A CRITICAL ANALYSIS OF TEACHER EDUCATION QUESTION PAPERS : IMPLICATIONS AND SUGGESTIONS FOR REFORMS

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ABSTRACT

The world over, there is a paradigm shift in school as well as higher education with an emphasis on student learning, development of critical thinking skills, self-regulation, teacher commitment to life ling learning, reflective thinking and so on. This necessitates a paradigm shift in teacher education too. The quality of teacher education depends not only on professionally sound and pertinent curriculum and on the way the curriculum is developed and executed in Teacher Education Institutions (TEIs) but also on the evaluation system as well. The present study focused on analysing 19 question papers of B.Ed. syllabus of a State university in Western India using Bloom's Taxonomy. The study found that predominantly, the instructional objectives of the selected courses of B.Ed. programme included Knowledge and Understanding and to a much lesser extent Application. The same was observed in case of question papers. On the basis of this analysis, it is suggested that in-depth workshops need to be organised for imparting training to teacher educators on curriculum design and development, developing question paper especially suitable to constructivist teaching and learning.

Key words: - Bloom's Taxonomy, Instructional Technology.

Background

The world over, there is a paradigm shift in school as well as higher education with an emphasis on student learning, development of critical thinking skills, self-regulation, teacher commitment to life long learning, reflective thinking and so on. This necessitates a paradigm shift in teacher education too. The quality of teacher education depends not only on professionally sound and pertinent curriculum and on the way the curriculum is developed and executed in Teacher Education Institutions (TEIs) but also on the evaluation system as well. National Curriculum Framework (2005) emphasised and recommended adoption of constructivism and recommended active role of teachers as facilitators in the process of learning in terms of knowledge construction rather than knowledge transmission. These recommendations were meant for school education. However, the same would have significant implications for teacher education programmes. Thus, it is expected that TEIs would be bringing in reforms in the curriculum including the objectives of the programme, syllabus as well as in the methods of evaluation suitable to constructivism.

This rationale led to the present study which inquired into the objectives of the B.Ed. programme and some of its selected courses and the concerned question papers. In the present study, the following courses were examined with reference to (a) Objectives of the selected courses and (b) Question papers :

(1) Education Psychology, (2) Development of Educational System in India, (3) Educational Administration & Management, (4) Educational and Mental Measurement, (5) Computer Education and Information Technology, (6) Environmental Education, (7) Essentials of Educational Technology and Management, (8) Teaching in Emerging Indian Society, (9) English, (10) Biology, (11) Commerce, (12) Mathematics, (13) History, (14) Civics, (15) Economics, (16) Geography, (17) Chemistry, (18) Physics and (19) Home Science.

Conceptual Framework of the Study

The analysis of question papers in the present study is based on Bloom's taxonomy. Bloom's taxonomy makes use of a multi-tiered scale to elucidate the extent of expertise required to attain each measurable student-outcome. Organizing measurable student outcomes in this way allows a teacher to choose suitable classroom assessment techniques for a particular course. Blooms' taxonomy for cognitive domain classifies instructional objectives into six categories, knowledge, understanding, application, analysis, synthesis and evaluation. The categories follow the maxims of 'from simple to complex' and 'from concrete to abstract'.

Review of Related Literature : A few pertinent studies conducted in the present decade have been reviewed here. Romanovs, Soshko, Merkuryev & Novickis (2011) conducted a case study of evaluation of engineering course content by Bloom's Taxonomy. The case study evaluated the engineering course "Logistics information system" content using the cognitive domain of Bloom's taxonomy model. The authors introduced experience in elaborating course content, including description on the course teaching methods, outcomes, activities and assessment system. In order to improve course quality, Bloom's learning outcomes model was found to a crucial element. Ulum (2016) conducted a descriptive content analysis of the extent of Bloom's Taxonomy in the reading comprehension questions of the course Book Q: skills for success 4 reading and writing. The researcher formulated the question "*To what extent do the reading sections of the EFL course book Q: Skills for Success 4 Reading and Writing cover the lower and higher order cognition levels of Bloom's taxonomy?*". EFL course book Q: Skills for Success 4 Reading and Writing by Oxford Publishing was analysed using descriptive content analysis method. Findings of the study suggested that the course book lacked the higher level cognitive skills involved in Bloom's Taxonomy. Chandio, Pandhiani & Iqbal

(2017) adopted Bloom's Taxonomy and studied its role in improving assessment and teaching-learning process. The study applied Bloom's Taxonomy to the prevailing assessment system at the level of secondary education in Sindh. The data were collected from five years' question papers used by the Board of Intermediate and Secondary Education (BISE), Karachi, Hyderabad Sukkur at secondary level for the subject of English. The questions asked in these papers were classified and analysed using Bloom's Taxonomy to determine whether the present assessment system focuses on the lower degrees of learning like remembering, understanding, applying or it surpasses the higher degree such as analysis, synthesis, evaluation and creation. The data were quantitative necessitating the use of hence SPSS. 20 for analysing and drawing conclusions and results. The findings of this study are expected to improve both assessment and teaching-learning processes, which will enhance the learner to higher levels of analysis, evaluation and creativity from merely practising description, rote-learning and memorisation. Tabrizi & Rideout (2017) adopted Bloom's Taxonomy to analyse support to critical pedagogy in active learning. The study explored how Bloom's taxonomy could describe the activities involved in active learning and how those activities were necessary for critical pedagogy. Banage,

Kumara, Brahmana & Paik (2019) conducted a study of Bloom's Taxonomy and rules-based analysis approach to questions for measuring the quality of examination papers. The study attempted to develop a suitable methodology to categorise final examination question papers based on Bloom's Taxonomy to analyse computer science related papers. The study was conducted to check whether examination questions complied with the requirements of Bloom's Taxonomy at various cognitive levels. Natural language processing techniques were used to identify the significant keywords and verbs which are useful in the determination of the suitable cognitive level. The derived model introduced a quantitative approach to categorise undergraduate examination papers.

Need of the Study : A review of related literature reveals that several studies have been conducted using Bloom's taxonomy in the present decade the world over in order to analyse question papers of different subjects. In most of the cases, weaknesses of the question papers have been identified. The present study too adopts Bloom's Taxonomy for analysing question papers of B.Ed. programme.

Statement of the Problem : The study intends to critically analyse question papers of B.Ed. with a view to ascertain its implications and make suggestions for reforms.

Objectives of the Study : The study was conducted with the following specific objectives :

1. To study the objectives of the selected courses of B.Ed. programme using Bloom's Taxonomy.
2. To study the question papers of the selected courses of B.Ed. programme.

Methodology of the Study : The study may be termed as descriptive action research since the study has focused its attention only on one university and the specific findings cannot be applied to other subjects, programmes or universities. Besides, the findings may be utilised for improving the examination system in the concerned university and programme. The study undertook an analysis of the instructional objectives and question papers of selected question papers of B.Ed. programme.

Sample : Its Nature and Size : The sample consisted of 19 courses (papers) of the B.Ed. programme offered by one state university situated in western India. It included core as well as elective courses including methodology of teaching school subjects. The study included 75% of the total number of courses offered by the university. These courses were selected using simple random sampling technique. Thus, 19 courses were selected for the present analysis. The question papers selected for analysis were those set for the examinations conducted by university.

Scope and Delimitations of the Study : The study is restricted to only one state university in Western India. It excludes other state, central, private or deemed in India. It includes question papers of selected courses only from the B.Ed. programme. It excludes other professional programmes from its purview.

Data Analysis : Data were analysed by the researchers keeping in mind Bloom's taxonomy of educational/instructional objectives.

A. Table 1 shows the percentage of educational objectives which fall into the six categories of Bloom's taxonomy of educational/instructional objectives, namely, knowledge, understanding, application, analysis, synthesis and evaluation. It also shows the percentage of questions which fall into the six categories.

Table 1 : Percentage of instructional objectives and questions under Blooms' taxonomy

No.	Subject	Instructional Objectives of the Course						Questions					
		Kn	Un	App	Ana	Syn	Eva	Kn	Un	App	Ana	Syn	Eva
		%	%	%	%	%	%	%	%	%	%	%	%
1	Educational Psychology	63	35	2	--	--	--	40	60	--	--	--	--
2	Development of Educational System in India	38	62	--	--	--	--	--	100	--	--	--	--
3	Educational Administration & Management	25	75	--	--	--	--	5	85	10	--	--	--
4	Educational and Mental Measurement	42	58		--	--	--	11.75	19.25	69	--	--	--
5	Computer Education and Information Technology	35	55	10	--	--	--	5	90	5	--	--	--
6	Environmental Education	23	77	--	--	--	--	27.5	62.5	10	--	--	--
7	Essentials of Educational Technology and Management	31	69	--	--	--	--	22.5	62.5	15	--	--	--
8	Teaching in Emerging Indian Society	45	55	--	--	--	--	--	90	--	10	--	--
9	Methodology of Teaching English	63	37	--	--	--	--	17.49	70.82	11.66	--	--	--

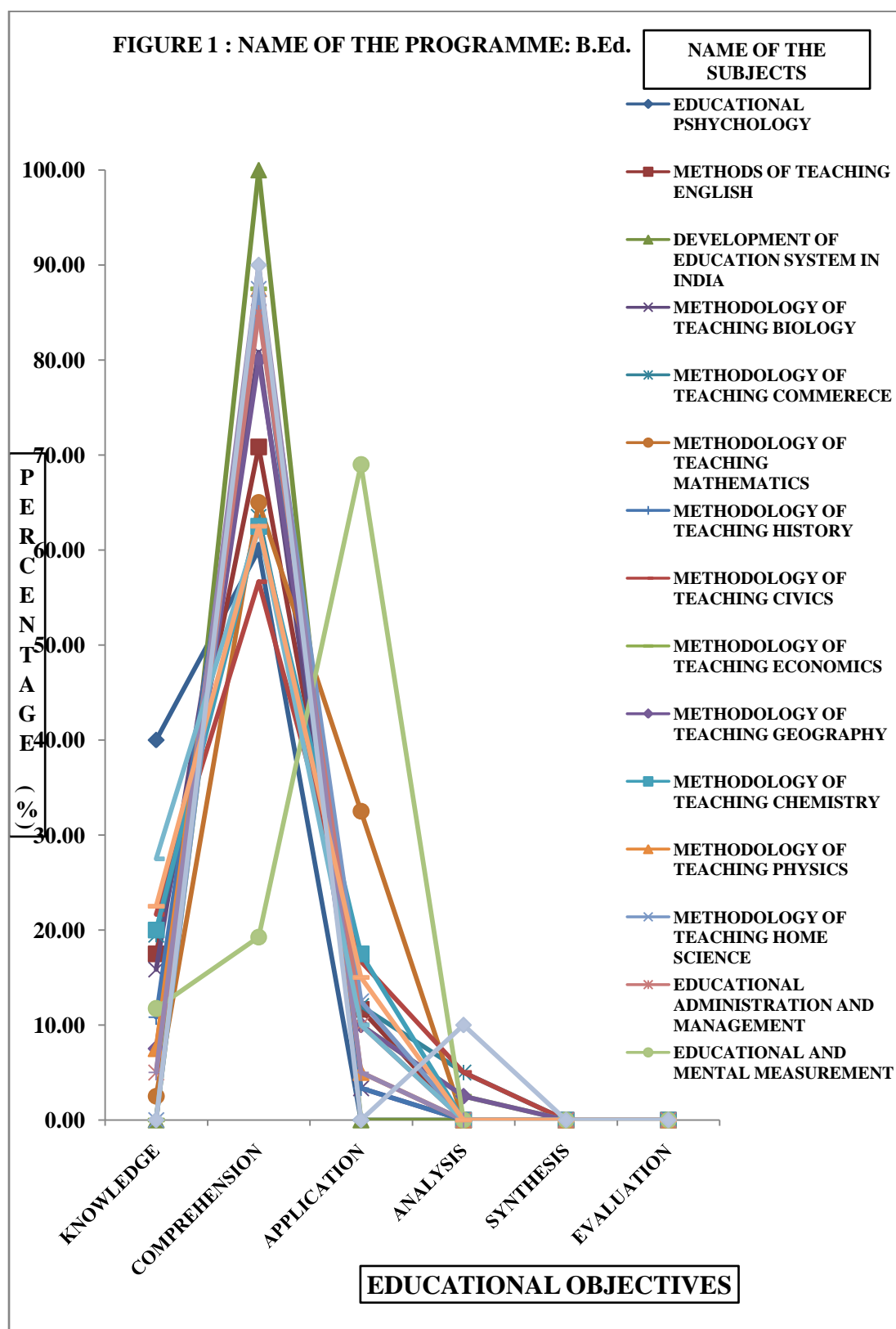| No.	Subject	Instructional Objectives of the Course						Questions					
10	Methodology of Teaching Biology	48	52	--	--	--	--	15.83	80.83	3.33	--	--	
11	Methodology of Teaching Commerce	39	61	--	--	--	--	19.5	63.5	12	5	--	--
12	Methodology of Teaching Mathematics	37	73	--	--	--	--	2.5	65	32.5	--	--	--
13	Methodology of Teaching History	51	49	--	--	--	--	10.83	85.83	3.33	--	--	--
14	Methodology of Teaching Civics	65	35	--	--	--	--	21.66	56.66	16.66	5	--	--
15	Methodology of Teaching Economics	40	60	--	--	--	--	--	87.5	10	2.5	--	--
16	Methodology of Teaching Geography	31	69	--	--	--	--	7.5	80	10	2.5	--	--
17	Methodology of Teaching Chemistry	28	72	--	--	--	--	20	62.5	17.5	--	--	--
18	Methodology of Teaching Physics	33	67	--	--	--	--	7.5	87.5	5	--	--	--
19	Methodology of Teaching Home Science	30	60	10	--	--	--	87.5	12.5	--	--	--	--
	TOTAL	**40.37**	**59**	**1.16**	**--**	**--**	**--**	**20.13**	**69.57**	**15.40**	**5.00**	**--**	**--**

Observation : It can be seen from table1 that

1. On an average, 40.37% of educational/instructional objectives focus on imparting knowledge, 59% try to develop understanding about a concept in the students and 1.16% are aimed at developing the ability to apply concepts learnt amongst students. None of the educational / instructional objectives were seen to be aimed at developing the abilities to analyse, synthesise and educational / instructional objectives evaluate.

2. Similarly, 201.3%, 69.57%, 5.40% and 5% of the questions were aimed at testing acquisition of knowledge, understanding, application and analysis amongst students. None of the questions were aimed at testing acquisition of abilities to synthesise and evaluate i.e. higher order abilities.

Figure 1 shows these results graphically. The figure corroborates the observations through table 1.

FIGURE 1 : NAME OF THE PROGRAMME: B.Ed.

A. Relationship between Instructional Objectives of the Course and the objectives of question papers

This was analysed using the non-parametric techniques of Chi-square and Cramer's V.

No.	Subject	x^2	P	Cramer's V	Interpretation
1	Educational Psychology	13.71	0.0011	0.2618	Moderate Association
2	Development of Educational System in India	44.48	<0.0001	0.4843	Relatively Strong Association
3	Educational Administration & Management	23.96	<0.0001	0.3461	Moderate Association
4	Educational and Mental Measurement	105.78	<0.0001	0.7293	Strong Association
5	Computer Education and Information Technology	32.61	<0.0001	0.4038	Relatively Strong Association
6	Environmental Education	11.92	0.0026	0.2441	Moderate Association
7	Essentials of Educational Technology and Management	16.69	0.0002	0.2889	Moderate Association
8	Teaching in Emerging Indian Society	63.45	<0.0001	0.5632	Relatively Strong Association
9	Methodology of Teaching English	49	<0.0001	0.4962	Relatively Strong Association
10	Methodology of Teaching Biology	26.48	<0.0001	0.3648	Moderate Association
11	Methodology of Teaching Commerce	23.61	<0.0001	0.3436	Moderate Association
12	Methodology of Teaching Mathematics	63.68	<0.0001	0.5507	Relatively Strong Association
13	Methodology of Teaching History	40.26	<0.0001	0.4498	Relatively Strong Association
14	Methodology of Teaching Civics	49.39	<0.0001	0.4982	Relatively Strong Association
15	Methodology of Teaching Economics	56.73	<0.0001	0.5326	Relatively Strong Association
16	Methodology of Teaching Geography	28.6	<0.0001	0.3782	Moderate Association
17	Methodology of Teaching Chemistry	20.04	0.0002	0.3165	Moderate Association
18	Methodology of Teaching Physics	23.99	<0.0001	0.3463	Moderate Association
19	Methodology of Teaching Home Science	69.6	<0.0001	0.5899	Relatively Strong Association

Observations :

1. The Chi-square and Cramer's V are found to be statistically significant. This implies that there is a significant association between the percentage of educational objectives and the questions contained in the selected question papers. The magnitude of these associations are found to be in the range of moderate to relatively strong in all the cases (Rea & Parker, 1992).

Educational Implications of the Study

1. B.Ed. syllabus requires drastic changes and needs to incorporate educational/instructional objectives of developing abilities to analyse, synthesis and evaluate. This is the first step in the process of bringing reforms.

2. There is an association between educational/instructional objectives of the selected courses and the questions included in the question papers. The magnitude of this association ranges between moderate to relatively strong.

3. This is not surprising. Since the syllabus is aimed at predominantly imparting knowledge and developing understanding, the question papers too reflect the same and test these abilities. The other reasons for a large majority of question papers measuring the domains of knowledge and understanding could be the ease of setting such questions.

4. The National Curriculum Framework (2005) recommended constructivism more than a decade. However, B.Ed. curriculum and examination patterns have not yet adopted constructivist evaluation strategies in their syllabus implementation.

Suggestions for Improvement : Detailed workshops need to be conducted for teacher educators on curriculum design and development with a view to focus on developing higher order thinking skills and abilities in student-teachers. This would also include training in writing question papers. Workshops also need to be conducted on training teacher educators for adopting constructivist approach to teaching, learning as well as evaluation which could include training in use of authentic assessment and development and use of rubrics.

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