
CHAPTER VII
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

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- 7.01 : Introduction
- 7.02 : Review of the Work done in this Study
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7.01 : Introduction :

The chapter begins with the review of the work done in this study. Next, the conclusions and recommendations are presented. The chapter closes with suggestions for further research.

7.02 : Review of the work done in this Study :**02.a : The Problem :**

Education is an ancient undertaking. It is an attempt on the part of the adult members of human society to shape the development of the coming generation in accordance with its own ideals of life. Education can be thought of as an investment in human resources that results in increased productivity. The teacher plays a crucial role in the process of education. In order to be an effective teacher, he needs to possess certain attributes. Some of them can be developed through a rigorous training programme. Teacher training programmes are designed and carried out in order to develop some of these qualities in persons who intend to undertake the profession of teaching.

The graduates from all the faculties are admitted to Colleges of Education. They become eligible for a teaching post in secondary schools

or junior colleges at the end of successful completion of the course.

Educational Psychology is taught to them during the training programme. It is, therefore, necessary that the teachers teaching the subject should be able to evaluate the achievement of their students in the content of the subject, as far as possible, objectively. Since no such tool was available, the present study had been undertaken with a view to develop such a tool. Thus, the problem selected was :

DEVELOPMENT OF AN ACHIEVEMENT TEST
IN EDUCATIONAL PSYCHOLOGY FOR B.ED.
(MARATHI MEDIUM) STUDENTS AND
PREPARATION OF A QUESTION BANK.

02.b : Objectives of the Study :

The objectives of the study were as follows:

- (i) To determine the objectives and specifications of learning Educational Psychology, in terms of behavioural outcomes.
- (ii) To construct the objective type items purported to test the objectives and specifications.

- (iii) To test the validity of the items in terms of their difficulty value and discriminating power.
- (iv) To prepare a 'Question Bank' consisting of objective based and objective type items having varied difficulty values and positive discriminating powers.
- (v) To develop a reliable 'Achievement Test' which would consistently test the attainment of B.Ed. (Marathi medium) students in Educational Psychology.
- (vi) To develop a valid 'Achievement Test' which would test the achievement of students in the subject matter.
- (vii) To determine the norms of the performance of the group tested.

02.c : Scope and Limitations of the Study :

The assumptions of the present study were as under :-

- (i) The teachers teaching the subject 'Educational Psychology' in the four Colleges of Education (the sample) taught the same teaching points on which the items in the Bank were based.
- (ii) The students had studied the relevant content matter before they responded to the items in the Question Bank.

- (iii) The students were aware of the nature of objective type items and understood the manner in which they were instructed to note their responses to the items.
- (iv) The teachers who had administered the subtests in their respective colleges were well-acquainted with the techniques of administering the tests and strictly followed the instructions given to them by the researcher.
- (v) The variables that were beyond the control of the researcher such as temperamental conditions and motivational level of the students at the time of testing were assumed to have random effect on their performance.

The limitations of the present study were as under :-

(1) The content of the subject matter : The eight subtests consisted of the items which were based on the topics that were common to the prescribed syllabi of Educational Psychology for B.Ed. Course by the six universities in the State of Maharashtra, namely,

- (1) S.N.D.T. Women's University, Bombay.
- (2) Bombay University, Bombay.

- (3) University of Poona, Pune.
- (4) Shivaji University, Kolhapur.
- (5) Marathwada University, Aurangabad.
- (6) Nagpur University, Nagpur.

(ii) The type of items : The items that made up the eight subtests were of only objective type.

(iii) The sample : The items were tried out on the students studying in four Colleges of Education situated in Pune only in the academic year 1979-80. The items were constructed in Marathi. Therefore, only Marathi medium students took the subtests. Hence the results were based on the responses of the students who received instruction through Marathi medium.

(iv) The sequence of the administration of the subtests : The sequence of the administration of the eight subtests varied from college to college. Each subtest was administered at the end of teaching that particular topic on which the items of the subtest were based. The researcher had no control over the sequence of teaching the topics in the respective local Colleges of Education.

(v) The conditions of the students at the time of taking the subtests : The researcher had no control over the temperamental conditions, motivational levels of the students and their presence at the time of taking the subtests.

02.d : Definitions of the Terms used :

Achievement Test : A test designed to measure the attainment of the B.Ed. students in the subject 'Educational Psychology'.

Question Bank : A pool of objective type items based on the content of the subject 'Educational Psychology' having varied difficulty values and positive discriminating powers.

B.Ed. (Marathi medium) Student : A graduate student-teacher enrolled in a College of Education who received instruction through Marathi medium.

02.e : Method of Research :

Normative Survey method had been used to collect information regarding the student's achievement in Educational Psychology in order to determine the status of an individual studying at the B.Ed. level.

02.f : The Sample :

The technique of area/clustered sampling had been used to collect the data efficiently. All the students studying in all Colleges of Education in Pune, during the year 1979-80 had been included in the testing programme.

02.g : Procedure of the Study :

The procedure of the study consisted of the following steps :

(1) Item writing : The procedure of item writing included the determination of the topics for item writing, the content analysis of the topics selected, deciding the objectives and specifications of the teaching points included in the content analysis, deciding the item format and actual writing of the items.

(2) Tryout and revision of the items : The items had been tried out on the B.Ed. students studying in various Colleges of Education during the year 1977-78. The items were divided into two subtests and they were administered separately. For subtest 1, 166 students were present and for subtest 2, 122 students were present. The efficacy of each of the items was determined by the process of item analysis. Revision of the items had been based on the item analysis results, reactions expressed by the students, the opinions of the lecturers and administrators of the colleges where the items had been administered; and the difficulties faced by the researcher at the time of item writing, administration and analysis of the items.

(3) Administration of the items : The revised draft contained 213 items and it was divided into eight subtests. These subtests were administered to the B.Ed. (Marathi medium) students intermittently, throughout the academic year 1979-80.

(4) Statistical analysis of the items in the Question Bank : Item analysis was done to determine the difficulty value and discriminating power of each of the 213 items. Items having positive discriminating power had been retained for the 'Question Bank'. Out of 213 items, two items turned out to have negative discriminating power. These two items had been omitted from the 'Question Bank'. Consequently, the 'Question Bank' consisted of only 211 items. With the help of item analysis data, the effectiveness of the distractors had also been ascertained.

(5) Development of the Achievement Test : Only a hundred items, out of 211 items, had been selected to form the 'Achievement Test'. Item selection was made with due consideration to the following criteria :
(i) content coverage of the test, (ii) weightages given to the various topics, and (iii) difficulty value and discriminating power of the individual items.

02.h : Statistical Techniques used for the development of the Achievement Test :

(i) Difficulty Value : Difficulty values of the hundred items ranged between .20 and .80. The mean difficulty value of 100 items was .51. There were 87 items which had difficulty values within the range of .30 and .70. There were 9 items which had difficulty values within the range of .71 and .80, and there were 4 very difficult items i.e. having difficulty values within the range of .20 and .29.

(ii) Discriminating Power : It was attempted to select items having discriminating power as high as possible. The discriminating powers of 100 items ranged from .08 to .62. The mean discriminating power of 100 items was .37.

(iii) Significance of the Discriminating Power of Items : It was attempted to find out whether the difference between performance of the students in the 'Upper' and 'Lower' groups was significant by finding out the difference between the two groups and then dividing it by the SE of the difference. It was considered that if the resultant ratio (CR) exceeds 3, the difference is significant. Out of 100 items, 93 were significant, 4 were significant at .01 level,

1 was significant at .02 level, 1 was significant at .05 level and only 1 item was not significant.

(iv) Scores on the Test : The total number of the students who took all the 8 subtests formed the sample for the Achievement Test. The total number of students who took all the 8 subtests was 107. The total number of correct responses given by the individual student determined his score on the Test. The raw scores obtained by 107 students were not corrected for guessing.

In order to describe and analyze the scores, the following statistical techniques were used. The mean, median, mode, SE_M and SE_{Mdn} had been calculated to measure the central tendency of the scores. The range, Q , SD , SE_Q and SE_{SD} had been calculated to measure the variability of the scores. The normality of the distribution of scores had been measured by calculating SK , Ku , SE_{sk} , SE_{ku} . The divergence of the distribution of obtained scores from normality had been measured by superimposing the normal curve of the same area, M and σ on the histogram of the obtained scores. In order to establish the norms; percentiles, stanines and T scores had been calculated.

(v) Reliability of the Test : The reliability of the test was established by the K-R 20 formula. Index of reliability was calculated in order to determine the dependability of the test scores. Reliability of the test scores had been established with the help of SE_{sc} and estimating true scores by way of the regression equation.

(vi) Validity of the Test : The content validity of the Achievement Test was based on the careful study of the text books, courses of study, coverage of significant topics and facts according to expert judgement, items devised, and difficulty value and discriminating power of each item. Validity coefficient was regarded the same as the index of reliability. Predictive validity of the test was determined by calculating the coefficient of correlation between the student's Achievement Test scores and the marks obtained by the same students in the subject of 'Educational Psychology' at the final university examination. Predictive validity had also been measured in terms of decision making accuracy.

02.1 : The Question Bank :

The Question Bank consisted of 211 objective based and objective type items having varied difficulty values and positive discriminating power. The items were based on the following topics :

- (i) Educational Psychology - its scope and limitations, and methods for study of Psychology;
- (ii) Human Growth and Development - heredity and environment;
- (iii) Human Motivation;
- (iv) Thinking Process;
- (v) Learning;
- (vi) Memory;
- (vii) Personality;
- (viii) Individual Differences - mental tests;
- (ix) Mental Hygiene; and
- (x) Educational and Vocational Guidance.

02.j : The Achievement Test :

The Achievement Test consisted of a hundred objective based and objective type items. All the items tested fairly consistently whatever they were purported to test. The difficulty values of the hundred items ranged between .20 and .80 with a mean of .51. The discriminating power of the items ranged between .08 and .62 with a mean of .37. The distribution of the scores was approximately normal. The values of Mean, Median and Mode were 52.70, 51.70 and 52.00 respectively. The closeness of these values indicated that the distribution of the obtained scores approximated

normality. The normative description of the test scores was done in terms of stanines, percentiles and T scores.

The reliability coefficient of the test was .88. The index of reliability was .94. The SE_{SC} equalled 4.43.

The validity of the items was established in terms of their difficulty value and discriminating power. While establishing the content validity of the Achievement Test, in addition to the statistical information regarding the individual items the responses given by the teachers teaching the subject to the questionnaires issued to them were also taken into consideration. Validity coefficient was .94 as Index of reliability was taken as the validity coefficient. The criterion-related validity was .47 and .47. These values indicated that the correlation between the predictor and criterion scores was positive and significant. The predictive validity in terms of decision making accuracy revealed the fact that the proportion of correct decisions was highest at highest and lowest cutting scores.

7.03 : Conclusions :

- (1) The objectives and specifications of learning Educational Psychology were determined in terms of behavioural outcomes.

- (ii) The objective based and objective type items were constructed to measure the achievement of B.Ed. Marathi medium students.
- (iii) Items (211 in number) in the Question Bank vary in difficulty values right from .10 to .85.
- (iv) All the 211 items in the 'Question Bank' discriminate positively between the performances of the students in the 'Upper' and 'Lower' groups. The discriminating powers of 211 items ranged from .01 to .75.
- (v) The Achievement Test is developed which would test the achievement of B.Ed. Marathi medium students in Educational Psychology.
- (vi) Achievement Test scores are distributed approximately normally around the mean score.
- (vii) The differences between the values of Mean, Median and Mode are considerably small. This indicates the normality of the distribution of scores.
- (viii) The values of Skewness and Kurtosis are .47 and .30. The SE_{sk} and SE_{ku} indicate the insignificant divergence of the distribution of obtained scores from normality.

- (ix) The superimposition of normal curve of the same area, N and SD on the histogram of the obtained scores only a small divergence between the two is observable.
- (x) The Achievement Test tests highly consistently whatever it tests. The reliability of the test in terms of inter-item consistency equals .88 and the index of reliability is .94.
- (xi) The SE of obtained score is 4.43.
- (xii) The Achievement Test has content validity.
- (xiii) The Achievement Test scores of 107 B.Ed. students have positive and significant correlation with the marks obtained by the same students in the subject 'Educational Psychology' at the Final University Examination.
- (xiv) The Achievement Test has predictive validity also in terms of decision making accuracy. The proportion of correct decisions is highest at the highest and lowest cutting scores.

7.04 : Recommendations and Suggestions for further Research :

04.a : Recommendations :

- (i) The eight subtests prepared by the researcher can be used for evaluating the extent of the students' attainment in the particular topics and on the basis of their results the teacher can lay proper stress on particular topics.
- (ii) These subtests can be used as unit tests in Colleges of Education.
- (iii) These subtests can provide the teachers with necessary information which can be used in remedial teaching.
- (iv) With the help of these subtests, a comparison of performances of the students on different subtests can be done.
- (v) The results of these subtests can reveal to the teachers the relative difficulty of topics. This can lead to the modification of their teaching strategies.
- (vi) With the help of the pool of items that make up the Question Bank, different items can be selected to determine the attainment of the high and low achievers in respect of different topics.

- (vii) From this Question Bank, many diagnostic tests, unit tests as well as achievement tests can be prepared which would be useful to teachers of Educational Psychology, according to their particular needs. For example, a pool of easy items can help the teachers to locate the low achievers and a pool of difficult items can help the teachers to locate the high achievers.
- (viii) The Achievement Test can be given to the students before their final examination. It can be indicative of their future success in the final examination.
- (ix) The Achievement Test results can be of aid to the teachers in furthering the students' standards.
- (x) The Achievement Test results would be helpful in motivating individual students to study certain topics with proper emphasis.

04.b : Suggestions for further Research :

- (i) Similar Question Banks consisting of only objective type items should be prepared and tried out in other subjects at degree and post graduate levels in the faculty of Education and other faculties also.

- (ii) The Achievement Test should be administered to the B.Ed. Marathi/English medium students from other colleges from rural and urban areas and also from other universities. With the help of these test results, norms, reliability and validity should be established on a larger sample.
- (iii) Similar Achievement Tests consisting of only objective type items should be prepared and tried out in other subjects at degree and post graduate levels in the faculty of Education and other faculties also.

After all is said and done, the researcher would like to state that this piece of research is an humble effort to devise a tool which can measure the students achievement in Educational Psychology at the B.Ed. level, objectively and reliably. The Question Bank can be a developing entity and the efforts of the researcher would be amply rewarded if other research workers and teachers in the field actually put in use the Achievement Test and contribute more and more items to the Question Bank in the years to come.