CHAPTER II

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Inservice education may be defined as continuing education of the teachers following their initial professional certification intended for continual improvement of their professional competence for effective education of the students. It intends to provide teachers with fresh opportunities to grow professionally. The working teachers are exposed to expanding horizons of knowledge and developing pedagogical techniques. Teachers with academic problems in their specific fields get a chance to find solutions through interaction within the group under the able guidance of teacher educators. They experience a thrill of gaining confidence to spring free on their own, a feeling they now hope to pass on to the students. The teachers do of course feel charged up with new confidence and self-reliance. Professional stagnation as per dictum 'static friction is greater than dynamic friction' is sightly broken with the inservice education programme and the teachers become more prone to gain momentum for their dynamic growth as a competent teacher. The teachers become conscious of their personal potentialities and capabilities to meet the new challenges.
of education. They gain proficiency in handling the sophisticated teaching aids - soft and hardware as well. Inservice education helps the teachers to dispense with their old notions and get rejuvenated for a healthy coverage of generation gap between the teacher and the taught. Andre Pareel has also observed three facets of inservice education, firstly, the teachers should continue with their personal and professional education; secondly the rapid extensive and fundamental nature of present day change - technological, economic, cultural, social, political - makes it imperative for the education system in general and teachers in particular to review and modify teaching methods in curriculum; thirdly for widely prevalent demographic reasons, the demand for new teachers is dropping sharply and the inservice education and training of a stable teaching force becomes more pertinent to the situation. It is also obligatory on the part of inservice education to enable the teachers to meet the demands for improvement of quality of instruction in the schools through improving their teaching practices. Inservice education has to cater to the increased need for understanding the learning process which impels the teachers to acquaint themselves with the new investigations in the field of 'how and what to teach,' the structural organization of curriculum, the stages of intellectual development of the child, the validity of
various methods to gain certain ends, the time and place to introduce principles and concepts and the nature of transference of learning etc. Since pre-service training of teachers can best make them abreast of existing knowledge which tends to be outdated with the passage of time, it is, therefore, essentially desirable to give timely doses to working teachers in their respective fields so that they can be fittingly play their role in the overall development of the children as also propounded in new educational policy (1986).

Inservice education is a process of working towards change viewed in terms of human behaviour. The changes are ordinarily identified as gaining new knowledge, increasing understanding, acquiring more desirable attitudes and strengthening interests. Toynbee as referred to by Jawanda (1976) has remarked that change cannot be brought to a halt. The constructive way of dealing with the inevitability of change is to make change voluntarily before it imposes itself. Inservice education has to its credit that it tones up the flexibility trait of the teacher enabling him to be better fit with novel demands of his professional environment.

The nature of inservice education is two-fold: one, it is highly individualised and is undertaken by a
particular teacher at his own initiative, for example, by reading books and journals and interacting with other colleagues etc., two, it is initiated through planned programmes.

It is worth mentioning that the need for inservice education of teachers has been increasingly felt at the national levels recently, as enunciated by Ernaut (1985), probably for some of the following reasons:

i) They believe that educational practice needs to be more closely linked to national needs and for the needs of the local community;

ii) Approaches to educational change which neglect the inservice education and training of teachers are usually unsuccessful;

iii) Teachers like other adults need continuing education to keep abreast of change in modern society;

iv) There is a growing concern in some countries about the quality of teaching and career development of those who have had less basic education and training than current recruits to teaching;

v) Demographic trends have reduced the demand for new teachers in some countries thus cutting off one
important source of new ideas. Hence the need for focusing attention on those teachers who are already inservice arise more;

vi) The general feeling that education has failed to fulfil the hopes of the expansionist era between 1964 and 1974 has created a public pressure for improved school performance.

The concept of inservice education is no more tangible until and unless it is not clearly formulated through the well defined theoretical framework of assumptions. The fundamental assumption of human behaviour is its non-halting nature. Actual changes in curricular design in teaching practices and in attitude towards improvement are directly dependent upon the sustained growth of teachers. Inservice education will prove to be of paramount utility if some of the fundamental assumptions as advocated by Dave (1968) are taken into account as given below:

i) Education of the educator continues all throughout his professional career in a planned manner.

ii) Educational extension will contribute to the qualitative improvement of education.
iii) The pre-service training provided to the teacher is not adequate for the rest of his professional career.

iv) There are many areas of human endeavour in which changes occur and these changes demand corresponding changes in education and in the educator as well. Education extension is capable of preparing inservice teachers and other educators in the best possible manner for bringing those required changes in education.

v) In order to bring about changes in education, corresponding to the changes in other related areas, it is necessary to improve the competence of the teacher in terms of his knowledge, skills, interest and attitudes as an essential means of improving education.

vi) Individual teachers or small groups of teachers and individual schools or small groups of schools may feel the need of bringing about some changes and aspire to solve certain specific academic problems; educational extension is capable of helping these individuals or groups in meeting their academic needs and in solving their academic problems.
In-service education becomes more effective if, while developing its plans, programmes, demands and techniques, as Dave (1968) has also mentioned the following principles of educational extension are actively considered:

i) There are many differences between initial education of teachers and educational extension.

ii) Educational extension deals with the mature persons. Therefore, the laws of adult learning, techniques of motivating them to learn and change their practices, and such other aspects of adult education should be carefully considered in order to make educational extension successful.

iii) The basic objective of educational extension is to improve professional competence of the educators in order to improve education. In this light the specific objectives should serve as guidelines in developing extension programmes and activities, techniques of conducting the programmes, educational materials and evaluation procedures to appraise the effectiveness of extension work. Such objective-centred programmes are likely to produce reinforcing...
influence on the recipients of educational extension and a cohesive impact on their educational practices.

iv) While formulating specific objectives of educational extension the needs of the clientele, needs of the state and the nation as a whole, availability of resources and such other factors should be taken into account so as to make the goals attainable.

v) Educational extension is that stage of teacher-education which has to bear a tremendous responsibility of keeping education dynamic, up-to-date and responsive.

Setting of objectives renders a vehement role in driving ahead and executing proficiently the planned activity such as the inservice education programme. Jawanda (1976) has brought to light several objectives of inservice education as are given below:

1. To equip the teachers with the latest content or subject-matter in their specialised fields so that they may catch up with the progress and new developments.

2. To help the teachers learn modern economic and effective methods of teaching. These methods
are imperative for making learning better, more expeditious and for negotiating the new subject-matter which is too complex to be taught with old methods.

3. To initiate the teachers in the habit of self-study with the ultimate aim of keeping them abreast of the latest developments in their own and allied fields. Also they have to be conscious of the growing interrelations between various branches of knowledge.

4. To develop suitable and varied programme to meet individual needs, school needs and the needs of the state with regard to educational extension and making teachers realise their social responsibility in the modern context.

5. To follow up the teachers who undergo inservice education to reinforce the objectives of the training.

The inservice education programmes will yield better results if executed at inservice training centres with a view to make a continuous study of the needs of the teachers in their respective fields through personal contact with them and to plan accordingly in order to
equip the teachers with the latest pedagogical trends. These centres may serve the teachers effectively, as Leonard has stressed, if they are identified with the national goals of education. Teacher educators of inservice institutions should be continually kept in touch with new developments in the relevant fields of education so that they may be able to stimulate the working teachers to improve professionally.

CONCEPTUAL DEVELOPMENT OF INSERVICE EDUCATION

Education is a lifelong process. Continuing education has a beginning in the home and subsequently in the school thus tending to approach the totality of the process of education. The concept of inservice education of teachers, viewed as a course of continuation of education for improving the professional competence of the teachers, both in content and methods of teaching, is a development of recent times in India. Here it is worth mentioning that inservice education of teachers has been gaining momentum in several other countries much earlier, of course. It is streamlined specifically in accordance with the structure of educational system and needs of the society in a particular country. In U.S.A., individual schools tend to be unique and individual in
their characteristics. Hence curriculum framing is much stressed upon in inservice education programme. In North America, inservice education may even be a requirement for relicensing of teachers. A teacher in Finland may not find adequate opportunities for attending an inservice course in his neighbourhood and hence may have to attend a summer school or go to a university for a full time advanced course. In U.S.S.R., every teacher has an opportunity and conditions for systematic work in an inservice education course for teachers. Different types of inservice education course are offered to the working teachers.

In India, an early reference to the need of inservice education was made in Lord Curzon’s resolution on educational policy in 1904, which meant that all possible care should be taken to maintain a connection between the training college and the school so that the student on leaving the college and entering upon his career as a teacher might not neglect to practise the methods and techniques taught to him and may not be checked from doing so and compelled to fall in line with the routinary methods of his untrained colleagues. Further the trained students whom the college has passed
out should be occasionally brought together again and inspecting staff should lend co-operation to the training college authorities in ensuring that the influence of the college is perceptible in the school. Government of India's resolution on educational policy (1913) again reaffirmed the earlier resolution (1904), when it pleaded that the teachers left all alone to themselves were bound to deteriorate and thus a provision of improved courses in vacation to their advantage should be made available.

In the year 1929, the Hartog Committee recommended again very clearly the need for inservice education of teachers. Among other things it recommended that despite ideal conditions where the right type of teachers have been selected and trained thoroughly, still the teacher is much isolated and invariably in the need of guidance and encouragement. Refresher courses, journals and magazines, meetings and conferences can enormously brighten the lives of the teachers and improve their day-to-day work.

For quite a number of years, after the recommendations of the Hartog Committee, no planned efforts seem to have been made either by the Government of India or by the universities and training colleges
to form a systematic programme of inservice education in the country. In the meantime the report on vocational education in India by A. Abbot and S.H. Wood, was published. The report clearly mentioned about the two-fold nature of teachers' training, namely pre-service training and inservice training. It stated that the teachers' training should consist of two distinct parts—a pre-employment training of students in normal schools and thereafter refresher courses for working teachers. They further apprehend that the time may not yet be ripe for this dualistic nature of the training of teachers but they suggest that in due course of time there ought to be a government training college in each province charged with the responsibility of providing a cycle of refresher courses of one or two months duration all along the year.

The report on 'post-war educational development in India' (1944) had also emphasized the need of replenishment for the working teachers as: In supplement to the provisions for the normal training of teachers, refresher courses in accordance with the recommendations of the board should be made available at frequent intervals with a view to keep trained teachers up-to-date. And that such courses to a great extent should cover all the subjects of the
It was also stressed upon that the role of these courses is of paramount importance in a country where large number of teachers compulsorily serve in isolated villages.

During the years 1944 to 1948 different States took up the programme of refresher courses. The State of Madras had already started a programme of refresher courses for the English teachers since 1933. Short courses and evening classes were also started in this state in the forties. The States of Bihar, Bombay, Mysore and United provinces started attempting in this field with a view to improve the knowledge of working teachers. The first attempt made by the Punjab Government was the refresher course held at the Central Training College, Lahore, in the year 1914, for the improvement of teaching of science in schools. In the year 1919 refresher courses were arranged for primary teachers and in 1926 such courses were held for vernacular teachers. Since that time, few other refresher courses were also held such as the refresher course for physical training supervisors in 1932, refresher course in the methods of inspection, administration and control of rural schools in 1936, five refresher courses during the period of 1932 to 1937
to give working knowledge of the 'Mo9a Method' as used in the teaching of urdu to infants and demonstrating to them the use of the 'activity' method in primary classes and a refresher course for english teachers in 1939. Though non-coordinated in nature, such attempts were the pioneering steps which created favourable climate for organising the future inservice programmes in a better way.

In India, the University Education Commission (1949) headed by Dr S. Radhakrishnan recommended:

"An immediate reform is the establishment of vacation refresher courses for high school and inter-college teachers. Presently, neither teachers nor students make use of their vacation in some better way. Most of our teachers do not keep intellectually alive and hardly there is any inducement for them to do so. It is remarkable that our school teachers learn all of whatsoever subject they teach before attaining the age of twenty four or twenty five and thereafter all their further education is left to experience which is the second name to stagnation. We must be conscious that experience needs to be supplemented by experiments. Constant outpouring needs constant intaking. Practice must be reinforced by theory and old must be constantly tested by the new."

Principals of the training colleges of different States met in a conference in 1950 at Broda and recommended:
"With a view to ensuring the unending professional growth of trained teachers and to prevent their lapse into unprogressive methods, refresher courses both special and general should be organised."

Then the Secondary Education Commission (1953) observed: "However excellent the programme of teacher training might be, it does not by itself produce an excellent teacher .... enhanced efficiency will come through experience critically analysed and through individual and group efforts made for improvement. The teacher training institution must accept its responsibility for assisting in the inservice stage of teacher training. And the provisions for refresher courses, short intensive courses in special subjects, practical training in workshop and seminars and professional conferences should be available in such institutions.

In 1954, Government of India appointed an international project team to study the various steps and procedures needed for implementing the major recommendations of the secondary education commission. About inservice education the team remarked:

"We recommend that education departments should consider ways and means of helping teachers to obtain inservice training and recognizing the improvement in their professional and academic qualifications by suitable salary increments."
The All India Council for Secondary Education was set up as an autonomous body by the Government of India in the year 1953. The various programmes undertaken by the council included the setting up of a machinery to develop and implement a sound programme of inservice education for secondary teachers in the country. Since July 1955, this council started functioning with about twenty-nine Extension Service Centres in secondary training colleges all over the country. The number of these centres rose to fifty-four by 1958. In 1959, all India Council for Secondary Education was deprived of its uniqueness and converted into an advisory body and its functions were taken over by the Ministry of Education, Government of India, which implemented the programme through a new office, 'The Directorate of Extension Programmes for Secondary Education.' The transfer of the inservice education programme from an autonomous body to the administrative machinery of the Union Government proved to be another setback and the growth of inservice programme was hampered.

In September 1961, it was replaced by another new autonomous organisation named as the National Council of Education Research and Training (NCERT) which takes care of training, research and extension
work in education apart from other manifold functions. During the period 1962 to 1965, forty two more extension centres were established and total number of extension centres was raised to ninety six by 1965. An Extension Research Centre was instituted to study the efficacy of these centres. New developments in the field of science, mathematics and social studies necessitated a fresh thinking in the N.C.E.R.T. which gave birth to the idea of summer institutes for working teachers in the year 1963. These summer institutes spreading all over the country became very popular. In the State of the Punjab, the first such orientation course for the newly recruited college lectures was held at the State College of Education, Patiala, in the year 1963.

In 1964, the State Institutes of Education were established in all the States in the country. One of the various functions of these institutions has been to organize inservice education programmes for teacher educators and block education officers. Soon after in 1966, came out the report of Education Commission which again emphasized the importance of continuing professional education. It stated:
"In all the professions there is a need to provide further training and special courses of study on continuing basis, after initial professional preparation. The need is most urgent in the teaching profession because of the rapid advance in all fields of knowledge and continuing evolution of pedagogical theory and practice .... Every training institute should work on twelve months basis with proportionate provision for additional staff and facilities. In addition, institutions that will carry out inservice work on a whole-time and continuing basis should be established."

In addition to the state institutes of education, the State of Punjab has to its credit two more institutes catering to inservice education i.e. State Institute for Science Education which was established in 1968 with a purpose to boost science education and Regional Institute of English established in 1963 for quality teaching of English. All these institutes have been working in collaboration with the National Council of Educational Research and Training.

The assessment of extension centres undertaken during 1965-66 showed the contribution of inservice programmes in the improvement of quality of secondary education. Still the authorities realised that there were several challenging issues to warrant careful thinking about those programmes being organised in the country, some of which were as follows:
1. The first major issue was that latest developments in methods and content did not find sufficient place in inservice programmes. The assessment committee was of the view that "If a programme of inservice education discusses problems like team-teaching, use of mass media of education, programmed learning or any other development in classroom teaching, it is justifiable. But it is useless to discuss the things which legitimately belong to the programmes of pre-service education."

The main stress given by the committee was on the point to organise the curriculum development programme through inservice education keeping in mind the latest developments as well as what was going on at the national level, and that the discussion by teachers on such syllabi by itself would broaden the educational horizon of the teachers and might result into their increased ability to do justice to the teaching of their subjects in classrooms.

2. The second major issue in inservice education was the type of resource personnel employed by extension centres in their programmes. According to Buch (1968), "A few enlightened participants, sometime
ago, pointed out that it was no use entrusting the administration of inservice education programmes to teachers colleges which could not develop even a good preservice education programme." There was the need to identify the right type of resource personnel for inservice education programmes, because, as all other specialized fields, extension education is a special field requiring personnel specially trained and experienced for it.

3. The third issue in inservice education was regarding the agency that should be entrusted with the responsibility of organizing such programmes. As regards the inservice programmes organized by extension centres attached to training colleges, one of the some basic issues which came to the surface was that the training colleges were not charged with the responsibility to improve schools. This has been the responsibility of the State Department of Education and the District Education Officers. In addition to all that only the office of District Education Officer was in a position to know the needs of schools and teachers because the work of inspection and supervision was undertaken by that very office. So it was thought worthwhile
to experiment by locating the inservice education agency in the office of the district education officer, in at least one district in every State.

4. In a number of States there were guidance bureaux, evaluation units, curriculum and research bureaux, audio visual departments, science units and English language units etc. which aim at the inservice education of teachers. The issue was to integrate all such agencies into a major department of inservice education in the State. Establishment of State Councils of Educational Research and Training proved to be a stepping stone in this direction.

The inservice education programmes were operated only at extension centres in colleges of education till 1975, when the State of the Punjab realizing that the importance and imperative need of inservice education for teachers should be met with a systematic, and scientific approach to it on a regular basis, came forward with the establishment of the three Government inservice Training Centres located one in every division at Patiala, Jalandhar and Ferozepore respectively. To begin with, the centres were equipped with staff both
from the college and the school sides. After a few years, these centres became part and parcel of school directorate and they were manned with school personnel only. Despite several limitations like insufficiency of building and hostel accommodation etc., the working and utility of these centres has made the government feel to increase the number of Government Inservice Training Centres from three to five in 1986.

These centres have been designed to stimulate growth of the teachers so as to make them a good deal of professionally competent. Professional competency is rather a relative concept, which is indeed difficult to be measured in an absolute sense. It depends upon the teachers' inherent potentialities which need be energised through the reflection of external expertise for stimulating growth in the right perspective. Teacher competence, in itself, is not an operational criterion. It is rather standard of performance in a specific work situation. No teacher is more competent than another except as someone so decides and designates. The process of such designation is based upon a reasoned judgement of adequate criteria. Several controversies exist as to the nature of criteria of teacher competence and it has been realized that no single criterion, however
carefully implemented, would be a valid measure for evaluating teacher competence. Instead the multi-dimensionality of the criterion would provide an adequately reliable and objective picture. These have been classified, as (i) process criteria, (ii) presage criteria and (iii) product criteria.

In the present study an attempt has been made to measure the development of professional competency of teachers through the study of some variables which have been identified as process variables, structure variables and product variables. A brief classification of these variables is given as under:

1. Process Variables

These include (a) teaching effectiveness, and (b) educational awareness of teachers.

2. Structure Variables

These include (a) teacher attitude; (b) rigidity-flexibility of teachers, and (c) physical resources of in-service institutions.

3. Product Variables

These include (a) scores of teachers on achievement tests; (b) school results of the teachers and (c) the
impact of inservice education programme upon the trainees.

These variables are described, one by one, as follows:

1. PROCESS VARIABLES

a) Teaching Effectiveness

An effective teacher is indispensable even in the most well-equipped system of education is the belief now accepted by all. He who teaches effectively may pave the way for progressive and productive society. On the contrary, the poor teaching would lead to the perpetuation of ignorance, misunderstanding and intellectual and cultural stagnation in a society.

There are a large number of factors which determine the effectiveness of the teachers in the field of teaching. Among these factors, mention may be made of a few personality traits such as adjustment, intelligence, creativity, interest in teaching, mental health, attitude of teachers towards teaching profession and refreshing their knowledge and methodology of teaching through inservice education programmes.

Though, despite considerable research efforts in recent years, there hardly seems to be a decisive
concurrence as to the concept of teaching effectiveness, yet from the point of view of operationalising the concept, attempts have been made to define it in terms of (i) competences employing teacher's role as director of learning; (ii) degree to which the teacher as an agent produces effects; (iii) relationship between pupils, teachers and persons and (iv) teacher characteristics.

Several approaches towards measurement of teacher effectiveness have been followed which centre around the evaluation of (i) teacher behaviour process; (ii) a product of teacher behaviour; (iii) concomitants of teacher behaviour.

Various descriptions of effective teachers have been evolved during the past few decades. According to Monroe (1952), "The ideal teacher of 1920's was a person possessing the traits, knowledge and skills considered necessary for performing various duties involved in that position. The ideal teacher in 1940's was a constructive and acceptable member of the school staff, competent to participate in determining school policies and programmes and interested in doing so as well as an efficient instructor in the classroom." In nineteen sixties, the qualities to be sought in an ideal
teacher included: "The teacher should deeply love his own subject in particular and learning in general, with a love that ensures continuing scholarship throughout his career. He should be interested in young people and respect them. He should constantly assess and understand the moral as well as the intellectual ends for which he teaches. As a person he should have integrity, vitality, stability and courage."

Thomas (1932) defines effectiveness by remarking, "Effectiveness is the degree to which an agent produces effects." Three categories of effect in terms of objects affected were identified as (i) the pupil; (ii) school operations; (iii) the school community. Effects on pupil have long been accepted as relevant criterion dimensions of teacher effectiveness. Pupil growth, change, gain, development, learning and the like had often been considered as the ultimate criteria of teacher effectiveness.

Researchers dealing with work in the field of teacher effectiveness are extensive and numerous, some of which are listed as Barr (1948, 1949 and 1952), Domas and Tisdman (1950), Castetter et al. (1954), Barr et al. (1955, 1956 and 1961), Saxe (1963), Evans (1951) and Medley and Mitzel (1959). There have been repeated
attempts to relate teacher effectiveness to teacher behaviour, teacher personality and teacher effects (Lyans, 1960; Flander, 1969). Biddle (1964) has discussed the role of formative experiences, teacher properties, teacher behaviours, immediate effects, long term consequences, classroom situations and school and community contents in his seven-variable model for teacher effectiveness. Radinowitz and Travers (1953), Ackerman (1954), Tomlinson (1955a and 1955b), and Watters (1954) observe that much of the literature in this field is inconclusive or offers conflicting results.

In India too, attempts by Adval (1952), Desajh (1956), Mina Roy (1970), Sutaj Salam (1963), Verma (1968), Chaturvedi (1970), Singh (1971), Buch and Santhanam (1972), and Buch (1975) and Grewal (1975) have been made to explore the field of teacher effectiveness.

Inservise education has a direct bearing on teaching effectiveness of the teachers. The success of the inservice education programme, in fact, depends upon the extent to which they have gained the ability of teaching effectively when they go back and teach in their respective institutions.
Karbal (1963) undertook an evaluation of a workshop and its effects as a process in the inservice education of teachers by appraising the way in which programmes and schools were affected. A great gain was seen in the help given to inexperienced teachers in human relation activities, and in participation in school organisations as well as in classroom management. Samantarov (1971) indicated positive relationships between the variables of teacher attitude and teaching efficiency and also between the variables of teacher adjustment and teaching efficiency. Joslin (1980) proved that inservice education is effective in changing teacher achievement and skills and attitudes of the teachers. Reinhard (1986) also states, "From whatever we learn in our regular interactions with practising school administration, we can develop superior inservice delivery mechanisms that take into account the nature of the learner, the constraints and opportunities of learning, time and environment, effective instructional strategies and immediate and future content needs."

b) Educational Awareness of Teachers

Research and investigations to some extent owe their progress to man's nature of inquiry. A teacher
without awareness about education is not a good teacher in the real sense, because the importance of awareness in education for a teacher is of an immense value. There is no denying the fact that almost all the educationists generally agree that the goodness of an educational programme is determined to a great extent by teaching and good teaching depends upon the amount of awareness the teacher has. The schools may have excellent material resources in the form of equipment, buildings and textbooks and though the curriculum may be appropriately adapted to community requirements, if the teachers have no educational awareness regarding methods of teaching, techniques of teaching etc., the whole programme is likely to be ineffective and thus wasted because it is only through enough awareness about education that a teacher can have a complete mastery of the subject matter to be taught, the skills in the utilization of specific techniques and methods of teaching.

Modern age can be rightly characterised as an age of changes as there have been more changes and experimentation going on presently than in any other age.

Presently various new trends are occurring in the field of education, for example, the use of highly sophisticated teaching techniques like 'programmed learning,' 'mock teaching,' 'micro-teaching' and 'structural
teaching,' etc. To keep pace with all such trends the teachers need to be aware about all these with full details so that they may be extraordinarily quick in reacting to the ever-changing environment, lest they should be labelled inadequate.

Sharma and Paramjit (1978) concluded that the responses of the B.Ed. trainees showed the hollowness of their knowledge with regard to educational issues and pedagogical facts and theories, which meant that the trainees were very little aware of the field of education. They suggested that seminars, discussions and assignments etc., which form the backbone of the modern teaching technology, should be encouraged. And such studies should also be made on in-service teachers to find out their educational awareness in the various fields of education.

In-service education programmes at the training centres are said to be effective only if the teacher educators are aware of new developments in the field of education and if they pass on such information effectively to the teachers. The need for such programmes to upgrade the performance of teachers has been stated throughout such works as Moffitt's (1963) where emphasis is placed on the continuing obsolescence of knowledge and methods.
of teaching. Without planned programmes for upgrading their work, individuals who have not learned of the potentialities of, and issues regarding, team teaching, teaching machines and programmed learning as well as other developing techniques will remain isolated on an educational island remote from innovative practices and new knowledge.

2. STRUCTURE VARIABLES

a) Teacher Attitude

The strength and direction of an individual's attitude represent an important aspect of his personality. His attitudes materially affect his educational and vocational adjustment, his inter-personal relations and other major phases of his daily living. It is held in general that attitudes to a greater extent effect the effectiveness of teachers, though some others claim that the effect of personality characteristics has been grossly exaggerated. However, it cannot be denied that attitudes are important indicators of personal and social adjustment. The individual's personal attitude towards the educational work, is a great factor in determining his effectiveness in teaching. For instance, if a teacher
is genuinely interested in his teaching for its own sake and also in the children, his altruistic behaviour will go a long way to evoke an enthusiastic response from the students in the classroom, while student's individuality emerges distinctively, for the teacher's own personality remains clearly defined for every student. The positive attitude may evoke brilliant results while negative attitudes may evoke diametrically the opposite. But the criterion of positive and negative is very relative, for a certain attitude may appear positive to one and otherwise to another. Although the attitudes of the teachers may not be amongst the primary factors conditioning efficiency, they may still exert an important effect on the pupils. On controversial questions, teachers who believe that it is their duty to indoctrinate may influence pupils to conform with their views. Manske (1936) found that the attitudes of some classes were more affected in this way than those of others, irrespective of the age, intelligence or socio-economic status of the pupils.

There are a number of studies available which report correlations between scores on attitude scales and various measures of teacher effectiveness. One of the best known of these attitude scales was drawn up by Yeager (1933) which measures attitude towards teachers.
and the teaching profession. Numerous theorists have discussed the consequences of learning emerging from various teacher personality characteristics, attitudes and interests as they interact with students in the classroom. Studies by Lippitt and White (1943, 1947) and by Anderson and his colleagues (1945, 1946) made it clear that the attitude of the teachers to pupils has a considerable effect on classroom relations. Whether the teacher was autocratic or dominating the children were likely to be aggressive or oversubmissive. They showed little pride in their work and they did not co-operate well with one another. In the classroom of a democratic or socially integrated teacher, the children were relaxed and friendly; they worked well together, and they were interested in what they were doing. Careful observations made it clear that these differences in the children were the results of the differences in the attitude towards them of their teachers. There is ample evidence that pupils reflect in the classroom the attitudes of their teachers.

It is probably true to say that the attitude of the pupils towards the teacher affect their attitude to the work. Considerably, with younger children in particular, liking for a subject may often result from liking for a teacher or for the classroom associated with
A teacher. Older pupils are less affected by such considerations and are more likely to respond to interest inherent in the subject. Corey and Breer (1938) found some evidence that dislike for a teacher does sometimes carry over to the subject, though the converse is less likely to be true. Pupils, it appears, can enjoy a teacher even if the subject taught is unpopular. The teacher who has little sympathy with the pupils and does not understand their needs, may induce a dislike for school and school-work which may affect the whole of their afterlives.

Gymondis and Judek (1956) suggested that the personality of a teacher can be studied best by watching reactions of pupils. The teacher who is confident and secure, who is interested in children and is able to accept them as they are, is likely to be successful but the teacher who is insecure, critical of the system and of people and conditions of work, is often critical, sarcastic and authoritative towards the pupils. This kind of maladjusted teacher tends to impose a barrier between himself and the children, and neither he nor they are likely to be happy in the classroom.

Wandt (1952) argued that a knowledge of teachers' attitudes towards the various groups contacted in the
schools would provide information useful in assessing the total teacher personality. Torrance and Parent (1966) reported that teacher effectiveness had a positive effect on student attitudes towards teaching methods and overall school-climate.

One of the measures to which a very large amount of attention was devoted is the Minnesota Teacher Attitude Inventory (MTAI). Buch (1959) surveyed the attitude of teachers towards the profession. The results indicate that, in general, training has a favourable effect on the attitudes of teachers towards their jobs, except when experience exceeds five years after training. The female graduates are more favourably disposed than the male graduates are and that, in the cases of male teachers, the level of formal education before training is inversely proportional to the favourableness of attitude.

Aggarwal (1966) has found a similar study that factors like 'designation,' 'age,' 'sex,' and 'experience' do not influence the attitudes.

McCullough (1968) concluded that the study instrument can be useful in helping to identify those teachers who, on the basis of these attitudes, displayed
In teaching activities to be more successful than other teachers in their teaching career.

Warrington (1971) reported that the attitude pattern of secondary school teachers are relatively similar in many respects but there are certain essential differences that can be related to teaching at the junior or senior high school level.

In India, Quraishi (1973) studied the relationship between teachers' personality variables and their classroom behaviour using Flanders interaction analysis category system. He found only teacher attitudes to be associated with classroom behaviour of teachers.

The findings of Haan (1964), Flanders (1962, 1963) and Venditti (1966) have indicated the positive aspects that experience in group relations may have on teacher attitudes and activities and new attitudes can be developed through inservice education. Among the several studies which have been undertaken to determine the impact of various types of mathematical inservice education on teachers and teaching, Mossett (1964) found that mathematical workshop held in Missouri contributed to the development of mathematical understandings and to a change
in attitude towards arithmetic. In an assessment of secondary social studies inservice teacher development programme of professional association, Estelle Marks (1973) found that there was a significant difference between the attitudes of the teachers of experimental group and that of the control group in concern with the introduction of the newly founded curriculum content in future inservice development programmes.

Hargrove (1973) concluded that courses and inservice training appeared to be positive factors in influencing favourable attitudes towards teaching reading in the content areas. Schorn (1976) also proved through the findings of his study that an individualized inservice practicum for regular classroom teachers has a positive effect on changing their attitudes about mainstreaming the children with special need.

b) **Rigidity-Flexibility**

Flexibility and rigidity which are on the extreme ends of a bipolar continuum are the traits which are quite important for psychologists these days. According to Ansari and Bhargava (1938), flexibility as a new

*Studies regarding the concept of rigidity-flexibility have been taken from Ansari and Bhargava (1938) Manual of Rigidity-Flexibility Test.*
phenomenon was studied for the first time by Rapaport, Gile and Schafer (1945). Before this, Watson (1920), Ravner (1938), Jones and Jones (1928), Skinner (1939) had also studied this concept but differently. The concept of rigidity was brought into the realm of personality by Luchins (1942) while studying the set which immediately predisposes an organism to one type of motor or conscious act. Other psychologists like Kounin (1941), Goldstein (1943), Heinz Werner (1946), Rakosch (1946), Wesley (1943), Wolper (1953) and Rehflish (1958) studied the concept of rigidity to find out as it is related to other variables, correlates of rigidity, its relationship with flexibility which is on the other end of the continuum. McCain (1964), Ginsburg (1967), Kellam and McKenzie (1965) studied the aspects of the concepts of rigidity and flexibility. In India, Rabindra Jass (1967) measured rigidity through pictures on the basis of the responses obtained for the questions. Ansari (1956) studied the trait of flexibility-rigidity through the Hi-Scale prepared by Rehflish. But he used it in Hindi version which had been prepared by him and by following the same instructions and scoring procedures.

"Rigidity," according to Luchins (1959) "is not the effect of the situational factor only but a specific personality exhibited by the whole of the personality."
Heinz Werner (1946) defined rigidity as a lack of variability and adaptability, which had been observed as a normal trait of a less developed organism. Kounin (1941) defined rigidity as a positive monotonous function of the chronological age and with the advancement of age, rigidity may be found even in a person of dull behaviour. "Rigidity," as Emery (1951) defined it, "is the tendency to adhere to a previously practised method of problem-solving when that method no longer offers the most direct and efficient means of solving the problem." Nesley (1953) also supported this definition of rigidity. Franklin and Shortz (1954) defined psychological rigidity as "It is a person's resistance or lack of readiness to be influenced by motivationally relevant stimulation in such a way as to adjust to his environment as effectively as his behaviour repertory permits."

Thus rigidity implies no change in the person when objective conditions demand a change, of course. Rehflisch (1958) also found that rigid persons will be showing; (i) constriction and inhibition; (ii) intolerance of disorder and ambiguity; (iii) conservations; (iv) obsessional and perservative tendencies; (v) social introversion; (vi) anxiety and guilt.
The concept of flexibility in behaviour is a new phenomenon which means a tendency on the part of a person to shift from one task to another task and from one method to another method while performing some activities. Rappaport, Gile and Schafer (1945) defined it as the ability to modify concepts once developed, upon encountering difficulty or failure ...., a freedom of shifting from one concept to another." Solomon and Diamond (1957) attributed shifting due to (i) change in the internal drive state of the organism; (ii) maturation in the organism.

Flexibility enables the individual to adjust himself effectively in the problematic and complex life situations. According to Ansari (1958), "Persons who are flexible by nature usually find adjustments to new situations and experiences without losing their emotional stability. And as they encounter needs and experiences, they make change in their cognition to some extent to yield a better fit with novel environmental demands." Flexibility in teacher behaviour produces better results in the learning process of students as Flanders (1965) had made it evident from his research findings.
Inservice education programme helps reshaping the mental structure of the teachers on psychological foundations through lively discussions. International approaches help the teachers to get rid of mutilated notions and misconceptions and inculcate the new ones in turn of course. Rigidity of the teachers gives way to the development of more flexibility in them, thus making them more prone to adapt to the new educational environments.

c) Physical Resources Of Inservice Institutions

Physical resources of Government Inservice Training Centres provide the educational environment which contributes to the achievement of teacher trainees in various dimensions of professional competency. In this regard, Manning (1972) had concluded that utilizing a mathematics laboratory approach with the mathematics inservice education of teachers is an effective way to bring about positive change in the mathematics attitude and achievement of their students. In the present study, physical resources of inservice institutions include building facilities, equipment facilities, library facilities, subject-room facilities, hostel accommodation and audio-visual aids of teaching.
3. PRODUCT VARIABLES

a) Achievement Test For Teachers

An achievement test determines what a person has learned to do after he has been exposed to a specific kind of instruction. In the construction of an achievement test efforts are made to determine the knowledge and skills that are commonly taught in different situations and the test items are constructed to appraise these. When one is dealing with success in some type of training programme, one tends to make the marks obtained in courses and use them as the criterion measure of success. Ghiselli (1966) indicates that there is often little correspondence between the tests that have high validity for a training criterion and those that predict success on the job itself. However, it is worth mentioning that the score on achievement test can at best measure knowledge and skill; it cannot tell how effectively the teacher will apply the same at work in the profession. Although such an achievement test cannot tell how well a teacher will do, yet on successful completion of a training programme it serves as a liability to study how well the teacher can do certain tasks assigned to him.
According to Hass (1957), "Broadly conceived inservice education includes all activities engaged in by the professional personnel during their service and designed to contribute to professional improvement." Such programmes of inservice education, according to Richey (1957), refer to as, "The tremendous but largely unfilled need for even modestly educated and professionally trained teachers."

Studies had been conducted by Brown (1962), Weaver (1962) and Stent (1965), on the effects of inservice education in specialized areas and academic fields. Results of these studies proved that teachers who participated in the inservice programmes improved their skills and were able to solve immediate problems more realistically. Garroutte (1980) concluded that inservice training produced a positive change in teachers' pedagogical knowledge in the experimental group of teachers.

b) School Results Of The Teachers

The results of the pupils in their achievement tests depend upon the teaching by the teachers concerned. Inservice education aims at acquainting the teachers with
new ideas which stimulate them to improve in the teaching of their respective subjects.

The term 'school results of the teachers' refers to the difference in the percentages of middle standard public examination results for the consecutive academic years i.e. 1983-84 and 1984-85, of the teachers who have undergone an inservice training for two weeks in 1984-85 and of the teachers who did not undergo any such training during these two years.

An analysis of the learnings of teachers through inservice programmes and their ultimate impact on the students under their jurisdiction was made by Frank Weavers (1962) and Selser (1962). In all cases the students in classes taught by the teachers who were exposed to inservice programme made statistically higher scores on post-tests than did students whose teachers had not attended any such programme. McLeod (1965) found similar results in a programme conducted to remedy deficiencies in mathematics. Florida (1971) stated, "Inservice education is to cause some, more or less, permanent changes in what a teacher knows, how he feels, or how he acts that will have a positive effect on his pupils." The inservice training programme as described in the study by Jones (1972), did produce positive change
in communication patterns between teacher and their pupils. Medley and William (1957) stated that some teacher-behaviour does affect student learning.

c) The Impact Of Inservice Education Programme Upon The Trainees

Inservice education programmes do affect the behaviour of the teachers as to how they have changed their thinking patterns with their exposure to inservice training than what they were before. A well-organised inservice training programme which takes into account teacher needs and knowledge of the background of the teachers proves to be most successful. Gerheim (1959) and Cory (1959) found that teachers accepted and valued inservice education programmes which were planned carefully, locally and cooperatively.