CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

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4.1.0 INTRODUCTION

In chapter three, the researcher had discussed the research design and methodology adopted for the present study. The present chapter deals with the analysis and interpretation of collected data. Any raw data does not provide any precise answer. It has to be analyzed first and then interpreted. For this identification of data, appropriate analysis techniques are extremely important. An analysis helps the data to be reduced to understandable and interpretable form. Its basic purpose is to summarize the completed observations in such a manner that they yield answers to the research problems and the purpose of interpretation is to search for broader meaning of these answers. Thus, data analysis and interpretation becomes an important aspect of research.

The present study was a causal comparative study under descriptive survey research as it involved hypotheses formulations and testing, comparison of various dimensions of secondary teacher education programmes, determination of the cause or reason for existing difference in the behavior or status of groups of individuals i.e. Pre-service and In-service teacher education programmes, the comparison and analysis of the relationships between non-manipulated variables such as aptitude, interest, attitude, knowledge and skills of Pre-service and In-service student-teachers and the generalization. The data were collected by administering tools on the sample and were analyzed by employing qualitative and quantitative data analysis techniques. Frequency, percentage, and content analysis were used to analyze the qualitative data. Data obtained through observation and case studies were also analyzed qualitatively. Quantitative data analysis techniques like Mean, Standard Deviation, Standard Error of Mean and Mann- Whitney U-test were used.

Mean, Standard Deviation (S.D.) and Standard Error of Mean (SEM) was found by using the following formulas:

$Mean = \frac{\Sigma X}{N}$, where ΣX = sum of scores in a distribution and N = number of scores

$S.D. = \sqrt{\frac{\sum x^2}{N}}$, i.e. square root of average dispersion in squared units

SEM = $\frac{S.D.}{\sqrt{N}}$, where S.D. = Standard Deviation and N = number of scores

And non-parametric statistics, Mann-Whitney U-test was found out by using the below mentioned formulas:

$$U = N_1 N_2 + \frac{N_1 (N_1 + 1)}{2} - \sum R_1$$

N_1 = number in one group $\sum R_1$ = sum of ranks in one group

N_2 = number in second group

The z-value of U was determined by the formula:

$$z = \frac{U - \frac{N_1 N_2}{2}}{\sqrt{\frac{N_1 N_2 (N_1 + N_2 + 1)}{12}}}$$

Though data was collected in interval scale, the researcher prefer to use Mann-Whitney U-test as the sample was taken purposively and the assumptions of parametric statistics did not match for the present data.

4.2.0 DATA ANALYSIS AND INTERPRETATION

Collected data for the present study was analyzed objective-wise followed by the interpretations as follow.

4.2.1 ADMISSION PROCESS OF PRE-SERVICE AND IN-SERVICE SECONDARY TEACHER EDUCATION PROGRAMMES

The objective 1 of the present study is stated as 'To compare the admission process of pre-service and in-service secondary teacher education programmes.' The analysis and interpretation related to objective 1 is given as follow.

In pre-service B.Ed. programme, admission was done manually and it was based on marks or weightage of previous graduate and/or post graduater degrees, either a general or honours, in a secondary school subject. As per the criteria he/she must have taken Bachelor's Degree as a regular student in the 10+2+3 or 11+4 pattern with at least 50% marks in aggregate or equivalent grade. If he/she is a graduate with less than 50% marks or with lower grade, then he/ she must have a master's degree in the relevant subject. Duration of the course was one academic year that was, two semesters. Here, the total enrollment was 180 candidates in The M. S. University of Baroda, 100 candidates in Navrachna University and 100 candidates in R.H. Patel English Medium College of Education, Kadi Sarva Vishwavidyalaya. Details of the admission criteria in the selected three universities were as follow.

Admission in B.Ed. programme at the Department of Education, The M. S. University of Baroda was done manually. Admission was based on Graduation and Post-Graduation marks where equal weightage was given to Graduation and Post-Graduation marks. Weightage was calculated for all the students on the basis of a matrix prepared by the department. Merit list was prepared on the basis of this weightage following all the reservation criteria of the State government. Hence, the candidate with only graduation had less chance to get admission in comparison to a candidate with post graduation. Apart from that there was a reservation policy followed by the University to provide 70% admission to the students completed the last degree from The M. S. University of Baroda, 20% admission to the students completed the last degree from other universities from Gujarat other than The M. S. University of Baroda and 10% admission to the students completed the last degree from the universities outside Gujarat.

Admission in B.Ed. programme at Navrachna University was done both in online and offline mode. Admission was done on the basis of minimum requirement criteria of 50% and above marks in Graduation and interview. Interview was conducted to assess the level of teaching interest, attitude and aptitude of the candidates. Those who were found suitable, who can face the upcoming challenges of the B.Ed. programme were given admission and those who were not suitable, who had difficulty in facing the challenges were told to wait and later on they were counseled and if found suitable then given admission. Reservation norms were followed as per the reservation policy followed by the State Government.

Admission in B.Ed. programme at R. H. Patel English Medium College of Education was done offline. The minimum requirement for admission in B.Ed. programme was 50% marks in Graduation in school subjects or 55% marks in Graduations in Engineering and Technology with specialisation in Science and Mathematics. 80% of total marks obtained in Graduation and 20% of total marks obtained at Post-graduation level were considered to prepare the merit list for admission, following the reservation policy of the State Government.

In In-service B.Ed. programme, admission was done online. It was based on merit in entrance test conducted by IGNOU. Until the year 2014-15 admission was given to teachers working in schools or other educational institutions having a Bachelor or higher degree from a recognized university, and having two years of full-time teaching experience as Elementary/Primary/Graduate/Post-Graduate/higher education Teachers in Elementary/ Primary, Secondary/Higher/Senior secondary schools/higher education respectively in Gujarat. After the year 2014-15, NCTE added one more eligibility criteria for admission in B.Ed. programme i.e. trained in-service teachers in elementary education and having completed NCTE recognized teacher education programme through face to face mode along with Bachelor's or higher degree and two years of teaching experience. Due to which the number of students taking admission in B.Ed. programme in distance mode has been decreased. There has been no enrolment at IGNOU B.Ed. study centres in Gujarat including the Department of Education at the M. S. University of Baroda from the year 2015. The minimum and maximum duration of the course was 2 years and 4 years respectively and there was no age bar for taking admission in distance mode. Here, the total enrollment did not exceed 100 candidates in each study centre of IGNOU till the year 2014-15.

The pre-service student-teachers in the interview revealed the reason for joining B.Ed. programme as getting incentive, increment, becoming a teacher, improving qualifications, pursuing higher studies in the field of education, acquiring knowledge and skills needed for the job. The in-service B.Ed. student-teachers revealed the reasons for joining B.Ed. programme through distance mode as it was difficult in getting admission in pre-service programme, it was less expensive, continuing study while working, facility of learning at one's own pace and place. It also has flexible admission policies: flexibility in the consideration of different background variables like age, sex, employment, caste and demography (belongingness to different regions).

4.2.2 TEACHING-LEARNING PROCESS OF PRE-SERVICE AND IN-SERVICE SECONDARY TEACHER EDUCATION PROGRAMMES

The objective 2 of the present study is stated as 'To compare the teaching-learning process of Pre-service and In-service secondary teacher education programmes.' The analysis and interpretation of data related to objective 2 is given as follow.

In Pre-service B.Ed. programme, teaching-learning was a regular process which took place in classrooms in face-to-face mode. Theory was taught with the help of lecture cum discussion method. B.Ed. students made their own notes in the classes and refer books in the library for their study. Here, B.Ed. students underwent a regular course of study for one academic year, that is, two semesters and the total credits of the entire B.Ed. programme was between 44 and 48 credits. The syllabus of B.Ed. programme at The M.S.University of Baroda comprised of eight Compulsory Courses (8*2=16 credits), one Special Field (2credits) which was to be selected from available courses, two Special Methods (4+4=8 credits) of teaching, Practice Teaching (12 credits) which consisted of Journal of practice lesson plans (1 credit), Records of lessons observed (1 credits), Practice lessons given i.e. 40 lessons (6 credits), Final test lessons i.e. 2 lessons (4 credits), Practical Works like Preparation of assignment (1 credit), Developing teaching aids(1 credit), preparation of blue print and evaluation items (1 credit), and Developing written instructional materials (1 credit); Viva-voce internal and external (2 credit each). Here, every student-teacher was expected to have 80% attendance in each of the courses. The course components followed in Navrachna University and R.H. Patel English medium College of Education were very similar to that of The M. S. University of Baroda.

'Practice Teaching' is an important aspect of B.Ed. programme as it provides opportunity to practice the essential skills and other attributes needed to become an effective teacher who can cater to the ever-changing needs and demands of the society. At The M.S. University of Baroda, before the student-teachers went for practice teaching in schools, they were oriented about the use of instructional skills and lesson planning through a variety of demonstration lessons presented by a team of teacher educators and pre-recorded lessons given by the student-teachers of previous years. They were also provided with in-depth theoretical input with regard to the instructional skills. Then they were advised to discuss the scope of these instructional skills in their respective method subjects. The student-teachers were then oriented with the 'Simulation' to practice teaching and lesson planning for the same with an

emphasis on the practice of instructional skills in an integrated manner with the content. They were also explained about how to plan the lesson by illustrating few prepared lessons. The actual practice of teaching begins in simulated situation, wherein the teaching is scaled down in terms of content, time and number of students where they learn to teach in an artificially created environment, generally in a group of 8 to 10 student-teachers of similar subjects. The lesson planning was done in dialogue form between the teacher and the students. Immediate feedback was provided by the peers and the supervisor who is a subject expert. During this phase of simulation teaching, each student-teacher gave five to six lessons on the topics of their choice from their respective subject. They were directed to choose topics in such a way that they had a scope to proactive all the essential instructional skills in simulated situation. Through discussion with the supervisor and the peers, they identify those skills where they required more practice and accordingly put more efforts on those identified skills where they were found weak. These lessons were not graded, as the basic objective of this phase of practice teaching was to acquire mastery over the use of instructional skills. Simulation lessons become a bridge between theoretical understanding and practice teaching. It provides them with an experience as close to reality as possible and allows the student-teachers to 'reset' the scenario and try alternative strategies and approaches. It gives an opportunity to the student-teachers to know the problem arising during teaching and finding their probable solutions through immediate feedback. It helps to propose classroom interaction and enables student-teachers to understand classroom behavioral problems and learn how to deal with them. It helps them to develop teaching skills and provides student-teachers to play the role of teacher, student and supervisor. It also increases confidence among student-teachers.

After learning through discussions and feedbacks in Simulation lessons, the student-teachers went for practice teaching in schools under the supervision of an experienced teacher educator. A workshop was scheduled for one hour for the student-teachers to learn to operate certain Education Technology gadgets/ equipments under the guidance of a technician. A two day workshop on 'Content Analysis and Lesson Planning' was also organized in three different groups viz. Language Group, Science Group and Social Science Group. The student-teachers attended the group as per their subject specialization. In this workshop they were given orientation about content analysis, writing of instructional objectives and format of lesson plan. They were also demonstrated a prepared lesson plan. Then they analyzed the

content, which they were going to teach in a real classroom situation in the practicing Bloom's Taxonomy and prepared at least one lesson plan as per the format given by the department. Demonstration lessons were arranged by the method teachers. Attempts were made to incorporate as many instructional skills as possible depending upon the nature of the selected content. Emphasis was also given to pupil's participation, classroom management, use of teaching aids and other important dimensions of a real classroom teaching. The student-teachers got an opportunity to witness model lessons, which was followed by a discussion during which the entire process of classroom interaction was analyzed.

As the students were now fully equipped with all essential requirements to teach in real classroom situation, they were sent to English, Gujarati and Hindi medium schools depending upon the medium selected by the student-teacher. They went to schools for eight to ten days with supervisor who took care of the entire programme of student-teachers in the schools. This included arrangement of time-table for each student-teacher, ensuring smooth conduct of arranged classes, supervising the lessons, arranging the feedback session and exposing the student-teachers to various activities of schools.

In schools, the student-teachers were supposed to practice teaching skills and acquire the role of a teacher by practically using teaching methods, teaching strategies, teaching principles, teaching techniques and exercising different activities of daily school life. They also implemented the practical work which was assigned to them. Over and above these, they were also expected to organize and participate in co-curricular activities. They were also expected to observe lessons given by their peers to know variety of ways of teaching, acquiring their good practice and taking care of not acquiring undesirable practices (if any). These lessons were graded on an eleven point grading scale. During this phase they were expected to teach six to eight lessons and keep a record of fifteen to twenty lessons observed by them. On returning to department, as per practice, student-teachers shared their views, concerns, experiences gains during their practice teaching. Normally, this part of practice teaching programme was completed in the first semester itself.

In the beginning of second semester, they were oriented about 'unit plan', which they follow during the Block teaching programme. Usually, the Block Teaching Programme was organized for two to three weeks. Depending upon the availability of practicing schools, they were either sent to the same school where they had done their practice teaching earlier during

first phase or to a different school with either the same supervisor or a different supervisor. During this phase, they were expected to teach for twenty to twenty five lessons and keep an observation record of thirty to thirty five lessons given by their peers. In all, they taught for a minimum number of thirty to thirty-five lessons and observe fifty lessons. During Block teaching phase, they were expected to involve themselves in almost all the activities of the school. These lessons were also graded on the same eleven point grading scale.

All the student-teachers who successfully completed practice teaching appeared at the test lessons arranged for them. Each student-teacher taught two test lessons, one in each method of teaching. These lessons were examined by two supervisors- one was the internal faculty member and the other was the Principal of the school where the test lesson was arranged, who acted as an external examiner.

In addition to the theory teaching-learning and practice teaching, semester system, internal assessment and grading system in evaluation that the pre-service B.Ed. programme had been following, some special features of the B.Ed. programme at The M. S. University of Baroda were as follow.

General Assembly: The day began with the general assembly which was attended by the teacher educators and the student-teachers. A group of student-teachers were assigned the task of conducting assembly each day, which had a mix of items like prayers, devotional songs, talks, news briefing, sharing of information, etc. It was primarily intended to prepare a training ground for the student-teachers and was managed by the student-teachers themselves.

Tutorials: Student-teachers were allotted to a teacher educator in small groups. That group formed the primary affiliation group for the student-teachers and opportunities were offered to discuss and solve any difficulties the members might had, personal, academic or social, which the group members might wanted to brought up. The group remained with the teacher educator throughout the year. Each group was free to chalk out and carry out special activities of their choice which can help them in their professional development.

Co-curricular Activities (CCA): Co-curricular activities were a regular feature of the pre service B.Ed. programme. Student-teachers organized several kinds of programmes under CCA like, singing competitions, dance competitions, rangoli competition, celebration of

important days like, Teachers' Day, Navratri, Makarsankranti (kite flying) etc. Like other curricular and co-curricular components of the B.Ed. programme, it was also intended to train the student-teachers to conduct similar programmes in schools when they would be teachers.

Remedial Teaching: Student-teachers came from a multitude of backgrounds, represented a plethora of language groups and had different subject specializations, experiences and interests. Some of them even joined the B.Ed. course after a gap of several years on completion of their studies. Invariably some of them found it difficult to cope up with the fast-paced and activity oriented curriculum and continuous evaluation of the B.Ed. programme. To help them to solve their problems especially in the theory courses, the remedial teaching programme was organized. In this programme volunteered peer teachers were identified and they helped out the student-teachers who needed some extra help with their studies with the guidance of a teacher educator.

Teaching-learning process at Navrachna University: Interdisciplinary education was fundamental to their B.Ed. programme and it was balanced with disciplinary and general education. Core issues of Education was better developed, presented and contextualized in the B.Ed. programme. Entrepreneurship education and knowledge of visual design were the innovative aspects of the B.Ed. curriculum at Navrachna University and helped student-teachers to succeed in teaching practice; rigorous teacher-student interaction provided continuous dialog and mentoring. Hands-on-education through simulation exercises prepared student-teachers for real-life experiences in actual classrooms. A strong practice connect was established through a close and continuous interaction with the local school community. Regular teaching-learning of theory courses were same as taught in other universities. Student-teachers were offered choice-based interdisciplinary electives and specialization in various fields. Subject-based pedagogy was used in teaching-learning and more emphasis was given on giving exposure to student-teachers to develop teaching skills for which formative assessments, radio play and use of teaching components while teaching was used. Assembly activity was regularly done but there was no CCA or Tutorial. If student-teachers had any doubt or problem they were free to go to their mentor and discuss it, one hour was regularly devoted for this. Before the end term exams revision was also done.

For developing technological skills, student-teachers were asked to prepare a portfolio, based on which they had to make a digital lesson plan, power-point presentation etc. For two to three months the total focus was given on implementation of technology i.e. how to use computers, practical use of computers, how to use overhead projector etc. They learned from each other in a group, pair of student-teachers one having knowledge of how to use computer and other who doesn't have knowledge of using a computer was made, they sat together and learned about MS Word, Power point, Excel etc. Then they implemented their knowledge of using computers in practice teaching and internship.

User-connect through local school connections was one of the salient features of B.Ed. programme at Navrachna University. Before going for practice teaching and internship student-teachers were given a lot of exposure by making them visit variety of schools for having a look at how schools were. School observation was compulsory for all. After visiting schools like Navrachna, Vidyani and others (after taking permission), student-teachers were asked about their observation of school, teaching-learning, assembly etc. Knowing different concepts were a part of B.Ed. programme for sensitization of student-teachers towards inclusive education, special child care etc. For example, in social connect through KHOJ, student-teachers were taken to 'Spandan' school for the whole day, which works for the children with mental disabilities for providing them education and care. Then they were told to prepare and submit their report on the visited school.

Practice teaching at Navrachna University: First they had 'Integration' in which student-teachers prepared a combined lesson plan combining 4-5 skills together. Then they had simulations, in which they had model based teaching. The teacher educator helped the student-teacher to identify the model out of four main models, i.e. Concept Attainment Model (CAM), Advanced Organizer Model, Jurisprudential Inquiry Model and Language specific Skill based model. Based on that workshop was organized, first common for all in which common models were provided to all, then method specific models were selected in which lesson plan format was provided to the student-teachers and discussed in detail by them. Finally, the student-teacher had to choose the best model as per the subject and content for example, for language, listening and writing skill was to be focused upon so CAM along with Advanced Organizer model was chosen and constructivist based lesson plan was developed.

After this they had to present the lesson plan in simulation for about half an hour and feedback by teacher educators and peers were given. This process went on for a very long time.

They had 'Internship' of 10 days that is around two weeks, twice in a year, in which the student-teachers had to compulsorily take a model from models of teaching and make a lesson plan based on that model and present it in the classroom.

Another special feature of B.Ed. programme at Navrachna University was 'Reflective' practices, where student-teachers had to maintain a Reflective Diary, in which they were supposed to write what they understood in the whole semester, what they liked about teaching- learning, their experiences as a whole and what relation they can establish between method of teaching and practice teaching.

They also emphasized on English Language development, which was taken care of by mixing student-teachers those who were good in English and those who were not so good in English. If they had any problem in English language then they were free to consult any teacher and sort it out. This kind of environment was created. English language was focused in classroom teaching but they were also told Hindi and Gujarati words for some of the English words. Some classes on communication were also arranged for developing the language skills in English.

Another important feature was 'Placement Assistance' provided to the student-teachers. December onwards schools were invited for placement, schedule was prepared and best schools or preferred schools were invited first. Every day four to five schools came and took interview of student-teachers; this went on for about four to five rounds. Nearly, more than thirty schools were invited and placement of student-teachers was done. Student-teachers were prepared for the interview through mock interviews, discussion and counselling and they were told about the skills needed, communication required, the kind of questions will be asked and the personality required. About 10% to 15 % student-teachers went out of Gujarat and out of the remaining 85% students, 55% to 60 % students were placed in the schools till the end of fourth round. The remained 20% of student-teachers who were left out were again counselled and prepared through mock test and tried to place them in schools.

The B.Ed. Programme at R. H. Patel English Medium College of Education at Kadi Sarva Vishwavidyalaya involved lectures, discussions, group work, assignments, presentations, visits, excursions, practical work, tutorials, school based experiences, workshop experience, psychological testing, audio-visual education and co-curricular activities including physical education. One significant component of the programme was practice teaching / School Life Experience which was organized in various schools of Gandhinagar, Ahmedabad and the surrounding areas. It also provided internship experience to make student-teacher. Each student-teacher remained under an assigned Mentor faculty to address their social, academic and personal problems. The institute also offered internship with stipend to student-teachers. Their B.Ed. Programme had prominent features like Open Ended Curriculum, Semester System of Evaluation, Yoga Education, English Speaking and Personality Development, Compulsory ICT, Open Book Examination, Grade System and Education forum.

They had four well equipped laboratories viz. Psychology Laboratory, Science Laboratory, Computer Laboratory, and Educational Technology Laboratory. The Computer Laboratory with internet facility and multimedia projectors provided access to vivid educational software, instructional applications and data resources. They also had English Language Laboratory for professional learning of English as a second language by the student-teachers. They had workshop room well equipped with the basic tools required for preparation of teaching aids. Student-teachers prepared different kind of teaching aids in the workshop room such as charts, various models in science and social sciences, Maps etc.

The **c**ollege had an active placement cell in order to take care of job placement of student-teachers. The cell organized campus interview at the end of the academic year as to provide job to the student-teachers of the college. Schools affiliated to Gujarat Secondary Education Board (GSEB), Central Board of Secondary Education (CBSE) and Indian Certificate of Secondary Education (ICSE) was invited from various parts of the state to recruit teachers for their schools.

The Faculty of Education, Kadi Sarva Vishwavidyalaya, Gandhinagar had MOU with Society for Creation of Opportunity through Proficiency in English (SCOPE) and with INTEL and National Institute of Technical Teachers Training and Research (NITTTER) for benefits of student.

The other salient features of the B.Ed. Programme at R. H. Patel English medium College were as follow.

For benefit of Alumni and current student-teachers of the college, Teachers Aptitude Test (TAT) and Teachers Eligibility Test (TET) coaching classes were being held free of charge. Late Shri Maneklal M. Patel Memorial Scholarship was awarded to meritorious student-teachers of the college. This Scholarship was given in the memory of Late Shri M. M. Patel, who was a visionary and dynamic entrepreneur in the field of education.

English Speaking and Personality Development (ESPD) was an additional support system programme to develop important employability skills like English speaking and good personality.

My Class App. was an innovative technology-driven platform for serving the student-teachers and parents for various important things like, sharing hand-outs, sending attendance reports, sending various SMS alert and so on.

In In-service B.Ed. programme, teaching-learning was done through personal contact programmes, counseling sessions and tutorials. Student-teachers were provided with modules to study on their own and they got the flexibility of studying at their own pace and place and when they had any queries or doubts they met their subject counselors at a specified time in contact classes and resolved it. Here, B.Ed. student-teachers underwent the course of study in distance mode for two academic year, that is, four semesters and the total credits of the entire B.Ed. programme was 48. Here attendance was not compulsory. In-service B.Ed. programme had the following major components as follow.

Core Courses: To have a thorough understanding of the various theories of education, they had five compulsory core courses in this programme, three in the first year and two in the second year.

Content-based Methodology of Teaching School Subject (s): This component dealt with the methodology of teaching school subjects. Out of the courses offered, they had to opt for any two teaching subjects that they had studied/had been teaching.

Special Course: This component dealt with a thorough study of any one important aspect of school education. They had to opt for any one course from the four alternatives offered.

Practice Teaching and other Practical Work: This component dealt with development of skills and competencies required by an effective teacher. They got ample opportunities to apply in practice, the knowledge gained in theory.

The theory courses were further classified as follows:

Group A: Core Courses (20 credits — 15 Theory + 5 Practical)

They had the following five core courses, considering the job requirement of school-teachers and broad programme objectives, each having 3+1 Credits: Curriculum and Instruction, Psychology of Learning and Development, Educational Evaluation, Education and Society, Teacher and School.

Group B: Content-Based Methodology Courses (8 credits — 6 Theory + 2 Practical)

Two courses were to be opted from the following courses related to teaching of school subjects by the In-service B.Ed. students-teachers, each having 3+1 credits viz. Teaching of Science, Teaching of Mathematics, Teaching of Social Studies, Teaching of English and Teaching of Hindi.

Group C: Special Course (4 credits — 3 Theory + 1 Practical)

One course from the following courses was to be opted by the B.Ed. student-teachers, each having 3+1 Credits viz. Educational Technology, Computer in Education, Guidance and Counseling and Distance Education.

In each of the above 8 courses of Groups A, B and C one credit out of four credits was assigned to the practical oriented assignment based on theory courses. These 8 credits were shared in the Practical Courses. Here, one credit had been deemed equivalent to 30 study hours.

Scheme of Monitoring of Theory Courses: Out of 4 credits of each theory courses, 1 credit was allotted to practical assignments. Academic counseling session was arranged for each theory course. Although, the attendance for all counseling sessions for theory courses were not considered compulsory but desirable. All counseling sessions were held at the programme centers and conducted by academic counselors or teacher educators specifically identified for the purpose. Theory examinations were held at the end of first year as well as second year.

Practical Courses: The practical component of this teacher education programme aimed to concretize the In-service B.Ed. student-teachers' experience as a successful teacher. While the theory courses provided the necessary background on which professional skills and competencies of the school teachers could be built, the practical activities enabled them to improve their competencies in teaching and other related activities more effectively and efficiently. The practical work enabled them to apply knowledge learnt through the theory courses to the practical concerns of everyday professional life and to integrate and apply the knowledge gained through different courses. In Practical Courses, the emphasis had been on the development of skills. Practical work was based on the subject content presented in the various theory courses.

The activities of Practical Courses were categorized as follows:

1. **Practical/Application-Oriented Assignments Based on Theory Courses (8 Credits)**

In In-service B.Ed. programme, the assignments were such that they covered the theory as well as the practical aspects. So, one practical oriented assignment, on each theory course (core, methodology and optional) was designed in which they were expected to apply knowledge gained through the theory courses to practical situations. Thus, they had to work on 8 practical oriented assignments worth 8 credits. They were expected to submit their assignment responses for comments and evaluation either to the academic counselor or to the Coordinator of the Programme Centre, they were attached with. The evaluated assignment responses with constructive feedback were sent back to them within the specified period. The evaluation of these assignments was part of the evaluation of the concerned theory courses. The explanations concerning these assignments were provided during specified workshop sessions by the workshop facilitator. If they failed to complete the assignments in the year/session they were meant for, they were expected to work on a set of new assignments prepared for the following year. Working on the assignments was compulsory. Practical/application-oriented assignments included questions in the concerned areas, project work, model lesson/unit plan, case studies, action research, etc.

2. **School- Based Practical Work (4 Credits)**

School-based practical activities constituted an important part of the B.Ed. programme. It was based on the premise that besides regular teaching job, a teacher performs a number of

other activities in the school. This aspect of B.Ed. programme helped in-service B.Ed. student-teachers to plan, organize and conduct certain practical activities more systematically and professionally. All the school-based activities undertaken by them were accompanied by an authentication by the Mentor to the effect that the activity was actually undertaken by them in the school. Also his or her comments on the assignment were essential. The school-based practical work consisted of those activities which were undertaken by them along with the school work. These activities included administration of psychological tests/tools, organizing health education activities, participation in sports and games, conduct of debates, preparation of school time-table, construction of question papers together with scoring procedures, selection and use of different resources such as libraries, laboratories, media and materials, participation in class activities related to the teaching subjects, maintenance of registers and records, addressing the school assembly, conducting a socio-metric test in the classroom, content analysis exercise, administration of intelligence test, personality test and aptitude test to one student and analysis of results, preparation of cumulative records, organizing career talk/PTA meeting/debate/panel discussion/quiz, action research, field trip, organization of a campaign etc.

3. Workshop-Based Practical Work (4 Credits)

It was incumbent that all the students would attend practical workshop to successfully complete the B.Ed. programme. The workshop was conducted by the resource persons/ experts in education. Besides, audio-video programmes were used as support materials. In the workshop, the students participated, individually as well as in groups, in various activities for improving their teaching competency.

Classroom instruction requires mastery of various methods and modes of communication with the students. Instruction includes proper planning of instruction, special techniques associated with teaching specific subjects and also general management strategies needed for organizing teaching in a classroom. Apart from this, the teacher also has a multifaceted role of the manager, the researcher and the social welfare individual. To prepare the In-service B.Ed. student-teachers to effectively fit in all these roles, two workshops of 12 days each were organized. Workshop I was conducted before the commencement of practice teaching and workshop II was held after a large portion of practice teaching was

over.

To successfully complete the B.Ed. programme, they had to participate in all the activities of the workshops. The workshop facilitators and workshop directors specially oriented for the purpose conducted the workshops. In the workshops they participated individually as well as in groups, in various activities to sharpen their teaching competence. Only those topics/ activities which needed guided experiences were included in the workshop. They worked on their activities under the direct supervision/guidance of teacher educators and the workshop also gave them an opportunity to work with their fellow student teachers. The quality and extent of participation and the progress made by them was monitored and evaluated by the facilitators. Therefore, it was expected that they come to participate in the workshops with prior preparation. This preparatory phase had been called the pre-workshop activity. The tasks performed during the workshop were referred to as during workshop activity. All tasks done during workshop was followed up in teaching/learning situations and the descriptions of all these constituted the post-workshop activities. It is to be noted here that the first workshop corresponded to the first year theory courses and most of the school based activities was carried out during practice teaching. Apart from these, the first workshop oriented them to all aspects of practice teaching. The second workshop corresponded to the second year theory courses and some more school based activities. It also provided the final polish to their teaching and management skills inside and outside the classroom. A cursory overview of the activities of the two workshops is given in Appendix VIII and Appendix IX.

4. Practice Teaching (8 Credits)

To improve skills in teaching, the students were required to undertake pre-planned teaching under the supervision of experienced teachers and teacher-educators engaged by the university. Every B.Ed. student-teacher was required to present 40 model lessons, 20 in each teaching subject**.**

The practical experiences indicated in sections 2, 3 and 4 above were suitably categorized and organized under the following three practical courses with a total of 16 Credits.

Course 1: School-based Activities was of 4 credits and it was spread over two years.

Course 2: Workshops of 24 days was of 4 credits and it was spread over two years with two workshops, 12 days each.

Course 3: Practice Teaching was of 8 credits and it was spread over one year after the completion of first year.

Practice teaching is a learning process that provides experiences to B.Ed. student-teachers for development of their teaching competence. In practice teaching, they plan their lessons, deliver them under the supervision of their mentor and/or supervisor, and get feedback to improve their teaching competence as a result of guided experience.

Practice teaching of in-service B.Ed. student-teachers commenced after they had attended the first workshop. The activities undertaken in the workshop provided them with some understanding and competence required in teaching skills. They also got an opportunity to further sharpen their teaching competencies by way of various activities in Workshop II which was organized after a large part of practice teaching was over.

The role played by in-service B.Ed. student-teachers in practice teaching as follows:

- They selected a secondary/senior secondary school (may be their own school) and sought the Principal's permission to undertake practice teaching in that school.
- They prepared plans of 40 (20+20) lessons and got those approved by the mentor/supervisor. Out of these 40 lessons, 10 lesson plans (5 + 5) were discussed with the supervisor in detail. Improvements suggested by the mentor/supervisor were incorporated in the lesson plans. A generalized lesson plan format was given for their reference in B.Ed. Student Teachers' Handbook.
- They delivered at least 40 lessons spread over a period of one and a half years based on the written lesson plans. They taught at least 20 lessons in each of the two subjects they had opted for the B.Ed. programme.
- They coordinated with their mentor and supervisor while preparing their practice teaching schedule. They ensured that twenty lessons (10+10) were supervised by the mentor, and ten (5 + 5) lessons were practiced under the guidance of the teacher educator who visited the school.

- They prepared a lesson plan notebook for each subject. The notebook had to be available with them while delivering lesson(s) in the classroom.
- They developed at least 6 lesson plans using innovative/learner centered teaching methods such as brain storming, simulation, role play, project method, group interaction, problem solving etc.
- They developed appropriate teaching aids to present their lessons effectively.
- As their lessons were supervised and commented upon by the mentor and supervisor, they made copies of Teaching Assessment Battery (TAB) available to them. A sample of TAB was given to them in B.Ed. Student Teachers' Handbook.
- They observed at least 10 lessons of their peers or senior teachers in their school and rate them on the TAB.
- Each of their lessons was awarded a grade based on their performance rated on TAB and final cumulative grade was decided upon on the basis of these separate grades.

Scheme of Monitoring and Supervision of B.Ed. Theory and Practical

The B.Ed. practical work is an essential component of the course as it is based on various practical activities concerned with development of skills and competencies among B.Ed. students-teachers. The various practical activities of B.Ed. practical work were classified under four categories i.e. practical assignments, school-based practical activities, workshop-based practical activities and practice teaching. For the smooth organization of the practical activities, effective monitoring and supervision was required. The scheme to monitor and supervise the practical activities at different stages/ places of the organization is as follows:

The four categories of practical work i.e. practical assignments, school-based practical activities, workshop-based practical activities and practice teaching was conducted at the work centers (where student under training was teaching) and programme centers (specially commissioned teacher training institutions). The organizations that organized, monitored and supervised these four categories of practical activities were:

(i) Work centre: It was the school where the student-teachers worked and carried out practice teaching.

(ii) **Programme centre:** It was the teacher college or teacher training institution where academic counselling and practical workshop was conducted.

(iii) **Regional centre:** It was one of the regional centres of IGNOU. It was utilized to organize, monitor and supervise practical activities related to the B.Ed. programme.

(iv) **School of Education (Headquarters):** The School of Education planned, organized, monitored, supervised and guided all the activities related to the B.Ed. Programme.

For the monitoring and supervision to be effective, appropriate number of academics (full/ part time) were engaged. Thus, the faculty of the School of Education or external resource persons appointed by SOE along with staff from the Regional Centers was engaged in supervision and monitoring of practical work at the Programme Centre. Appropriate rating scales of supervision/monitoring were developed to carry out supervision and monitoring of school-based practice teaching and workshop-based practical.

In both, pre-service and in-service B.Ed. programme, student-teachers were assigned to do certain projects and assignments such as, making Programmed Learning Material, teaching-aids and working models; doing content and textbook analysis. They were supposed to carry out action research in the school set-up. All this helped them to develop themselves as a skilled teacher.

4.2.3 EVALUATION PROCESS OF PRE-SERVICE AND IN-SERVICE SECONDARY TEACHER EDUCATION PROGRAMMES

The objective 3 of the present study is stated as, 'To compare the evaluation process of Pre-service and In-service secondary teacher education programmes.' The analysis and interpretation related to objective 3 is given as follow.

In pre-service B.Ed. programme at The M. S. University of Baroda, the performance of each student-teacher in all the courses was evaluated on eleven-point scale in terms of grades ranging from E to A+. Continuous and comprehensive evaluation was done through assignments, field work, periodical tests and semester-end examinations, etc. and the performance of student-teachers in theory courses was judged on the basis of these. A comprehensive test was conducted by the end of each semester in each of the courses taught during the semester. The test was based on the whole course covered during the semester. The

comprehensive test in each course had the same weightage as of the seasonal assessment covering periodical test, field work, assignment etc. In theory courses, mostly subjective type questions based on knowledge and understanding of the content and sometimes application based questions were asked. The performance of the student-teachers on each of the four Practice Teaching courses and Practical work courses was graded by assigning a letter grade only. Two Viva-Voce tests were conducted and both the internal as well as external viva-voce tests carried equal weightage and assigned letter grade separately. The internal viva-voce test, which was conducted at the end of the first semester, focused on the student-teachers' understanding of his/her knowledge of the first semester courses offered by him/her, i.e. theory courses, practice teaching, practical work, etc. The external viva-voce test, which was conducted at the end of the second semester, focused on the student-teachers' understanding of both the semester courses, current educational problems and issues in the Indian context.

Evaluation at Navrachna University was nearly similar to the evaluation process at The M. S. University of Baroda. It was also continuous and comprehensive evaluation based on varied assessment techniques, such as group presentations using different formats like power point presentations, bulletin boards, posters, e-newsletters, models, assignments and written examination. Evaluation was transparent as it was based on pre-declared guidelines and evaluation rubric. The internal and external evaluation had the ratio of 60:40. Viva-voce was taken twice in a year. They also had compulsory seminar presentation in the subject method twice in a semester, i.e. mid semester and end semester. This was repeated in the second semester.

Resembling the evaluation at The M. S. University of Baroda and Navrachna University, the evaluation at R.H. Patel English medium College of Education also followed Continuous and comprehensive evaluation which was done through assignments, projects, case study, periodical tests and semester-end examinations. Mostly subjective type questions based on understanding of the content and sometimes application based questions were asked in theory courses. Two Viva-Voce tests were conducted, internal and external having equal weightage. They had internal and external evaluation in the ratio of 50:50. They had grading system (I to A+) and performance of each student-teacher in all the courses was evaluated on 7 point scale

in terms of grades in the range of 0 to 10 grade points, where 0 meant not qualified and 10 meant outstanding.

In In-service B.Ed. programme, Continuous and comprehensive evaluation was done through assignments, workshop and performance test through practice teaching and term-end examinations, respectively. In practice teaching, the scale to measure the performance of in-service B.Ed. student-teachers contained 15 items comprising different aspects of teaching and specifications of each item. The performance of the B.Ed. student-teachers was evaluated on each item on the five point grade scale. The cumulative average grade points score of the student-teachers on all the 15 items indicated the level of their performance. Considering the need of continuous and comprehensive evaluation in B.Ed. practical, it was desirable to involve Principal/Head Master for evaluating the school-based activities (SBA) and practice teaching. The school-based activities and practice teaching grades were provided by workshop facilitator on SBA and supervisors on practice teaching in consultation with the workshop director and programme center coordinator.

School-based activities were authenticated and commented upon by the mentor. The report was evaluated with the help of rating scales at the programme centers by workshop facilitator (Resource person) in the workshop and a cumulative grade was awarded. Assignments (Theory and Practical-oriented) were evaluated by Academic Counsellors at the Programme Centres. Evaluation of workshop-based activities was done by Coordinator/head of programme center in consultation with workshop facilitator/workshop director involved in the workshop.

The cumulative grade sheets together with all the individual rating scales were sent to SOE for moderation before submitting the finalized assessment to the Student Registration and Evaluation Division of IGNOU for declaration of result.

4.2.4 TO COMPARE THE PERSONAL ATTRIBUTES OF STUDENTS OF PRE-SERVICE AND IN-SERVICE SECONDARY TEACHER EDUCATION PROGRAMME

The objective 4 of the present study is stated as ‘To compare the personal attributes of students of pre-service and in-service secondary teacher education programmes in terms of teaching aptitude, interest towards teaching profession, attitude towards teaching profession,

knowledge in teaching and teaching skill.' The analysis and interpretation related to objective 4 is given as follow.

- **TEACHING APTITUDE OF PRE-SERVICE AND IN-SERVICE STUDENT-TEACHERS**

To achieve objective 4 of the present study i.e. `to compare the teaching aptitude of pre-service and in-service student-teachers' and to test the null hypothesis 1 of the present study i.e. 'there will be no significant difference in the teaching aptitude of pre-service and in-service student-teachers', data were analyzed using Mean, Standard Deviation and Mann-Whitney U-test which is given and discussed in table 4.1 and table 4.2.

Table 4.1: Mean, Standard Deviation and Standard Error of Mean wise distribution of Teaching Aptitude of Pre-service and In-service Student-Teachers

Student-teachers	N	Mean	Standard Deviation	Standard Error of Mean
Pre-service	205	28.64	11.88	0.83
In-service	186	29.47	12.08	0.89

From the table 4.1 it was found that the Mean teaching aptitude of pre-service and in-service student-teachers were 28.64 and 29.47 respectively. The Standard Deviations from the Means for the teaching aptitude were found to be 11.88 and 12.08 respectively for pre-service and in-service student-teachers with Standard Error of Mean of 0.83 and 0.89 for the respective groups. Comparing the Means it was found that the Mean of in-service student-teachers was higher than that of pre-service student-teachers. From the Standard Deviations and Standard Error of Means of both the groups it was also observed that the in-service student-teachers were more heterogeneous in terms of their teaching aptitude in comparison to their pre-service counterpart. To find whether the difference in the mean was significant or by chance and to test the $H_0 1$, Mann-Whitney U-test was used as the sample was taken purposively. The summary of the Mann-Whitney U-test is given in table 4.2, followed by analysis.

Table 4.2: Summary of Mann-Whitney U-test for teaching Aptitude of Pre-service and In-service Student-teachers, with the Number of Sample, Sum of Ranks, U-value, z-value and Probability

Student-teachers	N	Sum of Ranks	U-value	z-value	Probability (p)
Pre-service	205	39452	19793.00	0.64	0.2611
In-service	186	37266			

From table 4.2 it was observed that the Sum of Ranks of pre-service and in-service student-teachers in teaching aptitude score were 39452 and 37266 respectively with 205 and 186 student-teachers in respective groups. The U-value and z-value were found to be 19793 and 0.64 respectively. Referring Table for normal probability (Table A of Siegel, 1956) under null hypothesis (H_0) of z, for $z \leq 0.64$, the two tailed probability was found to be 0.2611 which is greater than our decided significance level (α) i.e. 0.05. Hence the null hypothesis i.e. 'there will be no significant difference in the teaching aptitude of pre-service and in-service student-teachers' is retained and it can be said that pre-service and in-service student-teachers do not differ stochastically in terms of their teaching aptitude.

- **INTEREST OF PRE-SERVICE AND IN-SERVICE STUDENT-TEACHERS TOWARDS TEACHING PROFESSION**

To achieve objective 4 of the present study i.e. 'to compare the interest of pre-service and in-service student-teachers towards teaching profession' and to test the null hypothesis 2 of the present study i.e. 'there will be no significant difference in the interest of pre-service and in-service student-teachers towards teaching profession', data were analyzed using Mean, Standard Deviation and Mann-Whitney U-test which is given and discussed in table 4.3 and table 4.4.

Table 4.3: Mean, Standard Deviation and Standard Error of Mean wise distribution of Interest of Pre-service and In-service Student-teachers towards teaching profession

Student-teachers	N	Mean	Standard Deviation	Standard Error of Mean
Pre-service	205	125.2	42.06	2.94
In-service	186	124.4	40.57	2.98

From the table 4.3 it was found that the Mean interest of pre-service and in-service student-teachers towards teaching profession was 125.2 and 124.4 respectively. The Standard Deviations from the Means for the interest towards teaching profession was found to be 42.06 and 40.57 respectively for pre-service and in-service student-teachers with Standard Error of Means of 2.94 and 2.98 for the respective groups. Comparing the Means it was found that the Mean of pre-service student-teachers were higher than that of in-service student-teachers. From the Standard Deviations and Standard Error of Means of both the groups it was also observed that the In-service student-teachers were more homogeneous in terms of their interest towards teaching profession in comparison to their pre-service counterpart. To find whether the difference in the mean was significant or by chance and to test the $H_0 2$, Mann-Whitney U-test was used as the sample was taken purposively. The summary of the Mann-Whitney U-test is given in table 4.4, followed by analysis.

Table 4.4: Summary of Mann-Whitney U-test for Interest of Pre-service and In-service Student-teachers towards Teaching Profession, with the Number of sample, Sum of Ranks, U-value, z-value and Probability

Student-teachers	N	Sum of Ranks	U-value	z value	Probability (p)
Pre-service	205	40378	18867.00	−0.17	0.4325
In-service	186	36348			

From table 4.4 it was observed that the Sum of Ranks of pre-service and in-service student-teachers in interest score towards teaching profession were 40378 and 36348 respectively with 205 and 186 student-teachers in respective groups. The U-value and z-value were found to be 18867 and −0.17 respectively. Referring Table for normal probability (Table A of Siegel, 1956) under null hypothesis (H_0) of z, for $z \leq -0.17$, the two tailed probability was found to be 0.4325 which is greater than our decided significance level (α) i.e. 0.05. Hence the null hypothesis i.e. 'there will be no significant difference in the interest of pre-service and in-service student-teachers towards teaching profession' is retained and it can be said that the pre-service and the in-service student-teachers do not differ stochastically in terms of their interest towards teaching profession.

- **ATTITUDE OF PRE-SERVICE AND IN-SERVICE STUDENT-TEACHERS TOWARDS TEACHING PROFESSION**

To achieve objective 4 of the present study i.e. `to compare the attitude of pre-service and in-service student-teachers towards teaching profession' and to test the null hypothesis 3 of the present study i.e. 'there will be no significant difference in the attitude of pre-service and in-service student-teachers towards teaching profession', data were analyzed using Mean, Standard Deviation and Mann-Whitney U-test which is given and discussed in table 4.5 and table 4.6.

Table 4.5: Mean, Standard Deviation and Standard Error of Mean wise distribution of Attitude of Pre-service and In-service Student-teachers towards Teaching Profession

Student-teachers	N	Mean	Standard Deviation	Standard Error of Mean
Pre-service	205	72.41	23.85	1.67
In-service	186	77.06	24.38	1.79

From the table 4.5 it was found that the Mean attitude of pre-service and in-service student-teachers towards teaching profession was 72.41 and 77.06 respectively. The Standard Deviations from the Means for the attitude towards teaching profession was found to be 23.85 and 24.38 respectively for pre-service and in-service student-teachers with Standard Error of Means of 1.67 and 1.79 for the respective groups. Comparing the Means it was found that the Mean of in-service student-teachers was higher than that of pre-service student-teachers. From the Standard Deviations and Standard Error of Means of both the groups it was also observed that the pre-service student-teachers were more homogeneous in terms of their attitude towards teaching profession in comparison to their pre-service counterpart. To find whether the difference in the Mean was significant or by chance and to test the $H_0$3, Mann-Whitney U-test was used as the sample was taken purposively. The summary of the Mann-Whitney U-test is given in table 4.6, followed by analysis.

Table 4.6: Summary of Mann-Whitney U-test for attitude of Pre-service and In-service Student-teachers towards teaching profession, with the Number of sample,

Sum of Ranks, U-value, z-value and Probability

Student-teachers	N	Sum of Ranks	U-value	z value	Probability (p)
Pre-service	205	38013	21232.00	1.90	0.0287
In-service	186	38717			

From table 4.6 it was observed that the Sum of Ranks of pre-service and in-service student-teachers in attitude score towards teaching profession were 38013 and 38717 respectively with 205 and 186 student-teachers in respective groups. The U-value and z-value were found to be 21232 and 1.90 respectively. Referring Table for normal probability (Table A of Siegel, 1956) under null hypothesis (H_o) of z, for $z \leq 1.90$, the two tailed probability was found to be 0.0287 which is lower than our decided significance level (α) i.e. 0.05. Hence the null hypothesis i.e. 'there will be no significant difference in the attitude of pre-service and in-service student-teachers towards teaching profession' is rejected and it can be said that the attitude of in-service student-teachers is stochastically larger than that of pre-service student-teachers towards teaching profession.

- **KNOWLEDGE IN EDUCATION OF PRE-SERVICE AND IN-SERVICE STUDENT-TEACHERS**

To achieve objective 4 of the present study i.e. 'to compare the knowledge in education of pre-service and in-service student-teachers' and to test the null hypothesis 4 of the present study i.e. 'there will be no significant difference in the knowledge in education of pre-service and in-service student-teachers', data were analyzed using Mean, Standard Deviation and Mann-Whitney U-test which is given and discussed in table 4.7 and table 4.8.

Table 4.7: Mean, Standard Deviation and Standard Error of Mean wise distribution of Knowledge in Education of Pre-service and In-service Student-teachers

Student-teachers	N	Mean	Standard Deviation	Standard Error of Mean
Pre-service	205	80.38	35.30	2.47

In-service	186	77.06	26.93	1.97

From the table 4.7 it was found that the Mean Knowledge in Education of pre-service and in-service student-teachers was 80.38 and 77.06 respectively. The Standard Deviations from the Means for the Knowledge in Education was found to be 35.30 and 26.93 respectively for pre-service and in-service student-teachers with Standard Error of Means of 2.47 and 1.97 for the respective groups. Comparing the Means it was found that the Mean of in-service student-teachers was lower than that of pre-service student-teachers. From the Standard Deviations and Standard Error of Means of both the groups it was also observed that the in-service student-teachers were more homogeneous in terms of their Knowledge in Education in comparison to their pre-service counterpart. To find whether the difference in the Mean was significant or by chance and to test the $H_0$4, Mann-Whitney U-test was used as the sample was taken purposively. The summary of the Mann-Whitney U-test is given in table 4.8, followed by analysis.

Table 4.8: Summary of Mann-Whitney U-test for Knowledge in Education of Pre-service and In-service Student-teachers, with the Number of sample, Sum of Ranks, U-value, z-value and Probability

Student-teachers	N	Sum of Ranks	U-value	z value	Probability (p)
Pre-service	205	41140	18105	−0.84	0.2005
In-service	186	35592			

From table 4.8 it was observed that the Sum of Ranks of pre-service and in-service student-teachers in educational knowledge score were 41140 and 35592 respectively with 205 and 186 student-teachers in respective groups. The U-value and z-value were found to be 18105 and −0.84 respectively. Referring Table for normal probability (Table A of Siegel, 1956) under null hypothesis (H_o) of z, for $z \leq -0.84$, the two tailed probability was found to be 0.2005 which is greater than our decided significance level (α) i.e. 0.05. Hence the null hypothesis i.e. 'there will be no significant difference in the Knowledge in Education of pre-

service and in-service student-teachers' is retained and it can be said that pre-service and in-service student-teachers do not differ stochastically in terms of their Knowledge in education.

- **TEACHING SKILLS OF PRE-SERVICE AND IN-SERVICE STUDENT-TEACHERS**

To achieve objective 5 of the present study i.e. 'to compare the teaching skill of pre-service and in-service student-teachers' and to test the null hypothesis 5 of the present study i.e. 'there will be no significant difference in the teaching skill of pre-service and in-service student-teachers'. Data were analyzed using Mean, Standard Deviation and Mann-Whitney U-test which is given and discussed in table 4.9 and table 4.10.

Table 4.9: Mean, Standard Deviation and Standard Error of Mean wise distribution of Teaching Skill of Pre-service and In-service Student-teachers

Student-teachers	N	Mean	Standard Deviation	Standard Error of Mean
Pre-service	50	191.26	1352.41	191.29
In-service	50	186.32	1317.48	186.35

From the table 4.9 it was found that the Mean teaching skill of pre-service and in-service student-teachers was 191.26 and 186.32 respectively. The Standard Deviations from the Means for the teaching skill was found to be 1352.41 and 1317.48 respectively for pre-service and in-service student-teachers with Standard Error of Means of 191.29 and 186.35 for the respective groups. Comparing the Means it was found that the Mean of pre-service student-teachers was greater than that of in-service student-teachers. From the Standard Deviations and Standard Error of Means of both the groups it was also observed that the pre-service student-teachers were more heterogeneous in terms of their teaching skill in comparison to their in-service counterpart. To find whether the difference in the Mean was significant or by chance and to test the $H_0$5, Mann-Whitney U-test was used as the sample was taken purposively. The summary of the Mann-Whitney U-test is given in table 4.10, followed by analysis.

Table 4.10: Summary of Mann-Whitney U-test for Teaching Skill of Pre-service and In-service Student-teachers, with the Number of sample, Sum of Ranks, U-value, z-value and Probability

Student-teachers	N	Sum of Ranks	U-value	z value	Probability (p)
Pre-service	50	1628	337	−4.105	.0018
In-service	50	1612			

From table 4.10 it was observed that the Sum of Ranks of pre-service and in-service student-teachers in teaching skill score were 1628 and 1612 respectively with 50 student-teachers in each group. The U-value and z-value were found to be 337 and −4.105 respectively. Referring Table for normal probability (Table A of Siegel, 1956) under null hypothesis (H_o) of z, for z ≤ −4.105, the two tailed probability was found to be 0.0018 which is smaller than our decided significance level (α) i.e. 0.05. Hence the null hypothesis i.e. 'there will be no significant difference in the teaching skill of pre-service and in-service student-teachers' is retained and it can be said that pre-service and in-service student-teachers do not differ stochastically in terms of their teaching skill.

4.3.0 MAJOR FINDINGS OF THE PRESENT STUDY

From the analysis and interpretation of data, the following major findings were drawn for the present study.

1. Admission process in both pre-service and in-service B.Ed. was found with minimum criteria of 50% and above marks in Graduation. In pre-service B.Ed. programme, admission was based on academic performance at degree level, i.e. Graduation and Post-graduation marks whereas in in-service B.Ed. programme, along with the academic performance in Graduation and Post-graduation admission was totally based on the merit in entrance test with the minimum required criteria of two years of teaching experience and serving teacher in school. Both pre-service and in-service B.Ed. programme followed the reservation policy followed by the State and Central Government.

2. In pre-service B.Ed. programme, teaching-learning was done through regular teaching in face-to-face mode with utmost 80% attendance, whereas in in-service B.Ed.

programme, teaching-learning was done through personal contact programmes-counselling sessions and tutorials where attendance was not compulsory. Pre-service B.Ed. programme had Core components and Practical which included teaching practice, assignments, development of teaching aids etc. Along with the Core component the in-service B.Ed. programme had school based practice teaching, school based practical and workshop based practice teaching, workshop based practical. In both, Pre-service and In-service B.Ed. programme, student-teachers were assigned certain projects and assignments such as, making Programmed Learning Material, teaching-aids and working models; doing content and textbook analysis. They were also supposed to carry out action research in the school set-up. Before they went for practice teaching in schools, they were oriented about the teaching skills, teaching aids, educational technology, content analysis, blue print, lesson plans and unit plans. Then they underwent Simulations where they learned to teach in an artificially created environment, generally in a group of 8 to 10 student-teachers. After learning through discussions and feedbacks in Simulation, they went for practice teaching in schools. They were also supposed to maintain a Journal of records of lesson plans and unit plans to be delivered in the class.

3. In pre-service B.Ed. programme, Continuous and comprehensive evaluation was done through assignments, periodical tests and semester-end examinations. Mostly subjective type questions based on understanding of the content and sometimes application based questions were asked in theory courses. Two Viva-Voce tests were conducted and both the internal as well as external viva-voce tests carried equal weightage. Whereas, in in-service B.Ed. programme, Continuous and comprehensive evaluation was done through assignments, workshop and performance test through practice teaching and term-end examinations, respectively. In both pre-service and in-service B.Ed. programme evaluation was transparent as it was based on pre-declared guidelines and evaluation rubric.

4. Pre-service and in-service student-teachers do not differ significantly in terms of their teaching aptitude.

5. Pre-service and in-service student-teachers do not differ significantly in terms of their interest towards teaching profession.

6. The attitude towards teaching profession of in-service student-teachers is significantly greater than that of pre-service student-teachers.

7. Pre-service and in-service student-teachers do not differ significantly in terms of their knowledge in Education.

8. Pre-service and in-service student-teachers do not differ significantly in terms of their teaching skills.

4.4.0 DISCUSSION

The major findings are further discussed here. In pursuance of the objectives of the present study, the data were organized to accomplish the objectives. After the analysis of data the major findings were arrived at, which are discussed in brief as follow.

The study disclosed that the admission of student-teachers in both pre-service and in-service B.Ed. programme was done with minimum criteria of 50% and above marks in Graduation. In pre-service B.Ed. programme, admission was based on academic performance in Graduation and Post-graduation whereas in in-service B.Ed. programme, along with the academic performance in Graduation and Post-graduation admission was totally based on the merit in entrance test conducted by IGNOU with the minimum required criteria of two years of teaching experience and serving teacher in school. Yadav (2011) did a comparative study of pre-service teacher education programme at secondary stage in Bangladesh, India, Pakistan and Sri Lanka and found that the entrance test was conducted in some universities in India but the teaching aptitude was not considered as criteria for admission in the entrance examination. This implies that the entrance test should be made the pre-requisite for admission in pre-service B.Ed. programme also, so that the teaching interest, attitude and aptitude can be assessed at entry level itself. This will ultimately help in improving the quality of teachers in school because only those who are interested in teaching will enter the teaching profession.

The study also unveiled that in pre-service B.Ed. programme, teaching-learning was done through regular teaching in face-to-face mode with utmost 80% attendance whereas in in-service B.Ed. programme, teaching-learning was done through personal contact programmes-counselling sessions and tutorials where attendance was not compulsory. Pre-service B.Ed. programme had Core components and Practical which included teaching practice, assignments, development of teaching aids etc. Along with the Core component the in-service B.Ed. programme had school based practice teaching, school based practical and workshop based practice teaching, workshop based practical. Attendance should be made compulsory in counseling sessions of in-service B.Ed. programme, this will strengthen the B.Ed. programme. Kohli (1974) came up with the suggestions that block practice teaching could better be replaced by practice of internship under the charge of practicing school. Need was felt to extend the duration of training to two years instead of the existing one year system. This coincides with today's demand and reality of teacher training institutes. In pre-service B.Ed. programme school based practice teaching phase was for a very short period which has now been extended and made into internship of six months by the NCTE with effect from the year 2015-16. This will give more time to the pre-service student-teachers to develop their teaching skills by practice teaching in real life situation in schools. Garg & Gakhar (2011) discovered that the distance teacher trainees outperformed the on-campus trainees on their preference for left-hemispheric styles of learning and thinking, budgeting time, learning motivation, overall study habits, academic motivation, attitude towards education, work methods, interpersonal relations and on their perception about relevance of course content of theory papers in B.Ed. This means there is so much to learn from in-service secondary teacher education programme. Their Assignments are also very qualitative and application based, such as action research, preparing a report on the conduct of assembly, CCA in schools etc.

Behari (1998) found that methodology of teaching paper was more helpful than the foundation papers taken together in developing abilities especially skills. Dramatics as an activity and discussion as a mode of transaction of programme was helpful. Yadav (2011) found that the practical activities were very useful for making an effective teacher. It developed confidence among them. The necessary knowledge and skills related to subject matter were inculcated by these activities. Kumari (2013) uncovered that the training received through the curriculum of the programme does not influence their teaching

competency alone rather it has the ability to influence their attitude, usage of modern technological devices and ability to manage their classrooms effectively. Therefore, teaching-learning process is an important component of the B.Ed. programme.

In pre-service B.Ed. programme, Continuous and comprehensive evaluation was done through assignments, periodical tests and semester-end examinations. Whereas, in in-service B.Ed. programme, Continuous and comprehensive evaluation was done through assignments, workshop and performance test through practice teaching and term-end examinations, respectively. In both pre-service and in-service B.Ed. programme evaluation was transparent as it was based on pre-declared guidelines and evaluation rubric. Study done by Buch (1975) pointed out that innovations in evaluation at the Department of Education, The M.S. University of Baroda were undertaken - transfer of power from external to internal and making whole evaluation process a continuous one, whereas Das (1991) compared the evaluative procedures of secondary teacher training institutes in Gujarat State and found that diversity exists in the evaluation process in teacher training colleges; majority of institutes followed a mixture of internal and external evaluation process. Patted (1992) found that for assessment of annual lessons, the mean of two examiners were taken into consideration in the colleges of education in the universities of Karnataka State. Therefore, there should be an external cum internal marking system with continuous evaluation and the semester system should be adopted in all teacher training colleges.

The research study revealed that the pre-service and in-service student-teachers did not differ significantly in their teaching aptitude while the study conducted by Goel et. al. (2007) exposed that teaching aptitude of in-service teachers was higher than that of the pre-service teachers and another study conducted by Panda and Pradhan (2009) also disclosed that teaching aptitude of those pupil teachers who had exposure to two years and four years B.Ed. training programme was higher than those who had experience of only one year B.Ed. course and they had better classroom teaching performance. Hence the findings of the present study contradict with the findings of the studies conducted by Goel et. al. (2007) and Panda and Pradhan (2009). The cause may be due to the fact that the present day students in the teaching profession those joining the B.Ed. institutes for pre-service and in-service training are with

appropriate teaching aptitude. It may also be due to the proper process in the training programme that may have developed teaching aptitude among pre-service and in-service student-teachers as supported by the study conducted by Kaur (2007) who concluded that B.Ed. programme enhanced teaching aptitude of prospective teachers.

Still there seems to be a lot of uncertainty regarding the level of teaching aptitude among student-teachers as shown by studies done by Sharma (1984) who uncovered that about 75% of student teachers of ten teachers' colleges of three universities of Rajasthan were below average in aptitude and Seetharaman (2015) again unearthed that student-teachers of two districts of Tamil Nadu in general had below average teaching aptitude. More research is needed in this direction and there should be a check on teaching aptitude of student-teachers at entry level into the B.Ed. programme. This will help in maintaining the quality of teachers.
The attitude towards teaching profession of in-service student-teachers was found significantly larger than that of pre-service student-teachers. This finding of the present study has a positive implication for the teaching profession that stops the critics those are against the in-service B.Ed. programme. The positive attitude of in-service student-teachers towards the teaching profession may be due to their interest towards the profession. Similarly, the positive attitude of pre-service student-teachers may be due to their regular face-to face mode of interaction and a positive climate in the teacher training institutions. This was supported by the studies carried out by Buch (1959), Mehrotra (1973), GCPI (1976), Kaul (1977), Verma (1979), Kaur (2007), Kavita (2011) and Gunjal (2014) which revealed the same result that training had favourable effect on the attitude of teacher trainees towards teaching profession. Sinha (1980) came up with a conclusion distinct from others that trained teachers were better than untrained teachers in professional efficiency but there was no significant difference between two categories of teachers in their attitude towards the teaching profession.

No significant difference was found in the Knowledge in Education of pre-service and in-service student-teachers, this indicates that teaching-learning of theory courses does help the student-teachers in acquisition of knowledge in education, which are must for effective teaching. This was backed up by the research done by Tharyani (1986) who found that B.Ed. students' knowledge (academic achievement) in their respective subject area was found to be the best predictor of teacher effectiveness. Even Sinha (1980) discovered that in the sphere of

professional efficiency, the trained teachers were better than the untrained teachers in the knowledge of the subjects and teaching skills as the pre-service student-teachers are exposed to the content of education in a regular face-to face mode of teaching and learning and the in-service student-teachers are exposed to the education knowledge during their contact and counseling classes and through their reference materials i.e. modules. Another noteworthy observation was done by the study carried out by Sharma (1970) who found that the achievement in theory subjects do not take into account the important variables like personality of the teacher, handwriting, expression etc. which affect teaching. The result showed positive but low correlation between achievement in theory subjects and skills of teaching.

No significant difference was found in the Interest towards Teaching Profession of pre-service and in-service student-teachers. In-service student-teachers were more homogeneous in terms of their interest towards teaching profession in comparison to their Pre-service counterpart. It was obvious that the in-service student-teachers had interest in teaching profession due to which they were attracted towards the profession even without professional training they were working as teachers in different schools. Patil (2012) found that interest in teaching of prospective teachers increased with increase in their academic achievement and it can be used as predictor of academic achievement of prospective teachers.

No significant difference was found in teaching skills of pre-service and in-service student-teachers, this indicates that training does help the student-teachers in acquisition of skills, which are must for effective teaching. This was supported by the findings of the study conducted by Jangira, Singh & Mattoo (1981) that Knowledge and skills are fundamentals for making teaching effective and training enhances the teaching skills. Training in skills is pre-requisite for improvement in teaching skill competence and general teaching competence. This was substantiated by the studies conducted by Patel (1976), Kanwal (1979), George and Anand (1980), Jangira, Singh & Mattoo (1981), Singh (1981), Das et al (1982), Kumar (1998) and Ellison (2009) which were related to teaching skills and mostly experimental in nature. All the studies together emphasized on the same thing that training in teaching skills using micro-teaching technique brought about significant improvement in teaching skill competence and general teaching competence. This finding of the present study indicates that irrespective

of the mode of training programme (either face-to-face or distance mode), the student-teachers posses teaching skills. In-service student-teachers have the scope to acquire teaching skills due to their prior exposure to the teaching learning situation and the contact programmes like, workshop and practice teaching. Similarly the pre-service student-teachers have also the similar scope to acquire enough teaching skill may be due to better theoretical inputs about the teaching skills and the practice teaching during their training programme.

The findings disclose that all these aspects of teacher education i.e. teaching aptitude, attitude towards teaching profession, teaching skills, knowledge in education and interest towards teaching profession are interrelated and affect each other. Bringing improvement in one aspect will bring improvement in others also therefore the focus of secondary teacher education programmes should be on all these aspects together to produce effective teachers, from admission through teaching learning to evaluation process, every stage is significant to build effective teachers. Therefore, the findings suggest that both the Pre-service and In-service B.Ed. programmes are of serious nature catering to the need of specific group. Thus, transformation in all these aspects of student-teachers should be the focal point in the teacher training programmes. This study may help the teacher educators to plan or to bring about certain modifications in the teacher training programmes, both in content and methodologies, in such a way that these aspects of the prospective teachers are enhanced which will eventually get translated into actions or skills.

In the present chapter researcher analyzed and interpreted the obtained data and discussed the result. In the next chapter summary of the research work, major findings, implications and suggestions were made for the future research in Chapter V.