Secondary School Certificate (HSSC) level in Khyber Pakhtunkhwa, Pakistan. The study tried to explore the techniques of improvement of examination system by employing Bloom Taxonomy in teaching learning process as well as in the setting of examination papers to bring credibility in the result of examination at HSSC level. Method: For collection of data purposive sampling was used. Through four sets of semi-structured interviews, from the four respondents, i.e., educationist, chairman and Controller BISE (Board of Intermediate and Secondary Education), and an Associate Professor from the department of Higher Education of Khyber Pakhtunkhwa. Results: Four themes emerged from these interviews which were properly analyzed through thematic analysis. The results of the study showed that holistic teaching, SLO (Student Learning Outcomes) based examination, variety of questions in papers and combination of all learning domains will properly help in the improvement of examination. Conclusion: The study recommends the incorporation of Bloom Taxonomy in both teaching learning practices, as well as for the setting of examination papers accordingly.

INTRODUCTION

Teaching learning and examination are inalienable from each other; ignoring one vitiates the other naturally. Teaching in classroom is properly determined by the results of examination conducted by Boards, what and how of teaching and learning are significantly affected by the ways and means used by the system of examination (Kaka, Dehraj, & Jamali, 2019).

The basic aim of examination is the assessment of students so that teaching and learning could be enhanced in the light of examination results, the issuance of

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certificates is the affirmation of a successful process of teaching and learning (Akram, 2020). The pedagogical skills of the teachers in schools are needed to be enhanced, as it is usually teacher centered. On the other hand, the syllabi are also above the cognitive level of the students. Its assimilation is difficult on account of its abstract nature, and that is why, the students resort to rote memorization (Chamadio, Pandhiani & Iqbal, 2016).

It is also one of the major problems of examination in the context of Pakistan, that due to the pressure of passing the examination with good marks, teachers are confined only to cram the textbook materials by the students, and the students also rote these material words by words and sentence by sentence (Shah & Saleem, 2010). On the other hand, paper setters of the BISEs' set such papers (knowledge-based papers) in which crammers can score highly and a substantial part of the papers are comprised of such questions, which do not transcend beyond the lower degree of learning (Nauman, 2017).

It is an established fact that the existing examination system in Pakistan generally and in Khyber Pakhtunkhwa particularly is promoting rote learning culture, which is really a low level of learning. The sole aim of Bloom Taxonomy (1956) is to upgrade, the process of teaching and learning from the lower level of rote memorization (remembrance) to the higher level of analyzing, evaluating and creating. In the wake of incorporating these domains, the result of the students would be automatically credible and trustworthy.

This study basically deals with the application of Bloom Taxonomy along with all its revised concerned stages by Lorin W. Anderson (Bloom's Student) to the existing system of examination in the context of Khyber Pakhtunkhwa. The study is aimed to ascertain that to what extent the existing examination system at HSSC (Higher Secondary School Certificate) level in Khyber Pakhtunkhwa is dealing with lower and higher degree of learning teaching process with the following objectives.

  a) To analyze the existing system of examinations by applying Bloom's Taxonomy for the possible improvement in the system through effective teaching learning process and papers setting accordingly. As through setting such papers the marks obtained would ultimately credible as these questions would be purely answerable by creative quality of the students.
  b) To suggest some possible recommendations for the improvement of examinations system, and to bridge the gulf between teaching learning process, the level and procedure of examination system as per Bloom's Taxonomy application.

REVIEW OF THE RELATED LITERATURE

Dr. Benjamin Bloom put forward his famous taxonomy in 1956 for the amelioration of teaching learning process from the lower level of cramming and rote learning (memorization) to the higher degree of analysis, creation and evaluation as problem solving activities (Orey, 2010). To Bloom, the original learning domains were three, which he named as cognitive, affective and psychomotor. The first is concerned with production of knowledge and mental skills; the second is the center of emotions and attitudes, whereas the psychomotor domain is that area of learning where physical skills

(engineering) etc. are learnt.

Later on in mid-nineties, Lorin W. Anderson revised the cognitive domain, which was named as new Bloom Taxonomy with the change named as creating, evaluating, analyzing, applying, understanding and remembering (Krathwohl & Anderson, 2001). The public examinations are usually conducted annually/bi-annually, which have a vital role in determining the course of learning and teaching process at classroom level, which eventually aimed to evaluate the education system (Chandio, Pandhiani & Iqbal, 2016).

Bloom's Taxonomy teaches us that learning transforms from lower to higher level; first the basics are needed to be learnt, as before making a building, the building blocks/bricks are made and after that the building proceeds on words (Rupani, 2011). The intent of Bloom Taxonomy was to inculcate the reality to the teachers that learning outcomes were naturally arranged in such a manner, that they should bring the students from mere information towards practical application of the knowledge into real life, as creativity is that capability, which transforms a rote learner into original writer (Riazi, 2010).

Bloom's Taxonomy (1656) as well as new Bloom's Taxonomy (2001) takes their start form knowledge. Both have their base on knowledge that the learner should have some basic knowledge about the phenomena. Then the stage of understanding comes from that phenomenon. In the stage of application, the knowledge is applied for its utilization in the real life. At the stage of analysis; the knowledge regarding the phenomena is broken down in segments for finding connection with other sets of information. At the apex of Bloom's Taxonomy come the stages of creation and evaluation.

Creation is the production of higher degree thinking and evaluation is the critical appraisal of the learnt objectives or achievement of a target which enable the learner to reuse this achievement or at least modify it to suit the new need (Paul et al, 2012). As a learning scheme, Bloom's Taxonomy is of course the most outstanding one (Callister, 2010), but it is worth noticing that cognitive domain and its new six stages are given much more importance, while critics and writers say little about the two other domains i.e., affective and psychomotor; where ethics, emotions, morality and religion etc. are quite ignored (Dewitt et al, 2014).

The factual learning is really difficult if it is not made easy. Rote memorization is a tiresome exercise, unless and until it is associated with other concepts of practical life (Kolb, 2014). Learning by doing is easier, rather than doing by what has been learnt. Practice makes a man perfect means that a learner forgets, what he memorizes, but he learned what he has done practically (Boud, 2013).

Heuristic learning/activities-based learning is durable and is easily transformable through apprenticeship as compare to the learning of abstract things which have a little existence in the practical shape (Hyder & Bhamani, 2016). Motivation is excessively essential for any type of learning; without it the process of teaching learning will be rendered as fruitless. Assessment practices have been proved lucrative for expediting the motivation of the learners, as during public examinations, the students have been found engaged in their learning practices (Boud, 2013; Herrnstein & Murray, 2010; Kolb & Kolb, 2012).

Hayat and Malik (2013) concluded that most of students, who have high scores and are

even toppers of the Boards have failed the entrance tests. Ali and Ali (2010) found that when the most brilliant students of the Boards remain unsuccessful, it means that rote memorization affect the system of examination, and college education is confined only to showing good results, which's credibility is smashed by entrance test results.

Nusche (2008) pointed out that the examination papers must be balanced, covering all the cognitive levels of the students i.e., lower, intermediate and higher cognitive levels. Chandio, Pandhiani and Iqbal (2016) observed that different education boards (BISE's) have not kept balance in the setting of papers; some of them have tilt towards one domain and ignore the other one, obvious from the below given table.

Board	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating
Karachi	30%	11.7%	10.7%	36.9%	5.8%	4.9%
Hyderabad	23.5%	7.05%	29.4%	30.6%	3.5%	6.9%
Sukkur	29.6%	4.6%	25.9%	29.6%	5.6%	4.6%

This study was aimed at utilization of Bloom's Taxonomy for the improvement of examination system starting from the upgrading teaching learning and culminating on the balanced setting of examination papers, which cover all the relevant domains of Bloom Taxonomy.

RESEARCH METHODOLOGY

The study is qualitative in nature which is a naturalistic inquiry for interpretation and explanation of human experiences; which is also called phenomenology. Through phenomenology data is collected and systematically organized, text materials are interpreted properly, and interviews of experts and their observations are analyzed precisely.

Moreover, in such research a social phenomenon is investigated as experienced by the persons of their specific walk of life or field of interest (Shaker, Khaliq & Ul-Kashif, 2020). Holloway (1997) adds that qualitative research is a social inquiry where people are expected to interpret and explained their gained experiences.

In the present study; the view points of the field experts were taken; and the literature survey was also employed for the proper guidance of this study to ascertain how the Bloom's Taxonomy can be applied to improve the examination system at HSSC (Higher Secondary School Certificate) level in Khyber Pakhtunkhwa, Pakistan.

SAMPLE OF THE STUDY

As per requirement of the qualitative research, the sample of this study is quite smart, comprised only on four respondents. Two from BISE, third from Private Sector University and the fourth one from the Department of Higher Education Khyber Pakhtunkhwa with their pseudo names for keeping the research ethics/norms of anonymity and confidentiality given in table.

S. No.	Pseudo Name	Department/Institution	Age	Experience.	Qualification

1	Dr. M. Zahid	City University Peshawar	50	7 Years	Ph.D (Education)
2	Mr. Mehsood Alam	Chairman (BISEP)	55	5 Years	MSc Biology
3	Mr. Ashraf Khan	Controller of Exam (BISEP)	53	20 Years	MSc (Statistics)
4	Dr. Haider Iqbal	Associate Professor	57	25 Years	Ph.D (English/Regional Languages)

DATA COLLECTION TOOL

Semi-structured face to face interviews were used as data collection instrument; four sets, of semi-structured interviews were devised. First for chairman Board, second for controller of examinations, third for additional Director Elementary and Secondary Education Department Khyber Pakhtunkhwa and the fourth for the educationist of Private Sector University (City University) Peshawar.

All the interviews were recorded through voice recorder. The responses of the interviewees were analyzed properly through thematic analysis technique.

RESULTS

The following themes emerged in the wake of interviewees' responses.

a) Holistic Learning – Dr. M. Zahid's View Points

Through this investigation, it was revealed that all domains of learning are in the need to be given appropriate attention; in this regard Dr. M. Zahid explained his view point. *"A balanced learning system is the need of secondary school students. Teachers can kindle the love of learning in the students though enquiry reflection and questioning; instead of passive memorization of facts. Stress should be laid on the whole growth of learner, instead of improving some specific faculties. Holistic education promotes growth in all areas of human experiences, whether they are intellectual, emotional, social or so forth. Holistic learning is experimental in nature. The use of all faculties makes a student perfect."*

"Let me tell you" Dr. M. Zahid added that *"Knowledge without experience is only a philosophy. Cramming facts and figures and reproducing them in the examination papers is of little worth"*. *"Moreover"* he elaborated, *"Imbalanced educational growth is at least clumsy at secondary school level, for instance if a student is fluent in English speaking, but is not well versed in the recitation of Holy Quran. Yes, I am also in the favor of specific intelligence, in this type intelligence a student is specially gifted in a specific area of learning but it is dangerous that most of our students are poor in mathematics and good in Urdu and social sciences. So, my point is that, all domains of learning should not be ignored so that secondary education could be imported homogeneously. There is a little room for incorporation of Affective as well as Psychomotor Domains in teaching learning process and assessment at BISEs level. The system should not ignore the practical skills and emotional expression of the students at*

Secondary School level."

The finding of this study showed that all the learning needs could be fulfilled if the teachers give attention to all the learning spheres with especial inclusion of Affective and Psychomotor Domains properly with adequate pedagogical skills.

b) SLO (Student Learning Outcomes) Based Examination- Mr. Mehmood Alam's Accounts

Through this study it was revealed that the examination system is gradually shifting from conventional culture of memorization towards concept learning based examination. In this regards Chairman BISEP (Board of Intermediate and Secondary Education Peshawar) explained his view point, *"We have declared our policy in black and white that the coming examinations will be totally SLO Based; in which the knowledge of rote memorization would be discouraged at large." "Of course,"* he added that *"The student will have material for cheating in front of him; but even through cheating he will not be able to solve the questions."*

In the response of lower order cognation, he explained that "*We are trying to transform the questions of papers from remembering towards understanding to test the ability of the student to what extend he can summaries a concept using his own words. Perhaps you know, in O, level and A, level examinations of United Kingdom, this thing is properly stressed."*

It becomes clear from the findings of this study that examination Boards are trying to proceed from lower-level cognation towards higher degree of cognition.

c) Varity of Questions in Papers Setting- Mr. Ashraf Khan's Account

The respondent of this segment Mr. Ashraf Khan explained that "*Room is given to all level of students in paper setting, some questions are totally based on remembering as most of MCQs (Multiple Choice Questions) are such a one; brief questions are mostly concept based, in which students are directed to apply their learning to the solution of practical problems, for instance; What would result if? or What approach would you select?" "Beside these"* he explained that "*A minimum passing criteria is also kept in view for paper setting to accommodate the weaker students."*

This study finds out that the examination papers are not only knowledge based, where only information are tested, a freedom of choice is also given in the papers, so that different level of students could be facilitated.

d) Combination of Different Learning Domains- Dr. Haider Iqbal's View Points

The interviewee of this segment Dr. Haider Iqbal explained that "*No building can be constructed without starting from the base, so the basics cannot be ignored, let suppose we say that the three levels of knowing, understanding and applying are basic, while analyzing (breaking of material into parts and finding relationship in parts), synthesis (which is creating of new things by combination of ideas from various sources to form a new whole) and evaluating (which is the development of opinions and making value decision regarding issues) are the higher level of learning, and if keep them apart from the fundamental levels. So resultantly the learner of basics will not be able to proceed to the higher level. The principle of moving from easy to difficult cannot be denied in*

any learning process." He adds, *"if we want to improve the examination system, we should restore its credibility. If the marks of students are not trustworthy, as the initiation of NTS, ETEA etc. was absolutely based on the mistrust that marks of FA/FSC are not reliable, and the marks of NMDCAT, NTS, ETEA and LAT etc. are trust worthy and credible. So, cramming should be eradicated from the system."*

The finding of the study revealed that haste in skipping from basics to pinnacles is dangerous and in the cognitive progression of learning all the six levels of knowing, understanding, applying, analyzing, creating and evaluating are needed to be given due proportion. The marks obtained in the presence of these domains in examination papers would ultimately restore the trust deficit.

DISCUSSION

The public examination at HSSC (Higher Secondary School Certificate) level in Khyber Pakhtunkhwa is severely criticized on account of examination mal-practices which are mostly caused by defective teaching (Akram, 2020).

The conventional examination system does not promote students' learning ability, critical approach, analytical and evaluation skills. In addition to this the syllabi are somewhat above the cognitive level of the students, so they cram the course, while the craze of good examination result, keep the teachers confined to complete the course and students prepare themselves for examination in the conventional patterns. The study of Shah and Saleem (2010) is in consonance with the findings of this study.

More over the findings of the current study is in contrast with the study of Chandio, Pandhiani and Iqbal (2016) which states that the Board of Intermediate and Secondary Examination (BISE) paper setters give little heed to the questions of higher degree.

The study of Riazi (2010) fond that intent of Bloom Taxonomy was to upgrade the learning of the students from mere information towards the practical use of knowledge, the findings of Raizi's (2010) are in consonance with the present study.

The study of Paul et al (2012) is in resemblance with this study which found that real learning is that which enable the learner to reuse the achievement to suit the new need or to apply it in a completely different situation for the solution of practical problems.

The study of Bond (2013) also affirms the findings of the current study which lay stress on learning by doing.

The study of Nusche (2008) which emphasis on the balanced formation of examination papers, covering all the cognitive levels of the students, is in complete consonances with the findings of this study. Conclusively, it is inference from the key findings of this study that defective teaching on the school level should be replaced by holistic and harmonies teaching as well as all the six stages of Bloom Taxonomy should be incorporated in the setting of examination papers at Higher Secondary School level in the context of Khyber Pakhtunkhwa.

The finding of the present study is in consonance with the study of Hayat and Malik (2013) that rote memorization is catastrophic and leads to mistrust of examination results.

The findings of this study are in consistence with the study of Ali and Ali (2010) that only showing high marks is not enough, and the higher degree thinking and approach is needed to be incorporated in the examination system.

CONCLUSION

An improved examination system can really improve the process of learning and teaching at school level. The application of new Bloom Taxonomy i.e., especially its six domains/stages of learning may improve the practices of teaching learning and if examination papers are set, keeping these domains in view may eradicate so many examination mal-practices, especially cheating and rote memorization.

This study revealed that holistic and homogeneous teaching at school level can mitigates irregularities in public examination. Similarly, it was also revealed that educational Boards (BISEs) has also shifted from the traditional paradigm to SLOs based examination and resultantly examination papers are set in such a style in which a substantial variety of questions are put.

Finally, this study also revealed that the amalgamation of all six domains of the new Bloom Taxonomy can improve the learning ability of students which will eventually mitigate the abuses of public examination, and the marks obtained by the students would be original and without cheating, which will eventually restore the credibility of the examination at HSSC level in the context of Khyber Pakhtunkhwa.

RECOMENDATIONS

The following recommendations are offered on the bases of the findings of this study.

a) The contents of Bloom Taxonomy are quite natural, so it should be utilized to the maximum both in learning teaching at classroom level as well as in the setting of papers at HSSC level in BISEs.
b) Teaching capacity of the teachers should be enhanced, so that new pedagogical skills could be used in classroom teaching.
c) Training of paper setters and examiners is timely needed on BISEs level. So that such papers could be set to hamper the cramming, and build the credibility of the results shown by BISEs of Khyber Pakhtunkhwa.
d) The Affective and Psychomotor Domains should be given their due place in teaching as well as in examination system at HSSC level.

SUGGESTION FOR FURTHER RESEARCH

A study could be conducted on the eradication of cheating through SLOs based papers.

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