CHAPTER V

COLLECTION OF DATA
The investigator had to collect data concerning four variables namely, creative thinking, vocational anxiety, general anxiety and teaching success. He was to administer tests to the subjects concerning first three variables, whereas he was to collect awards in respect of teaching success from the colleges where they were studying. The investigator himself developed tests to measure creative thinking and vocational anxiety, whereas he decided to use Dutt Personality Inventory to measure general anxiety in student teachers. In order to collect the required data, the investigator proceeded as under:-

A. The three tests were administered to the subjects in 8 groups of 30 to 40 subjects each. The tests were administered in the following order:-

(i) The test of creative thinking.
(ii) Vocational Anxiety Scale.
(iii) Dutt Personality Inventory (DPI).

Since many of the items in the self-descriptive VA scale and DPI contain negative affect, the investigator decided to place these after the Creative Thinking Test in the sequence of procedures to insure that there would be no adverse effect on the relaxed, gamelike atmosphere which is essentially maintained for the administration of the last test of creative thinking.

The second test was administered after an interval of about one week after the first test and the third test was administered after an interval of about one week after the second
test. In each testing session, the investigator gave solemn assurance to the respondents that their responses would be treated as strictly confidential and so, they were free to express their feelings, without any sort of inhibition. It was made clear to them that the information being collected was to be used purely in academic research and the investigator had absolutely no other motive. This was done to increase the validity of the subjects' responses. Every individual has a curiosity to know about himself. The subjects selected for the study were eager to know what psychological tests tell about them. Therefore, they were assured that results would be communicated to them in due time. Thus, they were mentally prepared to be honest and frank in their responses. It is clear that the investigator tried his best to establish rapport with the subjects because establishment of rapport is very essential for getting dependable and trustworthy responses from the respondents. Besides, all the subjects were quite mature and being students of Education, they all knew the importance of Educational research. It was also made clear to them that their whole-hearted and honest co-operation would mean much benefit for the student teachers of coming years. In summary, it can be said that the tests were administered in an atmosphere of mutual trust and respect.

B. THE TEST OF CREATIVE THINKING

While administering the final form of the test (Appendix IV) the investigator started with the following words of Dr. E. Paul Torrance (1968) — "I believe you will have a lot of fun doing the activities we have planned for this period. We are going to do
something that will give you a chance to see how good you are at thinking up new ideas and solving problems. They will call for all the imagination and thinking ability you have. So, I hope that you will put on your best thinking cap and that you will enjoy yourself." At this point, response sheets were passed on to the subjects. They were requested to write their name, age, sex, College Roll No., date and name of the college on the top of the first page. When they had provided the identifying information, the following instructions were read:

"We shall play certain games in this period. These are verbal games which will give you a chance to use your imagination in thinking up ideas and putting them into words. In all, you will take part in seven games and five minutes will be given to you for each game or activity. Work as fast as you can without rushing. If you run out of ideas before time is called, then, just sit and think, some more ideas may come to you and you can add those.

Some of these activities are in fact problems associated with your professional life. We are interested in knowing how you will solve these problems.

I shall first read the problem or item in English. Then, I shall translate it into Hindi or Panjabi or both. Therefore, you can clear your doubts, that is, you will be free to ask as many questions as you like. Please remember clever that you have to think of interesting, unusual and unique ideas — something that no one else will think of. Such ideas will earn more credit for you than the more common and routine type of ideas.
You are free to give your responses in a language of your choice. You have not to write your answers in paragraphs. You have to give Serial No. to each idea and a new idea is to be written in a new line.

The first activity requires you to give maximum possible arguments to get your request acceded to. Suppose, you want to leave your present college in order to migrate to some other college. You can give suchlike arguments:

(i) My brother is a teacher in that college.
(ii) I belong to that city.
(iii) The food served to us in the hostel is very poor and so, I am losing health.
(iv) I cannot live away from my parents, etc etc."

At this point, the first item 'Giving Arguments' was read aloud by the investigator and the subjects were asked to start writing their responses when they were given the signal 'start'. Using a stop watch, five minutes were allowed before calling time. The same procedure was followed for item 2, 'Asking Questions'. In the case of this activity, no example was given as it was very clear. Moreover, the subjects had already received initial orientation or warm-up. Again, five minutes were allowed before calling time.

"The third activity, 'Unusual Uses,' requires you to give as many uncommon uses as you can think of a given object. Suppose, you are asked to give unusual unusual uses of a match-box. You can give suchlike uses:

(i) It can be used as a plaything.
(ii) It can be used for making a decoration piece.
(iii) A burning candle can be fixed on it, etc etc."
Please remember that lighting fire is a common use of a match-box and, therefore, it is not acceptable."

At this point, item No. 3 was read and the subjects were asked to start giving responses. They were again reminded that writing on the black-board is a common use of a piece of chalk and hence, will not be entertained. In this case also, five minutes were allowed before calling time. The same procedure was followed in the case of items 4, 5 and 6, that is, Guessing Causes, Guessing Consequences and Suggesting Improvements. In the case of Item 7, Constructing Sentences, they were told that they had to use the given four words in their sentences. They were clearly told that every sentence constructed by them must include all the four words. The item was illustrated with the help of the following example:

"Suppose you are asked to use these four words in every sentence - Pen, Note-book, Delhi, Student. You can construct such like sentences:-

(i) The students purchased many pens and note-books in Delhi.
(ii) A student of 7th class has brought many pens and note-books from Delhi."

They were told that they could use any of these words in plural number also.

The procedure of test administration outlined above, was followed with all the eight groups.

C. VOCATIONAL ANXIETY SCALE

After an interval of one week, the investigator again met the subjects for the administration of Vocational Anxiety Scale. In the very beginning, he told them that he was very grateful to
them for the co-operation they had extended to him the previous week. He assured them that the present test was not a lengthy one and they would not be detained for more than fifteen minutes. This assurance pleased the subjects to a great extent. At this point, the VA scales were distributed to the subjects. They were requested to fill in the blanks at the top of the page quite carefully. When the subjects had provided the identifying information, they were asked to read the instructions given on the first page of the scale silently along with the investigator who read them aloud. The procedure for checking a response out of the alternative responses provided, was explained. As the scale was in English, therefore, the subjects were asked to call the investigator to them, if they had some difficulty in understanding the language of a question. However, the subjects did not experience much difficulty on this account as all of them had studied English up to the level of first degree examination. The completed scales were collected from the subjects and they were allowed to go out.

The same procedure of test administration was followed with all the eight groups.

D. DUTT PERSONALITY INVENTORY

The investigator had to select some suitable instrument to measure general anxiety in student teachers. He was in search of an anxiety scale suitable for use with the sample selected for the present study. It was decided not to take a scale constructed and standardized abroad because it would have necessitated its adaptation on Indian population so as to make it
a suitable measure to assess anxiety in Indian students. This would have meant going through the most arduous procedure of test construction and standardization. This would have been merely an exercise in futility because some suitable measures of anxiety are already available in India. These have been standardized in India and are specially meant for use with Indian population.

Butt Personality Inventory (Appendix VII) and Sinha Anxiety Scale are two important and well-known measures of general anxiety in India. The former was standardized by Dr. N.K. Butt of Central Institute of Education, Delhi. His standardization sample comprised teacher trainees drawn from Teachers' Training Colleges in Punjab. The present investigator also had to use it with teacher trainees of the same state. Therefore, he thought it advisable to select it in preference to the other scale. Besides, it has been widely used in a large number of master and doctoral studies both in the faculties of Education and Psychology.

The inventory was originally developed by the author as a part of his doctoral dissertation. Its extensive use in later studies has refined and perfected it. It has been validated against a number of suitable criterion measures. It has proved to be a highly reliable and valid instrument of anxiety measurement. Butt (1966) reports reliability coefficients of .83, .86, .97 and .80 as calculated by KR (21), Tucker, Odd-even and Dressell methods respectively. The content and construct validity of the Inventory were established rationally. Its congruent validity was established by correlating scores on this test with the scores on MMAS, administered within a week. The coefficient of correlation between the scores on these two tests was found to be .72 (N = 300).
Agyajit (1973) reports .82 as the split-half reliability coefficient (corrected by the Spearman-Brown Prophecy formula) of DPI (Original form). He has also reported inter-correlations between DPI, TMAS, MPI, Sinha Anxiety Scale and Cattell's ASQ. He reports .57, .68, .71 and .66 as the coefficients of correlation between DPI and the other four tests of anxiety respectively.

With a view to know the consistency of the scores for the sample that provided data for the present study, the investigator computed Odd-Even reliability coefficient of the test which came out to be .81. Thus, it becomes clear that the revised version of DPI is as reliable as its original form.

In deference to the wishes of Dr. N.K. Dutt and also keeping in view the convenience of the subjects in mind, the investigator translated the inventory into Panjabi. There are 65 items in the inventory. All the items are in the form of declarative statements. Three alternative responses are given in front of each statement — 'Yes', '?' and 'No'. The subjects are required to check the response which is most characteristic of their behaviour.

The scoring of DPI is very simple and easy. A score of 2 is assigned to a response indicating presence of anxiety and a score of zero is assigned to a response indicating absence of anxiety in an individual. A score of one is assigned to a response which is non-committal, that is, which is not indicative of either presence or absence of anxiety in an individual. The weights allotted to each response are given below:

(a) For items 13, 18 and 30

'Yes' carries a weight of 0
'?' carries a weight of 1
'No' carries a weight of 2
(b) For all other items
  * Yes* carries a weight of 2
  * ? * carries a weight of 1
  * No! * carries a weight of 0

The investigator administered this test in each group after an interval of about one week after the second test. The subjects were told in the very beginning that it was the last test which the investigator had to administer to them. They were also assured that the present test, like the VA scale, was not a lengthy one and they would require only about 20 minutes to take the whole test. The investigator held out a promise to inform them about their scores on all the three tests if they were really anxious to know about themselves. At this point, the inventories were distributed to the subjects and they were requested to fill in the blanks on the top of the page. Thereafter, they were asked to read the instructions printed on the first page of the inventory silently. Before asking them to start checking the responses, they were given time to ask questions to remove their doubts. The completed inventories were collected from the respondents as and when these were completed by them.

E. TEACHING SUCCESS

How can teaching competence be evaluated? What type of criteria can we employ to measure teaching competence of teachers? Kelly and Fiske (1950) classified teaching effectiveness criteria according to goal proximity as (a) product criteria (b) process criteria (c) presage criteria.
Product criteria depend for definition upon a set of goals towards which teaching is directed. These goals are most economically stated in terms of changes in behaviour on the part of students. Teaching competence may be judged in the light of effects on students. These effects are variously called student gains, student growth, or student changes, but they all involve measurement of change in student behaviour, a portion of which logically can be attributed to the influence of individual teachers.

Process criteria are most often described and measured in the classroom in terms of conditions, climates or typical situations involving the social interactions of students and teacher. One type of process criteria is obtained from observations of teacher behaviour, another from student behaviour. Examples of process criteria based on teacher behaviour would be the extent to which teachers discipline students effectively, maintain rapport with students, or individualize instruction consistent with students' capacities and achievements. Another type of process criteria involves student behaviour in the classroom, such as the extent to which students exhibit affection for the teacher, attentive listening, or conformity to classroom routines.

A number of criteria are called presage criteria because they owe their origin to guessed predictions. In a sense, they are pseudo-criteria because their relevance depends upon an assumed or conjectured relationship to other criteria, either process or product. A number of investigators have regarded such concepts as teacher intelligence, personal adjustment, character and the like as appropriate criteria for teacher effectiveness on
the basis of their 'common sense' appeal. Our common sense prompts us to pronounce that the most efficient teachers are those who have high intelligence, high character and adequate personal adjustment. However, scientific evidence has not uniformly endorsed the generalizations attributed to the basic wisdom of the race.

The University regulations for B.Ed. examination require every teacher trainee to deliver two Discussion Lessons or Criticism Lessons during the course of his training. They have to deliver these lessons in two different school subjects which they have offered for their examination. The lessons are prepared thoroughly by the trainees as these have to be observed and evaluated by their subject teachers. The teaching competence of the teacher trainees is judged by their supervisors when they observe the lessons delivered by them.

A few trainees and the critic teacher or the supervisor sit in the class to observe the lesson of a student teacher. A student teacher, while delivering a discussion lesson, fixes and states the aims of his lesson; prepares the students mentally to receive new knowledge, introduces the new lesson through the previous knowledge of students as revealed from their answers to the questions asked by him; makes efforts to seek active participation of the students in the development of the lesson; presents the new subject matter through one or more methods or devices; makes every possible effort to sustain the interest of students in the lesson and tries to enable the students to grasp the subject matter. Thus, his main problem is to lead pupils to take in the facts presented in a systematic and scheduled way which is carefully planned ahead in the shape of the lesson plan, keeping all the time in view the aim of the lesson.
The supervisor observes every aspect of the lesson critically and holds discussion with other teacher trainees after the lesson is over. Many relevant points are raised by the teacher trainees during the course of discussion. In the light of his own observations and also those of points raised by the teacher trainees, the supervisor awards marks out of 100. The second lesson of a student teacher is observed by another supervisor and another group of teacher trainees. This supervisor also follows the procedure stated above and awards marks out of 100. Thus, every student teacher gets marks out of 200 for his teaching skill as demonstrated by him in two discussion lessons.

Before starting the programme of discussion lessons, members of the faculty meet to evolve some criteria for the evaluation of such lessons and to ensure uniform standards in the matter of awarding marks. Many worthwhile suggestions are put forward by the teacher educators and the same are discussed minutely by all the participating members. The result of this meeting is that some broad guidelines for the evaluation of lessons are evolved and accepted by all the members.

Thus, we can say that the procedure outlined above, is a quite dependable evaluation procedure to assess the trainees' teaching effectiveness. Under this procedure, a critic observer awards marks out of 100 at the end of his 40 minutes' critical observation of a trainee's overall teaching performance which includes product criteria (student gains, student changes), process criteria (typical situations involving the social interactions of students and teacher), and presage criteria (teacher personality attributes, characteristics of teacher trainees, their knowledge and achievement).
Besides two discussion lessons, every student teacher has to appear in the final skill in teaching examination which is held by the University. He delivers two lessons—one in each of the two subjects which he has offered as his teaching subjects. Every lesson is observed by a set of two examiners. One of them is from the local college and is called an internal examiner while the other is from outside and is called an external examiner. They observe the lesson from different angles and arrive at a consensus to award marks out of 100. There is a co-ordinating examiner to supervise the evaluation of different sets of examiners and to settle the disputes which may arise between internal and external examiners. The co-ordinating examiner is generally an experienced Principal of the College of Education. Before the commencement of the examination, he calls a meeting of all the examiners and explains to them the evaluation procedure which they have to follow for judging the teaching skill of teacher trainees.

The second lesson of a teacher trainee is observed by two other examiners who also award marks out of 100. Thus, every student teacher gets marks out of 200 for his teaching effectiveness which is judged on the basis of his over-all performance in the final skill in teaching examination. In all, a teacher trainee gets marks out of 400 in two discussion lessons and two lessons delivered by him for his final skill in teaching examination.

Although the trainees deliver these lessons after adequate planning and thorough preparation, yet the exact unfolding of a lesson has to rest on the response of the class. This is, therefore, the key point of all teaching. The trainee's ability
to manage the response brings into play the presage criteria, that is, teacher’s knowledge and personality characteristics. The response embodies the student changes, that is, the product criteria. The social interaction between the teacher and pupils which precedes and succeeds the response mirrors the process criteria.

Almost all the difficulties of delivering lessons crop up from the pupils’ response. Given the normal conditions and grouping of the class, the response depends upon motivation or appeal to interests and on pupils’ experience.

Successful motivation does not end the story of the whole lesson, instead it unfolds the lesson further. Devices of teaching used by the teacher should be within the range of pupils’ experiences. Nothing wholly 'unknown' enters human mind, as such something 'known' must be handled to move the learning minds to the aimed 'unknown'. This handling may demand changes in the plan even at the time of its execution. This handling is accomplished by presage criteria (like the teacher’s personality) which in turn gives rise to product criteria (like pupil changes) and process criteria (like teacher—pupil interaction). All these three criteria are looked up to while assessing the student teacher’s performance.

While evaluating the lesson delivered by a trainee, the supervisor or the examiner generally puts the following questions to himself:-

i) Has the lesson plan been prepared methodically?
ii) Is he adequately prepared with his lesson?
iii) Has he stated his aim clearly?
iv) Has he succeeded in motivating the students?
(v) Has the lesson been introduced in a suitable way?
(vi) Has the subject matter been presented systematically?
(vii) Has he succeeded in making the students active participants in the development of the lesson?
(viii) Is he able to control the class?
(ix) What are the students' gains?
(x) Has he achieved the aim or aims of the lesson?
(xi) What is the overall impression about the success of lesson?

A glance over these considerations reveals that the product, presage and the process factors are necessary concomitants of teaching performance evaluated on the above bases.

The existing tests of teaching skill were subjected to statistical analysis by Kakkar (1965) in his doctoral study. He labelled a trainee's score on first discussion lesson as first marking, his score on second discussion lesson as second marking and his score in the final skill in teaching examination as third marking. The reliability coefficients computed by him from the Pearson r's between the three markings (tests) for five years are given in Table - 7.

<table>
<thead>
<tr>
<th>Year</th>
<th>N</th>
<th>I &amp; II r</th>
<th>SE</th>
<th>II &amp; III r</th>
<th>SE</th>
<th>I &amp; III r</th>
<th>SE</th>
<th>Mean r</th>
<th>Significance level</th>
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<tr>
<td>1959-60</td>
<td>168</td>
<td>.82</td>
<td>.01</td>
<td>.80</td>
<td>.01</td>
<td>.74</td>
<td>.02</td>
<td>.79</td>
<td>.01</td>
</tr>
<tr>
<td>1960-61</td>
<td>158</td>
<td>.74</td>
<td>.02</td>
<td>.96</td>
<td>.004</td>
<td>.93</td>
<td>.008</td>
<td>.85</td>
<td>.01</td>
</tr>
<tr>
<td>1961-62</td>
<td>171</td>
<td>.75</td>
<td>.03</td>
<td>.90</td>
<td>.01</td>
<td>.91</td>
<td>.01</td>
<td>.85</td>
<td>.01</td>
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<tr>
<td>1962-63</td>
<td>193</td>
<td>.71</td>
<td>.03</td>
<td>.79</td>
<td>.02</td>
<td>.71</td>
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<td>1963-64</td>
<td>193</td>
<td>.87</td>
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It is clear from Table 7 that existing tests of skill in teaching are highly reliable. These results were based on samples of teacher trainees in Panjab and the sample population in the present research also comprises teacher trainees of the same state. Therefore, the investigator decided to adopt these tests, for the purposes of this study. But before making use of teaching success scores thus derived, for establishing relationship between different variables, the investigator decided to find the consistency or correlation between discussion lesson awards and final teaching success scores obtained by the subjects of the present study.

Scores obtained by 240 student teachers in discussion lessons and University examination lessons were totalled separately. A scattergram was plotted with marks in discussion lessons as X-variable and the marks in University examination lessons as Y-variable. Pearson r was computed which came out to be .49. This value of correlation is between two halves of the total test. In order to find the reliability coefficient of the total test, the Spearman-Brown Prophecy formula was applied. The reliability coefficient of the whole test as computed by the formula mentioned earlier (Chapter III & IV) came out to be \[ \frac{.66 (2 \times .49)}{1 + .49} \]

The significance of the reliability coefficient of .66 was tested by Fisher's Z function. Table C from Garret was consulted for converting r into Z and then Z back into r. An r of .66 is equal to a Z of .79 which has a standard error of \[ \frac{.06 \sqrt{1 + .49}}{\sqrt{239}} \]. This implies that there are 95 chances out of
100 that Z values between .79 ± 1.96 x .06 or .79 ± .12, that is, .67 and .91 will contain the true Z. In terms of r, it can be said that the class interval .585 to .720 (converting Z back into r) will contain the true r of the population. Likewise, there are 99 chances out of 100 that Z values between .79 ± 2.58 x .06 or .79 ± .15, that is, .64 and .94 will contain the true Z. In terms of r, it can be said that the class interval .565 to .735 will contain the population r.

TESTING OF NULL HYPOTHESIS

The null hypothesis 'that population r is zero' was tested by the formula:-

\[ t = r \frac{N - 2}{\sqrt{1 - r^2}} \]

By substituting values of r and N

\[ t = .66 \frac{240 - 2}{\sqrt{1 - (.66)^2}} = 13.55 \]

Thus, the null hypothesis that the population r is zero, stands rejected as the computed 't' value is significant well beyond .01 level.

A consistently good correlation among different evaluative markings of trainees, justifies the use of mean of the four awards as a reliable measure of the trainees' teaching skill. It is this mean (rounded off to the nearest unit) which is being taken as the teaching skill score of the sample population here.
F. SCORING

The first three tests were administered to about 300 teacher trainees drawn from three Colleges of Education. As the tests were administered on three different days, therefore, all the subjects could not take all the three tests because of absence from the college on the days fixed for administration of tests. It was found that only 240 trainees had taken all the three tests. Their tests were scored in accordance with scoring procedures described earlier. Out of these 240 subjects, University examination marks in teaching skill were not available in case of 10 trainees as their result was withheld by the University. Thus, the investigator could obtain scores of 230 subjects on all the four tests. Out of these 230 trainees, 117 were male teacher trainees, whereas the remaining 113 were females. So, the investigator included 220 teacher trainees (110 males + 110 females) in the final study for reasons of convenience.

The whole data were collected personally so as to guard against the possibility of wrong or incomplete responses caused by lack of proper understanding of statements or lack of the knowledge of method of answering.
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