

How Good Are Long – Answer Questions

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INTRODUCTION

During the past thirty years the investigator was a university teacher of the subject Educational Measurement and Evaluation at master level (M.Ed.). In March 2011 he had an opportunity of evaluating a question paper containing all long-answer (so called essay type) questions. The question paper he did not set. He had a long experience of writing the standard questions, preparing objective test-items for competitive examination, paper setter of various University examinations and attending seminar as an expert of the subject. This put him in a typical situation and almost against the work (mentally) which he had to carry out. He was somewhat in favor (higher objective based essay type questions) and very much against the evaluation of question paper, entirely based on essay type questions.

The investigator had a research paper of same subject and objectives (Desai, 1979). Here the same title is selected for this research paper. In this reference Desai's paper is not containing all long answer questions but containing essay type and short (not very short or objective type) answer questions both. This situation led to an analysis of all long-answer question paper, which in turn resulted in writing of this paper.

NATURE OF THE QUESTION PAPER

The subject of the paper was 'Research Methodology in Education'. The paper contains ten questions; each carrying fifteen marks and with instruction; attempts any five questions. All the questions were long-answer questions. Time allotted three hours and maximum marks 75. This was a set pattern of the University.

BASIC QUESTIONS CONSIDERED FOR THE STUDY

The investigation was undertaken to answer the following questions:

1. How easy was the question paper as a whole?
2. How was the each question difficult?
3. What was the facility index of each question?
4. How was the discriminative index of the each question?
5. Were all questions equally attractive?
6. Were all questions having equal selection?
7. Did students' select easier alternatives?
8. Did students' select more paying alternatives?
9. Did some students lower their marks by wrong selection of alternatives?
10. Was there set pattern in awarding marks for any particular question?

ANALYSIS AND INTERPRETATION

The procedure followed for the analysis, and interpretation sought after the data analysis is reported here according to questions considered for the study.

(1). Question Paper in General. In this examination 385 students were appeared. Out of 385 the boy students were seventy nine and the girls were 306. The paper was examined on the basis of the scheme prepared by the investigator himself. The highest score obtained was sixty two and the lowest one was zero. The passing standard was 25 marks and thirty three students were failed at the examination. The result was 91%. Thus the paper was on the whole easy.

(2 & 3). Facility Index (FI) and Discriminative Index (DI) of the questions. The investigator has to determine the Facility Index of each question. Facility Index tells us as to what percentage of the students answered the question right. For this purpose all the 385 answer papers were arranged in the descending order of total number of marks obtained. The top 77 students (20%) formed the Upper Group

and the bottom 77 students (20%) formed the Lower Group. The statistical result related to Facility Index is presented in Table: 1.

The investigator has to determine the Discriminative Index of each question. The Discrimination Index tells us how well the question discriminates between those who did well and those who did poorly on the question. For this purpose all the answer papers were arranged in the descending order of total number of marks obtained and two groups were formed as stated above.

Following formulas are used to determine Facility Index and Discriminative Index (Parekh & Trivedi, 2010).

••••FI = (MU + ML) divided by (2 multiply by maximum marks allowed),

And DI = 1.8 (MU – ML) divided by maximum marks allowed.

Where MU = Mean of Upper Group & ML = mean of Lower Group ••••

The statistical result related to Facility Index (FI) and Discriminative Index (DI) is presented in Table: 1.

TABLE 1

STATISTICAL RESULTS RELATED TO STUDY QUESTIONS

	Q.	01	02	03	04	05	06	07	08	09	10
1.	TNSs	200	207	329	311	278	276	75	62	48	136
2.	TNSn	185	178	56	74	107	109	310	323	337	249
3.	χ^2	0.58	2.18	193.58	145.89	75.95	72.44	143.44	176.94	216.94	33.17
4.	MT	8.48	8.65	7.98	7.51	8.14	8.00	7.88	7.52	7.32	9.76
5.	MU	11.18	10.62	10.37	10.98	10.64	10.1	10.0	9.48	11.53	12.27
6.	ML	5.86	5.75	4.79	4.73	4.39	4.92	4.78	3.38	2.6	5.25
7.	FI	0.57	0.56	0.50	0.52	0.50	0.50	0.49	0.43	0.44	0.58
8.	χ^2	1.96	1.0	0.00	0.16	0.00	0.00	0.04	1.96	0.36	2.56
9.	DI	0.64	0.58	0.67	0.75	0.75	0.62	0.63	0.83	1.07	0.84

Note for Table 1: (1) TNSs=Total Number of Students selected the question (2) TNSn=Total Number of Students not selected the question, (4) MT= Mean achievement of all students, (5) MU=Mean achievement of Upper group, (6) ML=Mean achievement of Lower group, (7) FI=Facility Index while 3 & 8 is an Index χ^2 showing the magnitude of difference in observed frequencies and (9) DI=Discrimination Index.

The answers of the research questions (2 & 3) based on above mentioned analysis is discussed here.

Facility Index tells us about easiness and hardness of the questions. In other words which questions were hard and which were easy. Table 1 (raw 7) reveals that in general all questions were relatively easy because the average FI value of the questions was 0.51. The question No. 8 and 9 were relatively hard (FI < 0.51) and question No. 1, 2 and 10 were easy (FI > 0.55). Table 1 (raw 4) also agree from average score of these questions with the above interpretation. Average score of question 8 and 9 was 7.52 and 7.32 and average score of questions 1, 2 and 10 was 8.48, 8.65 and 9.76 respectively.

Discrimination Index Table 1 (raw 9) reveals that the average DI of the questions was 0.73, because for long-answer question any DI below 0.50 should be considered unsatisfactory and range 0.50 – 0.70 should be considered satisfactory. The question No. 4, 5, 8, 9 and 10 had high DI this shows that these questions were hard to lower group as compared to higher group. Considering DI of question No. 9 and 10 were unsatisfactory due to its very high discrimination index.

(4). Attractiveness of the Questions. Whether or not the questions were equally attractive was judged on the basis of Chi-square test (equal probability hypothesis) applied to the number of candidates selecting/not selecting the questions. In all the cases (Table No.1 and raw 1, 2 and 3) Chi-square values were significant at 0.01 level for question 3 to 10. Thus it can be concluded for these eight questions, the questions were not equally attractive. Only question NO. 1 and 2 were equally attractive for the students of both groups. (For df = 1 and Sig level 0.05 χ^2 is considered 3.841 and For df = 1 and Sig level 0.01 it is 6.635).

(5). Selection Level of Questions. Whether or not that the all ten questions were equally selection or not was decided on the basis of test (equal probability hypothesis) applied to the percentages of students

answering the question right (FI value). For all the questions χ^2 values (Table 1 row 8) were not significant hence all the questions were equally difficult or easy – no specific selection in general. From the high Chi-square value (not significant) question number 1, 2, 8 and 10, more students did not attempted hence they had not high selection. If selection in terms of percentage it can be said that questions 7, 8, 9, 10 had a low selection.

(6). Selection of Easier Questions. More students has selected question No 1 to 6 (Table 1 row 1). The Facility Index of these questions was: 0.57, 0.55, 0.50, 0.52, 0.50 and 0.50 (Table 1 row 7). Less number of students has selected question No 7 to 10. The Facility Index of these questions was 0.43, 0.43, 0.47 and 0.58. (Table 1 row 7). It means more students selected easier questions but for question No. 10 it can be concluded that students did not selected easier question. It can be also noted here that the question No 10 was from Statistics unit of the subject. And those who fall into special group had only selection of this question.

(7). Selection of Paying Alternatives. More students has selected question 1 to 6 While less number of students selected question 7 to 10 (Table 1 row 1 and 2). The average score of question No. 1 to 6 is 8.48, 8.65, 7.98, 7.51, 8.14 and 8.00. It can be observed that more students selected paying questions but out of question No. 7 to 10 it can be concluded that students did not selected more paying questions No. 10 and somewhat 7.

(8). Wrong Selection of Questions. It is interesting to study whether any students lowered their marks by wrong selections. This is studied through the analysis of questions selected by the higher group and lower group of the students. From Table 1, row 4, 5 and 6 it appears that $MU > MT$ for all questions it identifies that there is no wrong selection for the higher group. The average score value of ML is 4.65 and for questions 5, 8, 9 and 10 the question wise average value is less than entire group's mean value. It appears that students belonging to the lower group selected these questions with lower total means.

(9). Pattern Analysis. In case of Table 1 row 2 percentage of the students not attended the question is high for question 2, 7, 8, 9 and 10 it is found that 46, 81, 84, 88 and 65 students not attended these questions, and as this was a post-graduate examination, the range cannot be very big. If ten percentage of standard considered as base out of 385 students 39 selection is good. The total scores, moreover, show a range of zero to 62. It can, therefore, be concluded that there was no set pattern in the method of marking. From the graphical representation of data in terms of scatter diagram it was found that the data is well distributed. This is an agreement with no pattern in scoring.

Summary of the Findings

The analysis of the question paper revealed the following facts.

1. The paper was on the whole easy (91 % result).
2. On the bases of Facility Index it can be said that only two questions (No. 8 and 9) out of ten are hard. Both questions were from the 'Educational Statistics'. And question No. 1, 2 and 10 were categorized as easy. First two questions were based on basic concepts related to Educational Research and tenth question (of course Statistics) was for the calculation of Mean, Median and Mode from a frequency distribution.
3. As the important aspect is Discrimination Index it can be said that question No. 4, 5, 8, 9, 10 has high DI. Out of these five questions two questions (No. 9 and 10) were unsatisfactory.
4. Two questions (No. 1 and 2 based on concepts of Educational Research) were have equal attractiveness to both groups and eight questions (No. 3 to 10) did not.
5. Out of all questions question No. 7 to 10 has not good number of students' selection. It can be also concluded that question No 7, 10, though good average and thus easy had low selection among students.
6. The students did not selected paying questions.
7. Some students from the lower group lowered their marks by wrong selection of the questions.
8. In general there was no set pattern in the method of marking.

Discussion of the Result

The set pattern though selected in the favor of students the result typically for questions based on Educational Statistics is against this assumption. The questions (1 & 2) related to fundamental concept were had equal attractiveness. In this question paper question no.3 (What are various methods of

educational research? Explain in detail the method do you like more?) is having misleading interpretation is the drawback identified by the investigator. The wrong selection of questions also suggest for preparing (announcing in advance) the set pattern and/or internal options is to be provided to the examinees.

Lastly investigator suggests that internal options may help students in wrong preparation style, in terms of not preparing certain units; say Educational Statistics by a group of students. The investigator also suggests clear specification of writing the answer of the question while forming the question is also required. These suggestions are the points of discussion and for change in set pattern only.

Appendix

Methodology of Educational Research

Time Allowed – Three Hours

Maximum Marks: 75, Attempt 5 questions each carries 15 Marks

1. Differentiate between the terms, Research, Knowledge and Inquiry. Explain in detail.
2. Write an essay on interdisciplinary in educational research with special reference to philosophical, psychological and sociological orientation.
3. What are various methods of educational research? Explain in detail, the method do you like most.
4. Write about the meaning by hypothesis? Explain the nature, types, sources and characteristics of good hypothesis.
5. Write about the meaning and nature of sampling. Differentiate between probability and non-probability sampling techniques.
6. Write a detailed note on any one of the following tools/techniques of data collection: (1) Observation Technique and (2) Interview Technique.
7. What do you mean by validity in research? Describe how to enhance validity of research findings?
8. Write about the nature of educational data. Describe the merits and demerits of qualitative and quantitative data.
9. Write short notes on any three of the following: (1) Measures of Central Tendency, (2) Properties and use of Normal Distribution and (3) Standard Errors and Standard Deviation
10. Find the Mean, Median and Mode of the given Data –

Frequency	50-59	60-64	65-69	70-74	75-79	80-84	85-89	Total
Score	04	05	08	10	06	04	03	40

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