

Chapter - III

REVIEW OF RELATED LITERATURE

1. OVERVIEW:

The concern for change in our schools and for the processes which effect change is paramount among our educators for a long time. A demand for the improvement of education on the one hand, and a welter of schemes for bringing it about on the other, leave the educators with two central questions. What changes should be made? How are such changes to be brought about?

A landmark in the annals of innovation and change in Indian schools was the constitution of the Directorate of the Extension Programmes in Secondary Education in 1955. Promotion and dissemination of innovations was one of the main functions of the Directorate. In 1961, the Extension Service Departments were attached to Colleges of Education with the avowed objective of diffusion of good practices. The DEPSE yielded place to a bigger research body, namely the National Council of Educational Research and Training. The NCERT has done pioneering work in the field of innovations

disseminating the innovations to schools, but also evaluating them. The State Councils of Educational Research and Training were established in several States. In Tamil Nadu, there was a unique and significant development. The South Indian Teachers' Union, the Premier Teachers' Organisation founded a research wing called the S.I.T.U. Council of Educational Research and promoted a number of auxiliary bodies like Society for the Promotion of Education in India, Mathematics Teachers' Association, Geography Teachers' Association, Science Teachers' Association, English Language Teachers' Association and so on. The objective of the Society for the promotion of Education in India is to promote innovation and innovative institutions. Through its journal "Experiments in Education", a number of good features obtaining in schools are made known to others. The subject teachers' associations are also deeply involved in educational innovations. A need has come to evaluate the many practices introduced in the schools and find out the process of change, factors that facilitate change and causes for discontinuance of innovations. It is in this context that this study has been taken up in the form of case study of innovations to go deep into the various factors of change. The scope of this study has a bearing on the related findings of the earlier studies to start with.

Havelock (1973) in his book "Planning for Innovation", describes that the change process consists of four very important elements viz., (1) Resource System (2) Communication

Channel (3) Innovation and (4) the Adopter System. To describe any innovative institutions in terms of its innovativeness, it is considered enough if all the above four elements are rightly described.

The first of the four elements is the "Resource System". The resource system comprises the "Sources" of the innovative ideas and mark the beginning of an innovative process. The communication channel refers to the mode and media of communication of an innovative idea to the adopter system from the source. The third element 'innovation' refers to the new idea that is generated by the source and the last element being the 'Adopter System' which is the important and culminating point of the total system of innovation. It is only for the adopters that the entire system of innovation operates.

If all the above four elements are well described in relation to the factors and forces operating at each level about the innovative schools, probably the object of this study would have been achieved. This chapter is expected to throw such light on fulfilling the objective in the proper order and proper form. There was a visibly progressive trend in studies on "Educational Innovation" and "Change" in India from 1960 onwards. It was Griffin and Pareek (1963) who initiated this movement. A few universities like the M.S. University of Baroda and Sardar Patel University in India started specialising on studies connected with innovation and

change. These studies are reviewed in the following pages in view of their relevance to the present study.

2. REVIEW OF STUDIES ON INNOVATION IN INDIA:

Innovation and change process: Ross (1962) has reviewed about one hundred and fifty studies in the area of innovation and change. The summary of his findings reveals the following facts about the process of change. (1) There is always a time lag between the recognition of an educational need and the adoption of an innovation to meet the need. (2) The diffusion of educational innovations is also spread over decades and takes the form of 'S' shaped curve. (3) There is not much difference in the rate of diffusion between the complex structure of innovations and the simpler ones. (4) It requires two conditions to be fulfilled to make a local school system to be innovative viz: (a) readiness to give more freedom for teachers and (b) to spend more for schools (5) The attitudes and expectations act as an inward pressure to schools to innovate or adopt to changing conditions.

Subba Rao (1967), in his inquiry into factors contributing to promotion or inhibition of educational innovation has identified that the major areas of educational innovation pertain to (a) Classroom instruction (b) use of audio-visual aids (c) utilisation of learning experience (d) examination reform (e) school administration and others relating pupil welfare in general.

The sources of new ideas as found from his studies are (a) extension services department (b) Headmasters (c) Seminars (d) Workshops (e) Inspectorates (f) Training Colleges personnel (g) Books, Magazines and Journals. Voluntary agencies and extension centres also are included in his list of sources of new ideas.

The inhibiting factors identified from his studies were (a) State Department of Education (b) Headmasters' lack-lustre leadership qualities and inadequate professional experience to guide his teachers for innovation.

The few characteristics which were found present as part of the innovative schools and their systems: (a) a better physical plant (b) better library facilities for pupils and teachers (c) better utilisation of the library facilities by the staff and students (d) the progressive management of school (e) positive role performance by pupils (f) Headmasters good all round abilities and better leadership behaviour (g) Headmaster and teachers have greater outside school visitation habits and experience (h) Professional background of staff (i) their cosmopolite tendencies and (j) effective participation of staff in the inservice education.

Shalini Bhogle (1969) investigated the influence of some social, psychological and organisational factors on the readiness to accept changes in a group of secondary schools.

The Headmaster's role is indicated as most vital in the adoption of innovation. The type of Headmaster and his

characteristics which are found to positively influence are: The heads with (1) democratic approach (2) favourable attitude to teaching (3) higher salary (4) low role conflict (5) greater age and (6) long experience of teaching.

This kind of headmasters belonged mostly to large schools and of the multi-purposes type of schools, schools with cosmopolitan teachers.

The researcher's finding includes that there is no relationship found to exist between adoption of innovation by the Principal and the teachers of the same school.

Characteristics of innovations like relative advantage, compatibility, complexity, divisibility and communicability affect educational innovation to a significant level.

Personality of the headmaster and the organisational climate characteristics of the school are found to play major role in the acceptance and adoption of innovation, even more than the personality factors of the adopters (teachers) themselves. The above findings do add a very special dimension to the study of innovation and change in a school system.

Bennet (1968) has reported a positive relationship between 'esprit' of the teachers and the number of innovations adopted by the concerned school. But, the findings of a later study by Buch (1972) give a contradictory fact.

However Buch and Bennet are found to agree in their findings that the quality of 'thrust' in the principal does not

contribute to the innovation adoption traits of the teachers. There are contradictory findings reported about the relationship between the 'consideration' trait of the headmaster and the adaptability of the school, by earlier researchers. Some of them found a positive relationship while others found a negative relationship.

About the relationship between the age of the teachers and the innovativeness of the school, some studies as that of Mort and Cornel (1951) and Laverne (1968) report positive nature while those of Rao (1967) Hilfinker (1970) and Buch(1972) report negatively.

Between the factors like experience of teachers and their acceptance of innovative practices, Bhogle (1966), Rao (1967) and Buch (1972) have concurred in their findings to report that there exists no relationship.

On the relationship between the age of the Headmaster and his own quality of innovativeness, studies of Radhukar (1951), Rogers (1961), Seger and Holdaway (1966) and Bhogle (1969) report the existence of a positive type while the studies of Carlson (1965), Carnick (1966), Lawrence (1967), Hinman (1967) and Buch (1972) report the existence of negative type.

Bhogle (1969) found that the older Headmasters adapted more innovations. Buch (1972) reported that the Headmaster's age is not a criterion found to influence the adaptability of the school.

Pratiba (1969) studied innovation in relation to schools in Gujarat. She discovered that (1) some schools tried innovative practices more for prestige value than even for the quality and educational worth of the practice. (2) only in a few schools, innovations were institutionalised. Her significant or major findings include the following: The following factors were found to contribute favourably for the innovation adoption: (a) Dynamic leadership qualities of the head (b) Progressive outlook of the managing committee of the school (c) teachers' cohesiveness, team spirit and identification with school (d) the watchful student community along with an alert and co-operative local community (e) extent of guidance from local extension services department. The detrimental or inhibiting factors for innovation in schools have also been identified by her in her study. (i) A traditional and conservative principal (ii) over-cautiousness of the principal without liberal attitude (iii) examination result oriented management (iv) teachers' lack of faith in innovation (v) interference of local politics into school (vi) controlled school climate leading to staff-disengagement (vii) older age of faculty members (viii) cost factor (ix) delay by the department of education to approve innovation due to non-confirmity to departmental prescription (x) heavy work load of teachers.

Griffin and Parèek (1970) arrived at certain generalisations regarding steps for activising the process of change: (1) Recognising the need for change would be the way of those who want to

change (2) persons willing to change should have exposure to innovations of others in favourable conditions (3) sustained use should be accepted as the law (4) self-involvement of adopters in creating developing and planning a change (5) building self-concept in favour of one's own abilities in relation to perceived innovation (6) assurance from superiors for right incentives.

M.B. Buch and P.M. Buch (1971) undertook a Centre of Advanced Study in Education Institutional Project on a study of educational change movement in Gujarat. Thirty innovations were taken for study which covered 160 schools in 15 districts of Gujarat. Their findings are (1) Only 24 innovations are known to all the principals (2) The innovations of the greatest awareness are those sponsored by the State Department. (3) Innovations of the greatest awareness are not necessarily adopted in all schools (4) Training Colleges and Extension Services Departments are source of innovations (5) Most ideas wither away soon after its birth for want of finance. (6) Experimental attitude and academic interest are factors formulate to introduction of innovation (7) The major cause for non-introduction of innovations are teachers' attitude and their inefficiency. (8) Teachers have been the main factors for discontinuance of innovations. (9) In the Introduction of innovation, the teachers' role is as important as the Principal's.

Dr. D.B. Desai (1972) directed a University Grants Commission Project with the assistance of M.B. Patel College of Education, Vallabh Vidyanagar, investigating into the factors affecting innovations leading to change in secondary schools in Kaira District of Gujarat. The findings of the investigation are (1) The number of innovative practices in a school is dependent on the innovativeness of the school (2) Most innovations are Headmaster-initiated or authority sponsored. (3) Seminars, Workshops, Department of Education and management are the main sources of innovation. (4) Individual and group communication exist in innovative schools (5) The factor of resistance is internal to the system and is mainly teachers. (6) System of communication and leadership are lacking in less innovative schools. (7) Value system of the institution and its financial status affect change process. (8) Leadership of Principal, team spirit and physical facilities and finance are positive factors in the diffusion of innovation.

Kamala Rai (1972) studied about factors related to the process of innovation diffusion within a school system - those factors which are the teacher characteristics associated with the diffusion process and they are (1) the time of awareness of innovation (2) the time of its adoption (3) its internalisation (4) the process of self perceived change-orientation.

It was found from the study that there are 10 variables significantly related to the 'time of awareness'. Those variables

are viz. (i) age (ii) vertical communication (iii) perceived frequency of horizontal communication in general and (iv) about innovation (v) exposure to mass-media (vi) professional communication behaviour (vii) teacher's perception of students' attitude towards the innovation (viii) professional orientation (ix) exposure to wider environment (x) socio-economic status.

Some other variables that contributed to the prediction of 'the time of awareness' at .05 level of confidence were:

(i) Age (ii) socio-economic status (iii) mass-media exposure (iv) self-designated opinion leadership (v) perceived change-orientation of principal and (vi) teachers' perception of students' attitude towards innovation.

Six variables related to the factor of 'time of adoption' are again the same as the last six except the self-designated opinion leadership in the place of which 'experience' of adopters is found out.

With regard to "internalisation" process of innovation the following six variables were found to be correlated at .05 levels viz. (i) Teacher's perception of the benefit for the students from the innovation (ii) perceived change-orientation of the principal (iii) ascribed opinion-leadership (iv) perceived cohesiveness of the staff (v) Organisational climate (6) role satisfaction (vii) need for autonomy.

The next one out of the 10 factors that were identified and reported earlier, is 'the process of self-perceived change orientation' to which the following variables were found correlated at .05 level: (1) Experience (2) perceived psychological distance between self and principal (3) the perceived frequency of horizontal communications about the innovation (4) attitude towards teaching profession.

Rai's finding about the eight predictors of the diffusion process are as follows: (1) Teachers' perception of students' benefit from the innovation (2) perceived change orientation of the Headmaster (3) ascribed opinion-leadership (4) exposure to wider environment (5) socio-economic status (6) teacher's perception of students' attitude towards the innovation (7) experience and (8) general exposure to mass media.

The main objective of a study of the innovation and change in schools could be to provide considerable guidance and show a method to determine or control the qualities and elements of the leadership in schools in such a way that improvement in the process of innovation is effected. It is for effecting this that a right knowledge and understanding of the process of innovation diffusion is required.

Piloo Buch (1973) made an inquiry into the conditions promoting adaptability in secondary schools. Selecting forty-nine variables for her study, she attempted to find out whether significant relationship exists between each variable and school

adaptability. The researcher aimed at two major outcomes from her study, viz. whether any relationship exists between a number of attributes of the school principal and innovations of a school and if so, whether it is possible to identify some specific elements of the school adaptability and develop a model of prediction for the same.

Buch's findings are summarised and presented below:

The variables that were found to bear significant relationship with the school adaptability are: (1) Principal's in-service training (2) his feelings about his job-security (3) his perceived self-rated administrative abilities (4) his perception of the staff ratings of his administrative abilities (5) his perceived level of relationship with the District Education Officer (6) his perceived support from the teachers' college personnel for his innovations (7) number of his membership contacts with organisations (8) frequency of his attending the professional meetings. (9) his inter-school visitation (10) his perception of the expertise of the teachers' college personnel (11) his cosmopolitaness (12) Community involvement in the school (13) parent's involvement (14) interest of the management and (15) the distance of the school from the Teachers' College.

Those variables which were found out to have significant relationship to contribute to the school adaptability to educational innovation and change are: The Headmasters' (1) age (2) educational qualification (3) teaching experience (4) length of period of service (5) job satisfaction and (6) the educational level of the local community (7) size of

the school (8) age of teachers and (9) experience of teachers.

Bhagia's (1973) study of "perception of characteristics of innovations as related to their diffusion in schools of Gujarat" emerged with the findings given below:

Bhagia's findings lay much stress on the adoption and diffusion of an innovation in schools which are very much related to the Headmaster's perception of the utility and the intrinsic and situational characteristics of the innovation. Therefore the success in the adoption and diffusion of an innovation is very much dependent on the perception and the favourable disposition of the Headmaster in the matter. She has also found that the non-acceptance of a number of a good innovations due to inadequacy of proper perception is mainly due to the inability of the agencies that are concerned with the implementation of change to create the right psychological orientation among the potential adopters.

Bhagia's study took into consideration the following ^{twelve} ~~fourteen~~ innovations: (1) Instructional Planning (2) Unit Planning (3) Objective type tests (4) Educational and vocational guidance (5) Cumulative record and (6) Science club (7) Work experience (8) Co-operative store (9) Programmes for gifted children (10) Weightage to periodical tests in annual promotion (11) Hobby centre (12) Regular and periodical staff seminars for discussion on academic problems.

Principal's ratings on a five point scale on each of these innovations in respect of 20 characteristics were obtained. These twenty characteristics were:

- (1) academic effectiveness
- (2) adaptability
- (3) associability
- (4) burdensomeness or load factor
- (5) compatibility
- (6) simplicity
- (7) divisibility
- (8) efficiency
- (9) communicability
- (10) cost economy
- (11) independence
- (12) facilitation
- (13) flexibility or permissiveness
- (14) meaningfulness
- (15) pleasure
- (16) practicability
- (17) prestige
- (18) relative advantage
- (19) structuralisation and
- (20) time economy.

Bhagia, based on her findings, made the following suggestions:

- (1) The principals should be oriented towards the need for innovation more in terms of total quality improvement of the school than only the academic effectiveness
- (2) All the desirable innovations should be properly patronised by all the different elements of the resource system and the management
- (3) Positive encouragement to the adopters about the feasibility of an innovation that is proposed for adoption, should be given
- (4) Proper guidance and the necessary support from administration are the two important prerogatives for successful diffusion of an innovation
- (5) Proper planning should be ensured for any successful adoption of an innovation even before the process begins.

Ashma Doctor (1974) has also made a study on similar lines to identify factors related to innovation and change in secondary schools of South Gujarath. The highly innovative

schools, according to Ashma, are found to possess the following characteristics: (1) clarity in perception of its philosophy and goal (2) better physical amenities (buildings) etc. (3) higher innovative proneness of principals (4) low number of non-innovative teachers. (5) higher mean score of the upward category for the adopters (6) higher scores on the involvement of teachers (7) lower score of downward shift for adopters (8) higher score on the total evaluation of the school.

It is found from Ashma's study that the factors causing change proneness are (a) dissatisfaction of the staff (b) Headmaster's key role in innovation (c) identification of a few innovators and laggards (d) mental calibre of the innovator (e) proper planning (f) appreciation (g) freedom (h) encouragement (i) involvement and co-operation (j) love and dedication for profession.

Mukhopadyaya (1975) has studied the barriers to change in secondary schools of Gujarat and West Bengal, the two different progressive states of India. The study was done on a sample of 16 schools, 8 from each State. Out of the eight in each district four of them were innovative and the other four non-innovative.

The following characteristics were studied to identify the innovative schools and differentiate the non-innovative ones from them (1) linkage with resource system (2) management characteristics viz. supporting or interfering (3) the principal's characteristics like change proneness, professional awareness,

initiative, sense of security, information input and teacher encouragement and (4) teacher characteristics like change-proneness, initiative, peer-ascribed leadership morale and group process, (5) organisational climate.

The findings show that (1) In Gujarat innovative schools differ from the non-innovative schools in the following (a) linkage with resource system (b) management characteristics (c) most of the principal's characteristics and (d) most of the teacher-characteristics. In West Bengal, the innovative schools differ from the non-innovative schools on all those characteristics applicable to schools of Gujarat and in addition to them, there are two more factors that distinguish these two types of schools in West Bengal. They are: (a) Change-proneness of the staff which does not apply to Gujarat and (2) organisational climate of the schools, which again does not apply to schools of Gujarat in the matter of differentiating the non-innovative ones from the innovative ones.

The other major findings include the following: (1) poor linkage with resource system is a barrier for innovation (2) Though low teacher-morale characterises non-innovative schools, high morale is significantly related to school-innovativeness (3) Organisation/climate, if it is closed, hinders the change process in West Bengal (4) Principal's low initiative, low source credibility, poor-leadership qualities with a low initiative, low professional awareness level, and poor ability for communication were identified as barriers for change. (5) Feelings of complacency, localite tendencies

are barriers for change. (6) In Gujarat teachers' lack of sense of professional security and a sense of high job-security and in West Bengal low change proneness of teachers were factors operating as barriers to change.

S. Purushothaman (1978) conducted case studies of innovative institutions at secondary level in the State of Tamil Nadu. He selected twenty-five schools for case study. Some of them are innovative ^{some} and non-innovative. His findings are: (1) Most of the schools function as self generating systems as far as innovative ideas are concerned. (2) The objectives of the innovations is to meet their new needs (3) The authority assists the members of a system to adopt innovations. (4) The factors found favourable for creating a system effect in the individual members are (a) dedicated head (b) close supervision of the system by the authority (c) clear goals of the institution and the innovative practices (d) long and favourable tradition (e) incentives for individual innovativeness (f) client-need oriented approach of the authority (4) The most common process models of change are the problem-solving model and the social interaction model. (5) Procedures of evaluation of innovation are streamlined in the system (6) Resistance does not thrive in a system with built-in check mechanisms like power concentration in the authority and significant role for the adopter in planning and executing change. (7) The variables that promote innovativeness are (a) active managing committee (b) the support of the managing

committee to the Headmaster (c) system affinity of the staff (d) education of parents (e) students' level of awareness and (f) community's perception of the school.

P.S.Balasubramaniam (1978) made a critical study of the strategies adopted for the installation of innovations in high schools in Vellore Educational District in Tamil Nadu. His findings are (1) The two innovations commonly found in schools are the school complex and supervised study which are officially sponsored and descended from official hierarchy. (2) While in the least innovative schools, the idea is thrust on the teachers by the headmasters, in the most innovative schools, the programmes are discussed in staff meetings so that the change effects are perceived as being self-motivated and voluntary as much as possible (3) In the most innovative schools, the adoption is complete while in the least innovative schools, it is partial. (4) In the least innovative schools, teachers have taken up innovations that could be done within school time while in the most innovative schools, teachers are willing to work extra time, if necessary. (5) Physical proximity to resource centres like Colleges of Education, Departmental Officers, etc., has played no significant part in the adoption of innovations, while psychical proximity to NCERT/SCERT, even if schools are situated far from the resource centres, has helped them to adopt innovations. (6) Objectives are clear and specific in most innovative schools while they are general and ambiguous in the least innovative schools (7) Official recognition and public appreciation provide

a positive reinforcement for adoption of innovative while cold response from inspecting officers hurts the teachers.

(8) The widely adopted strategies are the Research, Development and Diffusion model and the social interaction model (9) The social interaction strategy is more successful with respect to innovations dealing with administration, role perception, curriculum, methodology and evaluation.

Mary Josephine (1978) made a critical study of the communication patterns adopted by the Colleges of Education with schools. A study of the source, message and receiver variables has revealed a high distortion leading to the conclusion that there is no proper system of communication between the Colleges of Education and the participating schools. The greater the communication between the Colleges of Education and schools is, the higher the innovativeness of the schools is.

Chandravadan Purani (1979) in her study of the teacher as a change agent has found that teacher's role as a change agent is accepted in the dimensions of literacy, student and community affairs, political education and use of science while his role is not accepted in the dimensions of customs and habits, population education and implementation of government schemes.

Ramesh Chandra Sharma (1979) conducted a study of the characteristics of the resource system and the process of developing and communicating innovations and their impact on adoption process. His findings are (1) The more linkages are, the more effective will be the day to day contact and exchange

of information and consequently the greater will be the level of adoption of innovations (2) Openness of the resource system affects the level of adoption of innovations. (3) The effectiveness of the adoption of innovation depends significantly on the power, prestige and capital or capacity of the resource system. (4) Reward factor or anticipated profitability is a major incentive to diffusion of innovation (5) The synergy factor affects the level of adoption. While the finding of P.S. Balasubramaniam (1978) that the psychic proximity of the resource system helps adoption of innovations has been validated by Sharma's studies, contrary to P.S. Balasubramaniam's findings, Sharma has found that physical proximity to resource system also promotes adoption of innovations.

Annepalli Sathyavathi (1980) made a study of processes in adoption and discontinuance of innovations in schools. She selected 30 schools in Gujarat State and presented case studies of 30 adopted innovations and 15 discontinued innovations. Her findings are (1) The successfully adopted innovations have the following characteristics (a) Most of the innovations are proven educational ideals. (b) Most principals considered the innovation as experiment. (c) Most innovations are suited to the existing social system (d) Resistance is shown by considerable number of teachers (e) The principals get full support from the management for adoption of innovation (f) Recognition is given for adoption of innovations (g) Adoption of innovations results in better pupil achievement, better school climate, increased parental

interest in school and improved teacher punctuality (h) All innovations ordered by District Educational Officer are continued (2) The discontinued innovations have the following distinctive characteristics (a) The innovation do not conform to the social ^hmoves of the institution (b) They do not bring prestige to the institution (c) They are not sponsored by the Education Department (d) Resistance is seen from the awareness stage itself. (e) The time lag between decision making and introduction of innovation is long. (f) Some of the factors accounting for discontinuance are (i) dissatisfaction with its performance (ii) cliques among teachers (iii) lack of financial support (iv) lack of community support (v) extra work load (vi) lack of interest and co-operation among teachers (vii) inadequate planning (viii) inadequate physical facilities (ix) too many innovations practised at a time (x) parental apathy.

3. REVIEW OF RESEARCHES ABROAD ON INNOVATION AND CHANGE:

A lot of researches have been undertaken in the foreign countries. Only those which are found relevant to this study are quoted in the following few pages. All those reviewed below would pertain to innovation and change. Different researches that were reviewed for inclusion in this chapter of the present study, have been classified according to the different areas to which they are related with an overall relationship to 'Innovation and Change'.

The areas classified for presentation of various research studies in the following pages are given below: (a) Process of innovation (b) Change-agents (c) factors viz: financial, community, staff, administrative and organisational (d) Role of other agencies as factors affecting adoption of innovation and (e) Diffusion.

(a) Researches on 'Educational Innovations'.

Most of them were done at Michigan and Columbia Universities. Dr. Paul Mort, Francis Cornell and Donald Rose have contributed more to this field of research.

The researches of Dr. Paul Mort are the pioneering efforts. According to him, though much of the studies are concerned with the diffusion process, nothing very significant is indicated on the process.

Donald Ross (1958) has mentioned about 150 studies in the area of innovation and change and many were carried out at Columbia University Teachers' College under Dr. P.Mort.

Dr. Mort's earlier studies were on the educational tradition of school finance. He had attempted to show the value of "Local control" over "school finance". Dr. Mort feels that 'Local Control' could lead to the 'school innovativeness'.

Only adaptability can serve as the test of modern education in a world in which the only thing of which one can be certain is "Change", says Carl. H.Kumpf.

Mort and Cornell found from the Pennsylvania studies that it takes 100 years for the complete diffusion of an innovative practice after its first recognition as a need to be satisfied, first 50 years to evolve a practice and the next 50 for acceptance. The metropolitan school study Council used a measuring instrument of a process type to satisfy this need. The Council with the help of this instrument established the correlation between adaptability criterion and a host of variables. This instrument is called the "Growing edge".

(b) Review of researches on the process of innovation:

The adoption is one type of decision making. The adoption of an innovation requires a decision by an individual, says Rogers.

Ryan and Gross (1943) were the first to identify 4 stages in adoption process viz: awareness, conviction, trial and acceptance. Wilkening (1953) supported the idea but called the conviction stage as information-obtaining stage.

Researchers like Beal (1957) Copp (1958) differ in their views about the stages in the process. Yet there is a basic agreement among them. Rogers (1962) gave the following stages for the process of innovation adoption: (1) Awareness (2) Interest (3) Trial (4) Evaluation (5) adoption. It is since then these stages are widely accepted and used.

Pareek recommends a 'Need' stage to precede 'Awareness' stage while reviewing Roger's classification. Rogers in the light of this has discussed whether 'Need' comes first or the 'Awareness'. He stated as follows: "But how are needs created? A need is a state of dissatisfaction or frustration that occurs when one's 'Desires' outweighs one's 'actualities'. When 'wants' outrun 'gets', an individual may develop a need when he learns that an improved method, an innovation exists. Therefore innovators can be led to 'needs' and vice versa". Some change agents used this approach to change by creating needs among their clients through pointing out the desirable consequences of a new idea. Thus knowledge of innovation can create motivation for their adoption.

Barton (1961) made a study in the area of "Teaching backward children". The finding was that the teachers accepted the new technique if it were found advantageous.

Richard Carlson expressed that innovations should be accepted by all to make it continuous. Pareek (1970) states "It should be added that the stages of adoption can be viewed as a cyclic sequence in which the last step is death and disuse of what was ^{an} innovation. It is assumed that in many cases what is a desirable innovation today becomes in time an outworn practice which should be replaced by a new innovation. Thus is the process of change, a continuing one".

Donald Rose gives an idea of the 'time-lag' that starts from the time when the need arises and ends with the time when the need is satisfied. Mort (1953) has expressed "The time lag for the diffusion of innovation in education is found such as would make us worry about. But a matter of shock is this that diffusion of innovation in the field of agriculture and medical sociology are found more progressive in comparison with the innovation in the field of education.

Allen's (1956) study supports this time-lag theory in relation to education. He observed that 168 schools in America took 60 years to adopt innovation while the adoption of an innovation to train the drivers of motor cars took only 18 years. Many such studies explain the causes for such a time-lag in adoption of educational innovations: (1) want of change agents (2) lack of scientific knowledge of innovations (3) need for economic motivating factors.

The study of Ebey points out that any new introduction into school system is only the beginning of a long period of diffusion. Cocking's findings reveal that when the innovation has a slow start the early diffusion is not a 'true' diffusion. As the spread seems to be negatively affected by lack of understanding of what change is. As a result, the particular innovation is looked upon with suspicion and this leads the time-lag.

From all these above studies by Mort, Cornell, Cocking, Berignton, Lovos, Adler and Allen it is learnt that a few schools

belong to 'innovator' category to adopt an innovation early enough while other schools wait and observe the extent of success before taking themselves on to that and thus tend to belong to 'late majority' category. This is what happens in any social system.

Some innovations are also rejected. Johnson and Band (1959) studied the theory of 'Rejection', Allen (1956) also studied some discontinuances.

According to Kelley (1960) the grade taught and the years of teaching experience were found significant factors in either adoption or rejection an innovation. There are adequate supports in favour of (1) rejection through ignorance (2) rejection through default (3) rejection by maintaining status quo (4) rejection through social mores (5) rejection through interpersonal relationship (6) rejection through logic (7) rejection through substitution (8) rejection through fulfilment and (9) rejection through experience.

Lackey's (1958) study indicates that all individuals involved in adoption do not remain in the same categories through out - More than 30% of them change from one category to the other Roger's findings support this ideas.

Greenberg (1964) Glasser (1958) show in their studies that earlier knowers of innovation have higher social status. This generalisation is accepted again by Rogers (1963).

Ryan and Gross (1950) and Beal and Rogers found that the 'rate of awareness' of knowledge for an innovation is more rapid than its 'rate of adoption'. 'Earlier adopters' have a shorter 'innovation-decision' period, observe Ryan (1948) and Petrini (1957).

"Good" schools try "better" practices is an observation by Biglow.

Cocking's study on speed of educational innovations in different regions did not show any significant differences.

Ralph Haber's (1961) study of adoption of language laboratory among high schools in U.S.A. tells that earlier adopters try innovation on a smaller scale than the later adopters. Wilkening (1952) found the importance of relative advantage of an innovation in one of his studies.

Ross (1952) in his study emphasised the seriousness of the need for an innovation as an indication of its 'Relative advantage'. The most closely related factor to innovation is the 'economic resource' as it is reported by Ross from his review of a number of studies made in 1958.

Lionberger reports from his study that the time taken at each stage for early adopters is more than that required for late adopters. Cocking supports this findings from his study.

3. Review of Studies relating to the agents of change:

The term 'change agent' as explained by Lippitt (1958) means a person or an agency related to the development, introduction and adoption of an innovation, was used for the first time in 194

Rogers describes a change agent as "A Professional person who attempts to influence adoption-decision in a direction that he feels is desirable".

Ebey (1940) feels, the headmaster is very often the change agent as in most of the innovations studied earlier. Skogaberg (1950) observes that a school superintendent can be a successful change agent. These superintendents are comparable to our headmasters in the schools.

One of the factors that lead a change-agent to success is the degree of effort to which he works in change activities with his client, observes Deutschmann (1962). The change-agent-client contact is the most important factor leading to change says Nichoff (1964).

Hoffer, Store (1952), Patrini (1966) all have studied the change-agents' role and observe that the change-agent-effort has a direct impact on the diffusion of innovation.

Wilkening (1957), Bible and Nolan (1961) observe that the change agents' is often expected to behave in a particular way by the change system and at the same time he is expected to behave in a different way by the client system. Thus the change-agent has to act between the change-system and the client system.

Innovations happen to fail sometimes because change agents are more innovation-minded than they are client-oriented.

Mead (1960) studied the compatibility of the innovation and stated, "Experience has taught us that change can be best introduced not through the centralised planning but after a study of the local needs".

Erasmus (1961) and Rogers (1966) have said "The success of change-agent is positively related to the degree to which his programme is compatible with the client needs".

Bliss and Nichoff (1964) have found that the change-agents' success is very much related to the extent that he works through opinion-leaders. Sasaki (1953) and Castillo (1967) found that success of change-agent is related to his efforts in increasing his client's ability to evaluate innovation.

Mort's study in Pennsylvania and Bulley and Eastmond's studies of metropolitan schools suggest that the staff as a whole has a strong relationship to the adaptability of the school.

4. Review of studies concerned factors affecting change:

(a) Financial Factors: Ayer (1920) in his study of the factors affecting innovation, found out that the money spent per pupil is the most influencing factor in schools' adaptability. Mort's study collaborates this finding along with those of Vincent (1945) and Wobllatt (1949).

Brickell (1953) and Teressa (1955) found that expenditure in various activities of the school to be a factor of resistance in innovation. Campbell (1956) and the Pennsylvanian studies emphasise the same factor.

The Rhode-island study found that when the financial budget is balanced annually, the educational cycle for a boy or a girl is a dozen years and that of the teacher is 25 years. The West-Virginia study also confirmed the Rhode-island study and also the Pennysylvanian study.

(b) The factors related to social environment: Mort and Cornell (1938) from their study come to the conclusion that communities play an important role in the development of the school.

Roberts (1947), Begg (1947) Beach (1949) and Fisk (1950) investigated about the public-understanding of "power of education" and the educational institutions' understanding of "Public-Power". Including from Britton (1947) it is learnt that teachers' association, pupils association, women's association and such other groups affect school-adaptability.

Gallagher (1949) also found out that associations connected with schools either friendly or unfriendly terms can affect the school-adaptability either way.

(c) Factors related to characteristics of faculty members: The earliest study in this area being that of Pennsylvania and metropolitan schools. Buley (1947) studied the staff as like age, variety of experience, interest, property and reading habits of the staff in relation to school adaptability.

Eastmond (1951) found out the following factors to affect adaptability: (a) maturity of the staff and their broad interests (b) high professional training and diversified background

(c) stability (d) security (e) outside school interests
(f) independence (g) age and outbreeding.

Collin's findings say that emotional mal-adjustment of a teacher is more dangerous than physical mal-adjustment.

(d) Study of factors controlled by administrations:

Abey (1940) found that principal's educational opinion is the most significant factor affecting adaptability. Mort and Cornell (1941) agree with Abey to express that a school superintendent with his remarkable educational qualities has everything to do with the adaptability.

Berthold (1951) points that the principal's powers of implementation and solution can help school-adaptability. Collin's views in the matter are that the school adaptability is a matter very much dependent on how the principals made use of human resources.

Environmental factors in relation to administration are found to affect school adaptability, observes Diemand.

(e) Factors related to climate and morale of the institution

The development of any institution very much depends upon how its members evince devotion and ability to discharge responsibilities and work as an organisation.

Miles (1965) has found out that the educational organisation is an important factor in adaptability. The importance of self-renewal of organisation to meet the challenge of change and innovation is found from the studies of Hilfinker (1969).

A comparative study by Gemtry and James Kenedy (1965) of the organisational atmosphere of the black and white elementary schools in urban area reveal that the ~~black~~ schools had low morale compared to the white-schools.

Bickert (1968) studied organisational values and characteristics of school systems. He found that teachers' working as an unit affects the adaptability of the schools.

5. Studies related to the System and Process:

Karpat's (1960) study evolved the following generalisation: "The power elite in social system especially encourages the innovation-introduction whose consequences not only raise the average levels of good but also lead to a less equal distribution of good."

Studies of Eibler (1965) and Kelley (1962) make out "Member-acceptance of Collective innovation-decision is positively related to member-cohesion with social-systems.

Russel (1964), Roa (1966) Wish (1967) and Ardut (1968) reveal from their study that the process of adoption of an innovation is not related to the age of the adopters at any stage and early-adopters are no different from late-adopters in age.

The importance of diffusion has been shown by Larson in the following words, "perhaps the most viable area in current communication research is the study of the diffusion of new ideas, products and practices. Diffusion studies are extensions

of traditional research on mass-media campaigns."

"The knowledge of persuasion-effects of diffusions are considered as intermediate steps in the process of decision-making which leads to behavioural change, communication channels of innovation-diffusion", states Van-den-Ban (1964) and he further observes that mass-media channels are often important to make others aware of the new idea whereas inter-personal channels are important in changing the attitudes towards innovation.

Ryan and Gross's (1943) study of time-lag factor indicate that it took 14 years to reach complete adoption of the hybrid seed corn in Iowa.

Rose (1958) found that diffusion of innovation depends thus on relative advantage and on the seriousness of the need.

Smith (1946) and others stress the importance of (1) source (2) message (3) channels of communication and (4) communication points as two ends in the process of innovation diffusion.

Rogers (1973) and Shoemaker has evolved the S-M-C-R-E model to stress the importance of the elements in the diffusion of innovations. They are: Source, Message, Channel, Receiver and Effects.

Pellegrin and Charters (1973) made a case study of the introduction of differentiated staffing. They found out there existed a dichotomy between assumptions and realities that

caused friction leading to dropping of innovations. First, while extensive changes were anticipated in teacher behaviour and role complexity, the administration did not see a need to change its traditional staff structures for the support and management of the new project. Second, the project officer who initiated the innovation and located resources for its implementation had no direct control over the programme once it was initiated. The assistant superintendent who was forced to assume responsibility for someone else's project was not enthusiastic about it. Third, the administrative staff felt that professional teachers should have sufficient skills and motivation to solve their own problems. Since none of these assumptions was valid, the programme floundered. Decision making was blurred and indecisive. Teachers never received the help they needed and their enthusiasm waned. The result was confusion, a little hostility, goal displacement and high ^{personal} personal turnover.

Janes et al (1973) discussed additional implementation problems. Teachers in case study schools were led to expect a great deal of autonomy and personal control over implementation of a new programme, but instead found arbitrary direction and external control. A large influx of visitors drained teacher energy and patience. Increasing problems with student disruption deflected teacher energy from the hard work of implementation. Conflicts and role ambiguities between the principals and the instructional co-ordination often left teachers without leadership or guidance. In short, multiple problems worked out

against the successful implementation of the new programme. They caution against concluding that many current innovative ideas just do not 'work'. They conjecture that more often it is the installation process that fails and it is an illusion that the discarded programme was 'tried'. They reported state of an innovation is often based more on fiction than on fact.

6. Review of the Process Models:

Havlock, R.G. (1973) has summarised the findings on innovation to describe the process models in his book "Planning for innovation". He has perceived basically three process models to exist which could explain the various types of processes of innovation.

(a) R & D MODEL: Havelock, R.G. (1973) himself has described the R & D Model. This is the Research and Development Model drawn on the basis of innovation processes of the Western countries like the U.S.A. and the middle Europe. This model explains the type of "Development" of the innovations which are usually born from a series of "Researches" drawing the existing problems in the related fields into consideration.

(b) Social-interaction Model: This model explains the diffusion of innovation through the interpersonal contacts of the adopters (teachers) of the various schools. The innovations diffused in this model have more prestige value than user-need.

(c) Problem-solving Model: After studying a number of innovative processes, the more commonly prevalent type of innovation-diffusion process is explained in this model. The innovations are born from the systems, and adopters themselves through their own research in need of a solution to their own problems.

Morrish (1976) has described the paradigms of all the three models described above.

7. Case Studies:

There are very negligible number of researches on innovation in the form of case studies.

Havelock (1973) from his analysis finds only a few (7%) instances where case study has been adopted as a research methodology. He commented "we were disappointed to see so few case studies of the thousands of dissemination and utilisation events that take place each year. It is unsettling to find so few documented in such a way that others may learn from them. This deficiency in the literature is one of the factors that thwart our efforts to code, analyse and compare utilisation process across studies and fields."

Gross et al. (1971) made a case study for the failure of an innovation at 'Cambire'. They begin their study by arguing that the major explanation for the failure of promising innovations found in the literature is inadequate. The major explanation offered in the literature is that innovations fail

because of the initial resistance of the members of the innovating organisation. Gross et al, claim that evaluators generally overload the possibility that innovations have not actually been implemented in the way that was intended. It is equally important to study what happens during the implementation process in order to find out why a promising innovation fails. Cambire experiment failed in spite of (a) absence of initial resistance (b) favourable external conditions and (c) high status powerful external change agent. Their study has revealed that the causes for the failure of the innovation are (1) The teachers did not have a clear understanding of what was expected of them in their new role (2) They did not have the necessary skills to carry out their new role (3) They did not have the necessary materials and equipment (4) The organisational arrangements, for example, the inflexible time-table, were incompatible that the innovation (5) There were no feedback procedures to correct the deficiencies (6) The unsatisfactory experiences led to development of resistance and (7) The Director of the project took a simplistic view of the implementation process and lacked an awareness of his obligation, as a leader, to his sub-ordinates. Gross et al therefore arrives at the following conclusions: (1) Since teacher's freedom to choose and adopt is limited, a school should be treated as a formal organisation and organisational change should be defined as a behavioural change with respect to role performance, authority structure, division of labour or organisational goals.

(2) The decision of the head to adopt does not tell anything about implementation by staff. (3) Organisational characteristics prior to the introduction of innovation is important, therefore external pressure, internal tension, previous atmosphere of change, outside expert with a positive image are all to be considered. (4) Initial resistance may not be the only inhibiting factor. The other factors are (a) Members who are not resistant face obstacles in their efforts to implement (b) The required aid from formal leaders on whom they depend may not be forthcoming (c) Members initially favourable may develop a negative attitude as a consequence of frustrations they have encountered in attempting to carry it out. (5) Most school authorities regard their task as having ended with the decision to initiate an innovation. The job of carrying it through is given to a subordinate.

Among the very popular case studies, the model of the OECD publications of "Innovation in Education" from the Centre for Educational Research and Innovation (CERT) in 4 volumes about innovation ^{at} of different levels have been taken as references for this investigation. The CERT volumes are the fairly latest publications (1969-71) in different volumes of which the one on secondary stage had reported the Case studies of acknowledged innovative schools in different countries.

The Centre of Educational Research and Innovation (CERT) under the aegis of the Organisation for Economic Co-operation

and Development (OECD) conducted a survey of Seven central institutes for educational innovation, 5 innovative regions and 5 innovative schools. The Central institutions initiated, developed and evaluated innovations. The regional institutes proved link agency to utilise internal and external resources. Schools generally adopt a problem-solving strategy and the source of innovations are generally from outside the school. An innovative climate is found in the innovative schools. The study also revealed that political-central authority-sponsored innovations pertain to objectives and functions of schools and the strategy adopted is power-coercive. Financial incentives are available for such innovations. The administrative-organisational type of innovations, other than those initiated by political authority, depends on empirical-rational strategy. While innovations relating to the role and role relationship of members use Normative-re-education strategy, the curricular innovations use empirical-rational strategy. The study developed a model of change, Planning, Research, Development and Diffusion model with seven stages: (1) Problem identification and definition (2) innovation planning (3) innovation programming and development (4) experimentation (5) evaluation and revision (6) dissemination and production and (7) implementation. The study concludes that there is no one way to organise the process of innovation. A particular combination of factors in one country and may call for a solution different from that required by the organisation pattern in another country, even if the basic factors like type of innovation, degree of centralisation etc. are the same

With assistance of grants from the Ford Foundation, a number of case studies have been undertaken and published as a series "Case Studies in Education and Culture". This series has been designed to bring the results of direct observation and participation in educational process in a variety of cultural settings. Individual studies include some devoted to single classrooms, others focus on single schools, some on large communities and their schools and some others report on indigenous cultural transmission where there are no formal schools. An attempt has been made in the ^{studies} states to move beyond the formalistic treatments of educational process to the interaction between the people engaged in educative events, their thinking and feeling, and the content of the educational process in which they are engaged. Each study is basically descriptive in character but all of them are also problem-oriented. Interpretive generalisation are produced inductively. Some are stated explicitly by the authors of the case studies. Others are generated in the reader's mind as hypotheses about education and its environmental relations.

Gay and Cole (1967) presents a case study of the impact of the New Mathematics on a traditional culture in Liberia. Singleto (1961) has made a case study of a Japanese school. The education system in a German village is studied by Warren (1968), while Wolcott (1961) presents of a study of a tribal school in Africa. Another series of case studies are published by the SAGE Library of Social Research in which Alderferer and Brown (1975) presents

a case study of change in a single boarding school. Under the Charles F. Kettering Foundation Programmes, a number of case studies on change and innovation have been undertaken. Oulver and Hobson (1973) and Bentzer (1974) give details of case studies undertaken. Shipman (1976) presents a case study of the implementation of a curriculum project.

In India, S. Purushothaman (1978) presents case studies of twenty-five innovative institutions while P.S. Balasubramaniam (1978) gives case studies of four institutions. The present study tries to present case studies of innovations which has not so far been undertaken in our country.

Case studies could bring out in full the various dimensions of the adoption of innovations in schools effectively and hence this methodology has been the choice of this investigation.

4. CONCLUSION:

This chapter is a report of earlier research studies related to innovation and change. As there are innumerable dimensions related to the phenomenon of innovation and change, all the connected researches both empirical and theoretical have been reported in this chapter touching only upon the findings relevant to the present study. These findings have been very useful to form the basis for the entire thinking at a conceptual level for this investigation. Many of the findings quoted here in this chapter have been requoted wherever necessary depending on the need and their contextual relevance.