Chapter-3

METHOD AND PROCEDURE
3.1 DESIGN

Experimental design is the blueprint of the procedures that enables the researcher to test hypotheses by reaching valid conclusions about relationships between independent and dependent variables. The present study was conducted by employing the only post-test control group design with the Competency Based Commitment Oriented (CBCO) Curriculum as treatment. In all, a total of twelve modules were prepared for the treatment (teaching) covering the syllabus in the subject of School Organisation (a compulsory subject) as prescribed by the Guru Nanak Dev University for the B.Ed. programme for the academic session 2000-2001. The experimental group was taught the content of the syllabus through CBCO Curricular approach prepared in the modular form. The control group was taught the same syllabus with the traditional method as is 'in practice' in the B.Ed colleges. Both the groups were taught by the investigator herself. The syllabus is presented in Appendix 1.

As to the post-test criterion variable, it was found that earlier researchers have used the various criterions such as academic achievement, teaching behaviour, teaching skills, attitude towards teaching, in their researches while examining the effectiveness of innovative curricular changes / instructional strategies / modification of teaching behaviour, separately or in combination of more than one (Saini 1978; Sharma and Bhattacharjee’s 1980; Pal 1981; Natrajan 1984; Dave 1987; Kaur 1988; Asija 1990; Singh 2005). In the present study the effectiveness of CBCO
Curriculum was examined in respect of achievement and attitude towards teaching. Accordingly, the post-test criterion variables included four sets of scores namely,

1. Marks obtained in theory papers in the subject of School Organisation in the annual examination conducted by Guru Nanak Dev University (GNDU) Amritsar.

2. Marks obtained in skill-in-teaching papers in the annual examination conducted by Guru Nanak Dev University, Amritsar. Every teacher trainee has to appear in two skill-in-teaching subjects. Marks of both the tests secured by each trainee were obtained from the University result and their total was taken.

3. Total scores obtained in the Community Work by each teacher trainee in the final house test during the session 2000-2001. This paper is not externally evaluated.

4. Scores on Attitude towards teaching profession.

Due care was taken to exercise various controls required in the conduct of experimental study. Except for the variation in the treatment involving teaching of Competency Based and Commitment Oriented Curriculum (Both in respect of content and methodology) for the Experimental Group as against prescribed syllabus taught with traditional method for the Control Group, all other conditions were kept similar for both the groups to the maximum extent possible. As both the groups were students of the same college, taught by the same teacher, most of the variables got control by way of being "constant". Such a design, the investigator was conscious, has the limitation of some type of informal interaction among students of both the groups.

Further it was assumed, that subjects of both the groups stood equated on previous achievement, mental ability and demographic variables as they...
had been admitted on the basis of a state level conducted entrance test, and centralized admission procedure wherein candidates admitted on merit are given opportunity to join the colleges located in the nearby areas of their residence. Design is briefly depicted below

PARADIGM FOR DESIGN: Two Group Static Design

<table>
<thead>
<tr>
<th>Group</th>
<th>Treatment</th>
<th>Post - Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>Teaching through competency based and commitment oriented curriculum</td>
<td>In respect of annual examination in: (a) Theory paper of School Organisation.  (b) Skill-in teaching in their respective two teaching subjects.  (c) Community Work by each teacher trainee in the final house test  (d) Attitude towards teaching profession</td>
</tr>
<tr>
<td>Control</td>
<td>Teaching through Traditional method</td>
<td>Same as for the experimental group</td>
</tr>
</tbody>
</table>

The treatment that is teaching pertained to the syllabus of only one subject i.e., School Organisation taught as a compulsory subject in B.Ed. The syllabus was divided into twelve units and therefore the number of modules prepared for competency based and commitment-oriented curriculum was 12 for the experimental group. These were so framed as to cover the entire contents of the paper of school organisation. The experimental group was taught the contents of the paper by the investigator through the modular approach. Whereas the control group of teacher trainees was taught the same contents consisting of 12 sub-units of School Organisation by the traditional methods by the investigator herself. Thus in a way the treatment of competency based and commitment oriented curriculum included both the structuring of content and self-
learning method that is both content cum method organised in the form of self-learning modules.

3.2 CONTROL OF ERRORS

In general, the variation in the criterion measures among all the subjects involved in an experiment (the total variance) may be attributed to a variety of different factors and these may arise from a number of different sources. When the total variance is analysed into a number of independent components, each of which may be identified with one of the sources of variations, one part of the total variance will be due to experimental treatments. Other part will be due to extraneous factors, which were kept under control or constant while conducting the experiment so that their effect on the treatment group remain the same. Still other that is the third part of the total variance will be due to uncontrolled sources that are to 'error', Lindquist (1951) has pointed out three basic types of errors, which commonly arise in the conduct of experiments. These are characterized under Type "S", Type "G" and Type "R" errors. The experimental control taken for each type of errors are submitted below.

Type 'S' Errors
Type 'S' errors are those errors, which characterise simple random sampling. Such type of error in the present study was minimised by random assignment of pre-service secondary teachers to both the experimental and control groups by taking one section as a unit of randomisation for teaching competency based and commitment oriented curriculum (two sections) and the traditional method (one method). Two sections in the experimental group had to be included because of the instructional constraint to cover all the three sections of the students for teaching in the study.

Type 'G' Errors
Such errors result from extraneous factors, which tend to have the effect on all members of any treatment group and which thus, create a systematic
difference in the criterion means from group to group in the same reapplication. These errors are thus associated with the administration of experiment or with the experimenter. To minimise these errors investigator herself taught both the groups i.e., the experimental group for competency based and commitment oriented (CBCO) curriculum and the control group which received instructions through traditional teaching (CG) of teaching.

Type 'R' Errors
These type of errors arise when a certain type of treatment is better for a particular educational institutional or community. This could result from differences in curriculum or in administrative organisation of the institution, equipment or it could be due to any other conditions in the institution, college or community making one method more appropriate or effective than the other for that particular institution, college or community. To minimise these errors in operation, only one college of education was selected for experimentation so that all the pre-service secondary teachers in the experimental and control group had same type of environment.

3.3 SAMPLE

As the study was to be conducted with the help of experimental design involving treatment spread over the whole academic session, the sample was restricted to only one college of education, namely Guru Nanak College of Education for Women, Kapurthala affiliated to Guru Nanak Dev University, Amritsar. This college was established in the year 1966 and can be easily taken as a representative of colleges of education affiliated to Guru Nanak Dev University, Amritsar. It may be stated here that since the investigator herself works as a teacher in this college, the cooperation and willingness of the Principal to conduct the experiment for almost full one session was most readily available. Subjects were the newly admitted 109 B.Ed students of this college for the academic session 2000 - 2001, and their aim was to qualify themselves for the Degree of Bachelor of Education. The said college being a college for women only,
all the subjects of the study were women. Their minimum qualification was graduation. These 109 students were placed in three sections. By taking the section as a unit randomly one section of students (N = 36) was designated as the control group and the remaining two sections (N = 73) served as experimental group. Thus all the students admitted to the college served as subjects of study. The variation in number of sections in the experimental and control group had to be made due to the strength of students grouped in three sections in the college.

3.4 TOOLS FOR COLLECTION OF DATA

1. Development of Competency based and Commitment Oriented Curriculum in the subject of School Organisation by the researcher herself, the details of which are given in Chapter 4.

2. Examination marks obtained by the subjects in the theory paper of School Organisation. These were taken from the detailed marks certificates issued by Guru Nanak Dev University, Amritsar.

3. Marks in the skill-in-teaching examination of two teaching subjects offered by each candidate was taken from the detailed marks certificates issued by Guru Nanak Dev University, Amritsar.

4. Marks obtained by the subjects in community work were collected from their University Cards.

5. Teacher Attitude Inventory (TAI 1978) by Ahluwalia, S.P

This inventory was used for measuring the attitude of subjects towards the teaching profession. The Inventory has been constructed and standardised by Dr.S.P.Ahuwalia and his associates (1978) under a project of the National Council for Educational Research and Training, New Delhi. This inventory is a ninety items Likert Instrument consisting of six sub-scales namely, Teaching profession; Classroom teaching; Child-centred
practices; Educational process; Pupils; and Teachers. Each sub-scale has fifteen statements that pertain to a particular aspect of prospective and practicing teacher's professional attitude towards that specific aspect as given above. In all, the inventory consists of ninety items out of which fifty-six are in positive declarative form and thirty-four are in negative form. Again forty-three items are meant to assess attitude in favourable direction and forty-seven in unfavourable directions.

Each item has five alternatives namely, strongly agree, agree, undecided / uncertain, disagree and strongly disagree. Every alternative is assigned a weight ranging from Four (strongly agree) to Zero (strongly disagree) for favourable items. In the case of unfavourable items range of weight is reversed i.e., from Zero (Strongly agree) to Four (Strongly disagree). The attitude score of a subject is the sum total of item scores of all the sub-scales.

The ATAI consists of a bi-lingual (English and Hindi) re-usable test booklet with a separate answer sheet. The researcher used the English version of the booklet.

Norms have been computed statewise and areawise for the five States. Standard scores and normalised Standard scores are also available in the manual. As reported in the manual reliability estimated by split-half (odd-even) method is equal to 0.79 for a sample of 239 prospective teachers. After the interval of three months and nine months the co-efficient of stability were found to be 0.58 (N=102) and 0.64 (N=290) respectively. The content validity of the inventory has been established (vide manual for the TAI).

The choice of this inventory was made because of its applicability in measuring the comprehensive qualities of teaching indicating attitude of the pre-service teacher-trainees. This tool is easy to be administered, and has been widely used in researches on similar types of sample. (Purohit 1987; Asija 1990; Bajwa 1998; Singh 2005).
3.5. CONDUCT OF THE STUDY

In order to see the effectiveness of competency based and commitment oriented curriculum and to examine whether two different approaches of teaching the contents of a subject at the B.Ed level to two different groups of subjects with two different approaches (the experimental group and the control group) could produce significantly different results in teacher trainees' academic achievement, teaching practice skills, community work and attitude towards teaching, the study was conducted during the academic session 2000-2001.

Before undertaking the teaching in connection with the curriculum both the groups (experimental and control) were introduced to the meanings of teaching competencies and the five types of commitments which teachers are normally expected to develop for doing justice to their professional responsibilities.

As described in the succeeding chapter, modules of all the topics of school organisation were framed in such a manner as to make the curriculum of the subject competency based and commitment oriented by integrating five types of competencies and five types of commitments in the modular form. The two approaches were - the traditional approach of teaching (primarily the lecture method as traditionally used), and the CBCO Curriculum in modular approach, which has been coming to lime light during the last three decades or so.

In accordance with the design, firstly, the entire contents of school organisation prescribed by Guru Nanak Dev University, Amritsar of B.Ed. class were analysed to identify the content areas wherein selected competencies and commitments could be integrated. After the final selection of the content area and competencies and commitments, twelve modules integrating the competencies and commitments with the syllabus (content) of school organisation were prepared. Table 3.2 represents the serial numbers of competencies and sub-competencies with commitments
and sub-commitments the details of which are mentioned in the first chapter. The modules are given in Chapter 4.

Serial numbers of competencies and sub-competencies and Commitments and sub-commitments covered during the conduct of treatment

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Modules</th>
<th>*Serial number of competencies</th>
<th>**Serial number of commitments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Selection of site and essential characteristics of a good school plant</td>
<td>1.5.1 - 6, 9, 10, 1.5.3 - 8, 9</td>
<td>1.6.1 - 1, 7, 1.6.2 - 7, 10, 1.6.3 - 1, 2</td>
</tr>
<tr>
<td>2</td>
<td>Classroom equipment, Sanitation and beautification of a School Plant</td>
<td>1.5.1 - 2, 12, 1.5.2 - 1, 6, 9, 1.5.3 - 2, 4</td>
<td>1.6.1 - 2, 3, 1.6.2 - 8, 9, 1.6.3 - 7, 10, 1.6.5 - 8, 12</td>
</tr>
<tr>
<td>3</td>
<td>Time Table, Principles of Time table construction and types of time table</td>
<td>1.5.1 - 1, 3, 1.5.3 - 1, 5</td>
<td>1.6.1 - 1, 4, 1.6.2 - 1, 11, 1.6.3 - 8, 12</td>
</tr>
<tr>
<td>4</td>
<td>Records and Registers</td>
<td>1.5.1 - 1, 3, 1.5.3 - 1, 5</td>
<td>1.6.1 - 4, 6, 1.6.2 - 2, 3, 1.6.3 - 2, 3</td>
</tr>
<tr>
<td>5</td>
<td>Discipline</td>
<td>1.5.1 - 4, 9, 1.5.2 - 1, 8, 1.5.3 - 3, 7, 1.5.5 - 1, 2</td>
<td>1.6.1 - 1, 5, 1.6.2 - 3, 5, 1.6.3 - 4, 5, 1.6.5 - 7, 8</td>
</tr>
<tr>
<td>6</td>
<td>Role and profile of an Ideal teacher</td>
<td>1.5.1 - 2, 12, 1.5.2 - 3, 6, 1.5.3 - 3, 6, 1.5.4 - 1, 2, 1.5.5 - 3, 4</td>
<td>1.6.1 - 3, 4, 1.6.2 - 6, 9, 1.6.3 - 6, 11</td>
</tr>
<tr>
<td>7</td>
<td>Role and profile of an Ideal headmaster</td>
<td>1.5.1 - 2, 10, 1.5.2 - 6, 8, 1.5.3 - 4, 5</td>
<td>1.6.1 - 5, 6, 1.6.2 - 1, 11, 1.6.3 - 11, 13</td>
</tr>
<tr>
<td>8</td>
<td>Social service activities</td>
<td>1.5.1 - 9, 10, 1.5.2 - 2, 4, 1.5.3 - 4, 5, 1.5.4 - 3, 4</td>
<td>1.6.2 - 10, 11, 1.6.5 - 2, 4</td>
</tr>
<tr>
<td>9</td>
<td>Literary activities</td>
<td>1.5.1 - 1, 2, 1.5.2 - 8, 1.5.3 - 1, 4, 1.5.4 - 1, 2</td>
<td>1.6.3 - 8, 10, 1.6.4 - 4, 8, 1.6.5 - 8, 11</td>
</tr>
</tbody>
</table>
Both the groups were taught by the investigator herself. The experimental group was taught the curriculum of School Organisation by CBCO approach, and the control group was taught the same syllabus in a traditional method. The timetable for teaching the subjects of both the groups was the same in terms of the number of periods throughout the academic session. The seriousness of the teaching on traditional lines and modular lines was scrupulously and objectively kept at the same level for both the groups. The modules prepared by the investigator were used for teaching respecting their sequence, which was chalked out keeping strictly in lines with the topics constituting the syllabus of the paper. There were five units of syllabus. On the first unit, two modules were prepared. On the second unit, three modules were prepared. On the third unit, two modules were prepared. On the fourth unit, four modules were prepared and on the fifth and the last unit, one module was prepared. The focus on competencies and commitments was kept as indicated in each module in Table 3.2 above, but competencies and commitments other than the focused which came spontaneously in the teaching were not ignored by adhering to wholistic approach where ever needed.
Treatment to Control Group

The control group of 36 prospective secondary teachers were not trained through competency based and commitment oriented curriculum. They were taught through traditional lecture method. All the five topics of school organisation and their sub-topics (in all twelve sub-units) were taught through the traditional method to the control group. The teaching of this syllabus of school organisation was spread over the same duration as in case of the experimental group.

Split of time in conduct of Experiment for the period August, 2000 to June, 2001

<table>
<thead>
<tr>
<th>First Part</th>
<th>Time Table 2000-2001</th>
</tr>
</thead>
</table>
| Administration of treatment of Competency based and commitment oriented teaching to experimental group and Traditional teaching to control group | 29 August 2000 to 07 October 2000  
6 November 2000 to 9 December 2000  
8 January 2001 to 24 February 2001  
12 March 2001 to 24 March 2001 |

<table>
<thead>
<tr>
<th>Second Part</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration of Post test Annual Theory Exams</td>
<td>16 April 2001 to 30 April 2001</td>
</tr>
<tr>
<td>Administration of Internal Final Exams of Community Work</td>
<td>27 March 2001</td>
</tr>
<tr>
<td>Administration of Post Test Annual Skill-in-Teaching Exam</td>
<td>24 May 2001 to 31 May 2001</td>
</tr>
<tr>
<td>Administration of Post Test Teacher Attitude Inventory</td>
<td>07 June 2001</td>
</tr>
</tbody>
</table>

Table 3.3
Summary of Treatment Time Devoted to Teaching of prospective Secondary Teachers

<table>
<thead>
<tr>
<th>Month</th>
<th>Teaching</th>
<th>Experimental Group (N=73)</th>
<th>Control Group (N=36)</th>
</tr>
</thead>
<tbody>
<tr>
<td>August 2000</td>
<td>3 days</td>
<td>General Orientation</td>
<td>General Orientation</td>
</tr>
<tr>
<td>September 2000</td>
<td>8 days</td>
<td>Module - I Module- II</td>
<td>First Unit School Plant (8 days)</td>
</tr>
<tr>
<td>September 2000</td>
<td>4 days</td>
<td>Module - III</td>
<td>Unit-II School Planning through Lecture method (12 days)</td>
</tr>
<tr>
<td>November 2000</td>
<td>8 days</td>
<td>Module - IV Module - V</td>
<td>Unit - III Personnel Management (8 days)</td>
</tr>
<tr>
<td>December 2000</td>
<td>4 days</td>
<td>Module - VI</td>
<td>Unit - IV Management of student activities</td>
</tr>
<tr>
<td>January 2001</td>
<td>4 days</td>
<td>Module - VII</td>
<td>Unit - V Institutional Planning (20 days)</td>
</tr>
<tr>
<td>January 2001</td>
<td>4 days</td>
<td>Module - VIII</td>
<td></td>
</tr>
<tr>
<td>February 2001</td>
<td>8 days</td>
<td>Module - IX Module - X</td>
<td></td>
</tr>
<tr>
<td>March 2001</td>
<td>8 days</td>
<td>Module - XI Module - XII</td>
<td></td>
</tr>
</tbody>
</table>

Table 3.4

Treatment to Experimental Group

To begin with copies of the relevant module were presented to the experimental groups at the start of the teaching learning process relating to each topic of the subject. The subjects of the experimental group were required to go through the contents of the module after giving relevant introductory brief relating to the topic and the steps enunciated in the module, and then the subjects were to go by their own initiatives given in the modules for learning the topic in question. Both the sections of experimental groups were taught separately with a number of students thirty-seven in one section and thirty-six in the other section.

The role of the teacher investigator consisted of overseeing the activities undertaken by them in light of the demands of the modules. The difficulties in
following the modular lines were duly noted and no time was lost in removing
them. Due care was taken to see that the activities demanded by the modules
on the part of the experimental group were duly and motivationally carried
out. An atmosphere was created for the wholehearted use of the modular
approach and anything militating against learning on the modular lines in the
college were noted and steps taken to rectify the situation.

While using each module all members of the experimental group remained in
the limelight or in the forefront. The role of the investigator was to oversee the
manner in which the activities were executed by the pupil-teachers for
covering the content of module. The task of the investigator specifically
consisted of motivating and encouraging to act as per the requirements of the
module to every member of the experimental group.

For undertaking the activities in connection with the learning of various
modules in subject school organisation the members of the experimental group
were instructed to go by the steps independently for making use of library
books and for completing their assignments with only facilitative support of
the investigator.

Wherever and whenever it became necessary to seek the help of parents,
teachers in service, retired teachers and the society at large, the members of
the experimental group were at liberty to seek their help. Such help not only
enabled them in establishing closer contact with the world in which they were
to operate after completing their training but also to have a better
understanding of the subject matter with which they were concerned as pupil
teachers

The members of experimental group were encouraged to share their
experiences with each other. This kind of sharing was imperceptibly helpful in
the development of teacher competencies and in the inculcation of
commitments relevant to the professional responsibilities of teachers. The use
of self-learning modules also seem to reinforce the spirit for teamwork. Thus
gradually all the competencies and commitments integrated in the curriculum (as shown in the Table no.3.2) were introduced to / practiced by the learners.

Post Treatment

The teaching part of both the groups finished just a few days (preparatory days) prior to the end of academic session. After the treatment that is the teaching phase was over all the trainees were post-tested on:

1. Attitude Inventory towards teaching profession, immediately on the next day, and the candidates appeared in the examinations in theory, skill-in-teaching and community work spread over days in Table 3.3 (after a gap of 14 days preparation from the end of treatment).
2. Theory paper of School Organisation.
3. Skill-in teaching in their respective two teaching subjects.
4. Community Work by each teacher trainee in the final house test.

3.6. STATISTICAL TECHNIQUES USED

Simple statistics have been used in the analysis of the data.

(A) Measures of Central Tendency and Variability

The Mean and S.D of the scores obtained by the subjects of both the experimental Group and Control group (separately) were computed for following criterion variables

(a) Theory marks in School Organisation.
(b) Marks in Skill-in-Teaching.
(c) Marks in Community Work.
(d) Attitude towards teaching profession.

(B) t-ratios were used to work out the significance of differences between means of experimental group and control group on each of the four criterion variables as given above.