

CHAPTER - I

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CHAPTER - I

L.O.O.O Problem:

The problem of the present inquiry is 'A study of the characteristics of the resource system and the process of developing and communicating innovation and their impact on adoption process'. It is a descriptive cum-correlational study. It attempts to study the characteristics of the resource system, the process of developing innovation, the process of communicating innovation and to find out their impact on the level of adoption of an innovation.

In the task of nation-building activity, the contribution of the educational infrastructure is not only unique but also important. Thus education in all its facets comes to be attuned to the society it serves. In an adjusted integral part of the socio-economic system, the creative function of the education always directly or indirectly contributes to social stability. This implies that when there is a major transformation in the socio-economic situation, education also tends to change. But as there is a lag in the time between the two changes, a temporary state of unequilibrium is created which gradually disappears when education adopts to the societal changes.

Though a number of countries were freed from the shackles of colonialism and though they have embraced democracy and becoming increasingly industrialised, their

education systems have still not changed. The old colonial system of education has failed to meet the needs of both the new society or individual. The education system in these countries is in the whirlpool of crisis and its new shape has not quite clearly emerged.

The Indian education system is no exception. The present education, a British vintage has come in for strong criticism, especially during the last a few years. The course content, course structure, examinations, administration of institutions, supervisory and administrative processes, indeed the entire philosophy of present day education have been attacked by students, teachers and public at large. This calls for a far-reaching changes in a system. The lack of harmony between social requirements of the society and the educational structure and the programmes point towards a simmering crisis which threatens to engulf other sectors of life as well. Far reaching educational changes are therefore urgently demanded.

1.1.0.0. CHANGE

Guba (1968) discussed elaborately the nature of 'change'. He has classified change into three categories: (1) Evolutionary change: It is the kind that goes on all the time whether we know it or not. Such a change is mainly unconscious; it occurs over a relatively long time-

period and its effects are difficult to detect by a contemporary observer even in a time of rapid change. (ii) Homeostatic change: It may be either conscious or unconscious. Its essential feature is that it occurs only in response to some specific triggering. Such a change may be referred as reactive. In other words, it is mainly automatic and instinctive, rather than thoughtfully guided. (iii) Nemoblistics changes: This type of change is always conscious and always involves elements of planning or at least of intervention. The term has been coined to convey the idea of change towards the new, or movement towards the new.

Given these definitions, we may ask which kind of change is relevant to the educational scene. At a first glance it looks that evolutionary change can easily be dismissed, but not so, since this type of change is the only true or lasting form precisely because it is natural. In our country many evolutionary changes have occurred. For example, the number of students have gone up, the schools have multiplied, the qualification for teacher educators have been raised and the curriculum has gone through slow and subtle changes. But eventhough we need a planned change in our education system.

1.1.1.0. Relation Between Change and Innovation

The term education implies a planned change, over a period of time, in the behaviour of students.

Education in this sense is a change process which would mean: (i) diagnosing a priority need for change, (ii) planning innovation as alternatives for action towards change, and (iii) locating sources available to work towards a change. Innovation may be regarded as a specie of the genus change. The term educational innovation implies a qualitative improvement in the present system through a novel idea. Innovations in education are adopted to bring qualitative improvement. The basis for educational change is the innovation or creative idea of an individual or of a system as a whole. Hence these two terms are interdependent. The process of change and the process of innovation may further be stressed that both of them have similarity.

1.1.2.0. CHANGE PROCESS

Guba (1967) has presented a model for change process. It explains the different stages for the adoption of an innovation. Essentially the change process consists of four major steps as shown in table No. 1.0.0.0.

Table No. 1.0.0.0. showing major steps of the change process

Major steps of change process
Research
Development
Diffusion
Adoption

Research:

The 'Research' has an important part to play in the process of change, viz., it can provide a basis for change. Research aims at the advancement of knowledge. The researcher, therefore, needs freedom to pursue his ideas, wherever they lead; must have the freedom to fail on occasion; he needs to be free from pressures of immediate pay-off.

Development:

The 'Development' has for its basic objective the identification of operating problems and formulations of solutions to those problems. The developer is most acutely concerned with practice. It is the job of the developer to make practice conform to the highest ideals that can be set for it, to be constantly probing the system to determine what, if anything, is keeping it from functioning at its best and then to devise new approaches and techniques to eliminate such problems.

Diffusion:

The potent solution that innovators devise to overcome problems has little utility if the practitioners are not informed about them. The purpose of diffusion activity is to create awareness and to provide opportunities for the assessment of the invention along whatever dimensions the potential adopter may feel necessary. In short, diffusion makes invention available and understandable to the practitioner.

Adoption:

The purpose of adoption activity is to adopt an invention to the local situation. This is by no means an easy task. Every situation has its own peculiarities, so that it is unlikely that an invention can simply be slipped into place without considerable modification. Further, an innovation needs to be tested, before adoption. Even if the invention passes the test, it still needs to be assimilated as a component part of the system. This assimilation may involve the training of local personnel, arranging appropriate scheduling, modifying available space, and the like. The change process comprises four elements. These four elements are (i) Resource system; (ii) Innovation; (iii) Communication channel; and (iv) Adopter system.

1.2.0.0. RESOURCE SYSTEM

A system may be thought of merely as a set of components which act with and upon one another to bring a state of balance, inter-dependence or "wholeness" (Havelock, 1973). The resource system is a complex network with various initiator configurations, individuals, informal small groups, formal organisations, so on and so forth. The resource systems are mainly responsible for generating innovation. Therefore, it comprises innovators. The resource system can be governmental or voluntary organisations. The studies on innovating organisations are very few. The universities have been recognised as the main

source for expert knowledge, but proper utilisation of the university expertise is yet to be realised (Marsh, 1963, 1964). This is mainly due to 'weakness' and 'narrowness' of university administration and dominance of faculty governance (Havelock 1973). With reference to other professional organisation it has been seen that they are equally conservative and protective. Buch and Buch (1973) found, in the order of importance, the teacher training college, extension services and directorate of education as sources of innovation. Trivedi, et.al., (1973) located District Education Officer (DEO) as the governmental agency, and extension services and training colleges as voluntary resource organisations. Mukhopadhyay (1974) located a few more voluntary organisations, namely, Psychological Bureau and English Institute working as resource system. Mukhopadhyay (1975) found that besides District Education Officer (DEO), the Extension Services, (Ahmedabad) Community Science Centre (Ahmedabad), Bureau of Psychology (Calcutta), and the English Institute (Calcutta) also play the role of resource systems. In the selected sixteen schools the Extension Services have been functional in introducing one innovation in one school, providing expertise in the five schools and incentive in one school. The Community Science Centre introduced innovation in three schools, provided expertise and incentives and followed up in all the three cases. The Bureau of Psychology and the English Institute provided expertise by way of training teachers in guidance and teaching of English through structural

approach. Bhatt (1970) reported that the extension workers and the staff of the training colleges helped comparatively to diffuse innovations in other schools.

Khosla (1970, 71, 73) identified the innovated practices in teacher education in India at the secondary level. He listed a few teacher's training colleges which have developed some innovations.

Resource system exists in an environment from which it receives inputs and to which it releases outputs in terms of innovations to its clients. Between the input and output falls the shadow of a number of other components. A healthy resource system not only survives in its environment, but continues to cope adequately over the long haul, and continuously develops and extends its surviving and coping abilities. Resource systems thus are the sources of change. They are responsible for the installation of innovations. The properties of the resource systems have often been treated peripherally, or left out as background phenomena. A literature survey on the diffusion of innovations would reveal that a good deal of attention is paid to the individual innovator and how he disseminates and installs innovation. But the literature remains rather silent on the organisational settings in which the innovation is developed. A steadily ineffective resource system would presumably not be healthy. There is a set of characteristics of resource systems which have a lot to do with its continued adequacy and viability with respect to its functioning.

The studies on the characteristics of the resource system are few. The extension agency plays a major role in adopting the hybrid variety. The role of extension agency is critical for the rural sector. Sinha and Sinha (1971) found that social characteristics like status, Size and Literacy were found to be significantly influencing the adoption of hybrid variety. The quality of extension workers and their characteristics were found to make great differences in the adoption of dairy innovations. Kahlon and Kaul, (1968) revealed that extension contacts and education turned out to be the major factors in promoting adoption. Christianson (1973) examined the reported purposes and structural characteristics of homerooms in Connecticut intermediate schools of varying sizes and organisational pattern. He found that managerial or administrative home rooms were the ones most often stated and served in all types of intermediate schools.

Peter Kohler (1973) found that task characteristics were found to be influenced by the type of information exchanged in the two sub-disciplines. Teaney (1973) studied the characteristics of the school district management system. He found that the management structure reflects the characteristics of the more participative management system. Superiors at all levels generally tend to over-estimate the quality of their subordinates' perception of the human

relationships which exist between them. Nagel (1973) developed guidelines for ascertaining the characteristics of relatively effective vocational occupational advisory committees. Advisory committees were generally composed of mates and were of direct value to the operation of local vocational, agricultural, business and office, distributive, home economics, trade and industrial educational programmes.

Miles (1965) enlisted ten dimensions of organisation health. Many of them were drawn by heuristic analogy from the behaviour of persons or small groups. The dimensions were: (i) goal focus; (ii) communication adequacy; (iii) optimal power equalization; (iv) resource utilisation; (v) cohesiveness; (vi) morale; (vii) innovativeness; (viii) autonomy; (ix) adaptation; and (x) problem-solving adequacy. These dimensions can presumably be applied to any type of organisation. Much of the theory and empirical data on which they are based was generated in industrial organisations in which "organisation improvement" programmes have become more and more wide spread in the last a few years. However, the emphasis on the commonality of all types of organisations has tended to obscure the fact that educational resource systems have special properties which condition the propositions of organisation theory in reasonable ways. Miles (1965) discussed some of these properties of educational system, namely, goal ambiguity, input variability, role performance invisibility, low interdependence, vulnerability,

low professional control problem and low technological investment. Pareek (1975) enlisted the following characteristics of an institution: (i) leadership; (ii) doctrine; (iii) programme; (iv) resources; (v) internal structure; (vi) linkage; and (vii) institutionality.

Havelock (1973) identified seven factors of a resource system which account for the most development and utilisation phenomena. These factors are: (i) linkage; (ii) structure; (iii) openness; (iv) capacity; (v) reward; (vi) proximity; and (vii) synergy. Linkage signifies the degree of interpersonal or intergroup connection. In order to be effective as disseminators and helpers in innovative process, the resource systems need to develop reciprocal and collaborative relationship with a variety of potential users. The extent to which structuring takes place in the sender and receiver and in the message seems to be an important correlate of successful dissemination and utilisation. Openness is the readiness to give and receive new information. Effective resource systems are open to influence and change both from the user and from other resource systems. It is also vital that practitioner resource systems renew their skills and their competence by continuously remaining open to the newest developments of science and technology. Capacity is the capability to retrieve and marshal diverse resources. The more power, prestige and capital possessed by the resource system, the more effective it will be as a resource system. If the resource system collectively

possesses a high degree of intelligence, education, power and wealth, it will be able to plan and structure its activities effectively over a long time span to produce "high performance products." Profitability or anticipated profitability is a major incentive for diffusion of innovation. The sender won't send if he doesn't get reward for sending; the receiver won't receive if he doesn't get reward for receiving; the message won't work if it has no reward value, and the medium won't be attended to if it has no reward-giving history. Other types of resource systems also require "profitability" but usually the coinage is different: for the basic researchers it is recognition by colleagues; for the developer it may be the satisfaction in creating something that works; for the practitioners it may be the feedback from a satisfied client or the feeling that he has done a good job.

Proximity is a powerful predictor of utilisation. The most effective resource systems are those which have easy access and linkage to other resource systems. The user should perceive the resource systems as accessible. Synergy has been defined as exerting force together or in combination or upon the act of adoption of an innovation. Successful utilisation usually seems to require persistent leadership in the resource system. Resource system must act synergistically upon the potential user by bringing together a variety of messages and message component in

combination, in sequence and in repetition upon the potential user. The seven factors listed above seem to account for the bulk of the development and utilisation phenomena, but there are other factors as well which are to some extent important in the development and utilisation phenomena. These are: (i) familiarity; (ii) primacy; (iii) status; and (iv) values.

In addition to the characteristics of the resource system, the process of developing innovation has a strong impact on the adoption of an innovation. The review of researches on the process of developing innovation will reflect on that aspect.

1.3.0.0. PROCESS OF DEVELOPING INNOVATION ✓

New ideas ~~are~~ generated or invented in the resource system. These new ideas are located from various sources and are given appropriate shape according to the clients' need. The process involved in creating a new idea is called the process of developing innovations. The process of developing innovations involves various stages. These are locating the need for developing new ideas, awareness, sources of getting information, administration of innovation, team work and flow of communication, decision-making and the characteristics of the innovations. There is hardly any research study in India which studied all the stages together involved in the process of developing

an innovation. But a few factors are identified by educationists which are important in the process of developing innovations. Some of them have been studied by researchers in India.

Innovations in education have a defined, particular and specified character, rather than diffuse and vague. In a system they affect either one or more parts of the systems and may get rejected, modified, accepted or maintained by the system. In spite of their utility and fruitfulness they are not easily accepted. It has been found that some innovations get diffused immediately, while some others take something like fifteen years to get diffused. From various studies it is found that there are certain characteristics which help an innovation in its rate of adoption. There have been fewer research studies designed to probe into the characteristics of innovation itself than to answer other major questions about innovations. Linton (1936) was one of the first to recognise that the characteristics of an innovation affect its rate of adoption. According to Rogers (1962, p.123), "the characteristics of an innovation have a great deal to do with its rate of adoption." He selected five characteristics based on, past writings and research, as well as a desire for maximum generality." They are relative advantage, compatibility, complexity, divisibility and communicability. Each of these five is somewhat inter-related with the other four, but they are conceptually distinct. The five characteristics

of innovations, just described, are by no means the only ones that have been used by diffusion researchers. According to Rogers (1962, p.134) *thirty* nine different terms have been used. They were subsumed under the five general characteristics utilised by him.

1.3.1.0. CHARACTERISTICS OF EDUCATIONAL INNOVATIONS

Very few studies exist on the characteristics of innovations diffused in the field of education. Ross (1958), reviewing a number of studies on adaptability, generalised that the rate of diffusion of complex innovations is similar to that of simple ones and that more costly innovations diffuse more slowly than others.

The seriousness of the need for an innovation is found to affect its adoption. This was found by Ross (1952) who attempted to determine reasons for the relatively rapid adoption of driver education programmes by high schools. 87 per cent of the school systems in Ross's study adopted driver training in the first 15 years. The need for driver education had been called to national attention by high accident rates.

Miles (1964) attempted some useful generalisations on the basis of a number of case studies of innovations in education. The generalisations present a comprehensive agenda covering characteristics of educational systems;

the innovation itself, innovating persons or groups, states of the relevant systems prior to and during change processes, and the eventual fate of the advocated innovations. About the innovation itself, Miles points out that some properties of the innovations itself are likely to affect its adoption and continued use. The properties, mentioned by him are presented ~~below~~:

- (i) Profit and loss; (ii) Technological factors; (iii) Associated materials; (iv) Implementation supports; (v) Innovation - system congruence

Carlson (1965^a) attempted to establish relationship between diffusion of educational innovation with the characteristics generalised by Ross (1958). He had taken two sets of innovations of varying rates of diffusion. In set - I he included accelerated programme in secondary schools and foreign language instruction in elementary schools. In set II he included modern mathematics, programmed instruction and team-teaching. In one set, the rate of diffusion was highest for accelerated programmes. In the other, the rate of diffusion was highest for modern mathematics and lowest for team teaching. The five characteristics of innovations, i.e., relative advantage, compatibility, complexity, divisibility, and communicability were relied upon to account for varying rates of diffusion of the innovation. The definitions used for these characteristics were the same as given by Rogers (1962). To obtain ratings of the two sets of innovations of these characteristics, a panel of judges was used. The ratings

were done on a five point scale. Assuming that these characteristics of innovations contribute equally to the fate of an innovation, the ratings were summed to achieve an overall score of diffusibility for the two sets of innovations.

The findings go to establish that there is a correspondence between the rate of diffusion of the innovation and the diffusibility rating for innovations in set I. Not only did the overall diffusibility scores correspond to the rates of diffusion of those innovations, but also the ratings on each of the five characteristics corresponded to the rates of diffusion. In set II, however, the overall diffusibility scores did not correspond to the diffusion rates for two of the three innovations. Moreover, the extent to which the overall diffusibility scores differentiated among the innovations in set II was minimal. In addition, no characteristic of the innovations in set II was judged in correspondence with diffusion rates. He, therefore, concluded that varying rates of diffusion of education innovations are only partially accounted for by the five characteristics of innovations.

Discussing the process of planned change in education, Griffen and Pareek (1970) have pointed out a number of factors related to all aspects for successful implementation of educational change. It is clear, however, from the review of these researches that there is general consensus about some of the characteristics of innovation and their considerable contribution in the adoption and

diffusion of innovations. The study by Ehogle (1969) indicates that characteristics of innovation like compatibility, complexity, divisibility and communicability affect the adoption process to a significant degree. Innovations like introduction of science clubs, deputation of teachers for refresher course and teaching with audio-visual aids were more adopted because of their more compatibility, divisibility and less complexity than such innovations as improvement of school libraries and introduction of child guidance clinics.

Bhagia (1973) found that as many as eleven characteristics of educational innovation are positively and significantly related to the diffusion of innovation. No such evidence of any relationship was found in the case of the nine characteristics. The study indicates that for an innovation to be adopted and get diffused, it must appear to heads of schools to have the intrinsic characteristics, namely, communicability, complexity, divisibility, efficiency and structuralisation; the utility characteristics, namely academic effectiveness, prestige and relative advantage; and the situational characteristics, namely, facilitation, meaningfulness and practicability. She concluded that more the perception of communicability, simplicity, divisibility, efficiency, structuralisation, academic effectiveness, prestige and relative advantage of an innovation by the

principals, the greater would be the likelihood of its adoption and the diffusion.

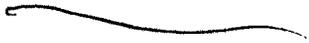
The style of communication of innovation has a profound impact on the adoption process. The review of researches on the communication of innovation will reflect on that aspect.

1.4.0.0. PROCESS OF COMMUNICATION OF INNOVATION

Communication of innovation is an important but a complex phenomena. Very few researches in the field of education have undertaken to study the communication of innovation. But there is a wide variety of literature available in this area in different fields, such as, sociology, rural sociology, anthropology, industry and medical science. In this section, the researches in the field of education, in particular, and in other fields in general, are reviewed in terms of channels of communication of innovation, communication behaviour, types of communication and change agents.

1.4.1.0. CHANNELS OF COMMUNICATION OF AN INNOVATION

Desai (1974) concluded that communication involves the sender of the message and the receiver of the message itself. Communication of innovation is effective when the receiver not only receives the message but also understands it in the same way that the sender intended him to understand. More the number of persons involved between the sender and receiver, the more are the chances of the message getting distorted. The absence of usual communication



and the employer's curiosity to know about the organisation also results in getting distorted informations. The channels in which the innovation is communicated from the educational resource system to its clients have a significant effect on the level of adoption of the innovation. No such study has been conducted in India to study the various channels of communication of innovation from educational resource system. Though researchers in other fields, in India as well as abroad, have studied the various channels of communication of innovation. These studies are reviewed here in order to provide the importance of the channels of communication for the diffusion and adoption of innovation in the field of education. In general, there are three major channels of communication of innovation.

1.4.1.1. One-way communication of Innovation

1.4.1.2. One-way feedback communication of innovation

1.4.1.3. Two-way communication of innovation

1.4.1.1 ONE WAY COMMUNICATION OF INNOVATION

A large number of studies have been conducted on communication media, written media, oral presentation in the form of lectures, symposis, seminars, television, film, radio and recordings, mailing, demonstrations, programmed instruction and teaching machines.

The written word has long been the prime vehicle for the mass dissemination of new knowledge, and has been presumed to be an effective medium. Some recent researches, however, have raised

considerable doubt on this assumption. At least three major variables condition the effectiveness of written media. These are: (i) education and socio-economic status, (ii) cosmopolitanism, and (iii) innovativeness. The most widely reported characteristic of written media users is their relatively high educational attainment and socio-economic status (Schramm, 1962; Swinehart and McLeod, 1960; Davis, 1958 and Myren, 1956). Another characteristic distinguishing mass media readers from non-readers is their tendency to be cosmopolitan and, generally, out-standing consumers of all media (Swinehart and Mcleody, 1960; Davis, 1958; and Schramm, 1962). A third characteristic attributed to readers of the mass media is their high willingness to try out new things, i.e., to be innovative. Davis (1958) noted with regard to the written media, consumer's positive attitudes toward science and scientists.

On oral communication, Hovland's (1957) study is of great significance but it concerned with structural variables of a lecture. The appropriateness of the choice of lecture or of some other one way presentation to a live audience depends on the goals of the speaker. Jha and Barol (1973) revealed that farmers gained less knowledge through group discussion as compared to a lecture-cum-discussion and flip method. On the other hand, lecture-cum-discussion and flip method did not differ significantly in their effect

on gaining of the knowledge by farmers. Bhaskar Ram and Mahajan (1970) found the use of flash cards along with lectures more effective than lecture alone. Quite a few studies have been conducted on the communicability of television programme (Alexander et.al. 1963; Ramey, 1965; Tamminen, 1957; etc.) Sekhon (1970) studied the effectiveness of television as a media of communication for imparting scientific knowledge to the farmers. He found that the extent of knowledge gained through telecasts varied from 45.1 to 61.7 per cent. Matriculate farmers gained more knowledge through telecast as compared to illiterate or less educated farmers. Shama and Dey (1970) found television to be significantly effective than radio in case of all the programme, with respect to gain and retention of knowledge. Strzelecki (1973) revealed that television was found to stimulate motivation, interest, understanding, reading and research in students.

The radio has functioned in the communication process mainly at the awareness stage of knowledge diffusion. The function of the mass media is to inform, educate, enlighten, motivate and entertain people. Kivlin (1968) compared the effectiveness of radio farm forums and adult literacy classes for communicating information. He found that the two villages using radio-farm forums showed significantly more progress than either the two villages with literacy classes or the two control villages. Group radio listening associated with

group discussion was found to be more effective than group listening alone in bringing about changes and acceptance of innovations (Jain, 1971). Radio seemed to be the most popular medium among basti dwellers (Misra, 1970). There is a significant impact of radio listening on the people. The general awareness level of the rural Indian communities having radio is higher than that of communities have no radios. The illiterate radio listener is either equal to or higher in terms of level of general awareness than the literate one in the communities without radio (Sitaram, 1971).

Kreitlow and Edwards (1962) have found that film does not communicate research information regarding a proposed school board reorganisation to the adults. In the area of recording, a few studies have been conducted out of which a major study on recording (Keating, 1963) has shown that it not only faces so many difficulties, but it creates hinderance to learning also. This is in context of language laboratories where tape recorded materials are used.

The mailing procedure of communication is widely used in medicine. But its effectivity has not been validated. Demonstration found to be the most effective method, at least in agriculture. In education, Richland's (1965) travelling seminar, -- a demonstration technique to familiarise educators with innovations, was successfully attempted in other school systems. Later on, this technique was adopted by Carr and Meyer (1969) and Kaser (1966). But the failure of a demonstration due to any reason is equally harmful. Bhask Ram and Mahajan (1970) found demonstration to be most effective method

among the three extension methods in respect to the adoption of the farm practices.

In the area of programmed learning a common threat is to the teacher for his role as conveyor of information and to the concept of a competent teacher. However, convincing data do exist to support the effectiveness of programmed learning. In an industrial settings (Schwartz and Haskell, 1966), the feasibility of remote computer assisted instruction for training newly hired electronic technicians was compared with that of a programmed text. Trainees rated both techniques as being effective and desirable as traditional classroom instruction. In the study of Singh and Jha (1971) on communication fidelity, it has been shown that next to message, communication skill, language compatability with the receiver and degree of contact of the communicator are important predictors of success. Other study in India, by Murthy (1969).

1.4.1.2. ONE WAY FEEDBACK COMMUNICATION OF INNOVATION

Any kind of transmission effort evokes some kind of response; some sort of activity which represents a return message from the receiver of the transmission to the original sender. Such messages are referred as feedback. The channels utilised in feedback communications are entirely distinct from those which might carry messages to the consumer

(e.g. written reports, mail), but such channels serve a distinctly characteristic purpose when flowing back in the direction of the resource. (Havelock, 1973).

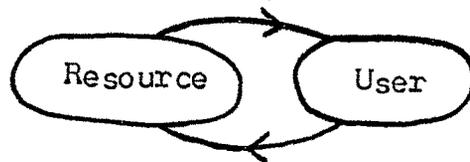


Figure 1.O.O.O showing one way feedback of communication of innovations.

The utilisation of feedback is an integral part of the knowledge utilisation process. Sometimes researchers from corporations, government, etc., elicit feedback through such mechanisms as surveys, polls and elections. At other times the user takes the initiative and his feedback arrives 'on the doorstep' of the resource system unrequested, and perhaps, unwanted in the form of letters, petitions, protest and demonstrations. (Havelock, 1973).

The response elicited through direct feedback may be biased in part by the user's reaction to the collector or to being in the position of 'typical consumer'. The strength of indirect feedback (Webb, et. al., 1966) lies in its ability to evade subjectivity in the response. Quite a few studies have been conducted on feedback. The teaching effectiveness of college teachers who receive feedback and discussion concerning their own teaching was not significantly greater than teachers who did not receive

such feedback (Farrel, 1973). It was found that focussed feedback methods did not detract from the counselling process (Baccur, 1973). Encounter groups with focussed video-tape feedback yield significantly greater perception of gain in self awareness than encounter group with no focused video-tape feedback (Haight, 1973). There was no discrimination by the teachers between video-tape recording feedback and trained observers (Saudargas, 1973). Client feedback can serve as one measure of improving counsellor effectiveness (Eckstein, 1973). 'Internals' receiving feedback changed their behaviours in a more positive direction than either 'internals' or 'externals' in the control condition (Shack, 1973). Rule (1973) studied the comparison of three different types of feedback on teachers' performance. He found that direct intervention was the most effective in changing teachers' behaviour. Smaller changes in the subjects' rates of praise on task contacts, and off task contacts occurred during the video scoring procedure; and no predictable change occurred in the instruction plus feedback condition. Attitude surveys are widely used in industries for receiving upward communication from employees. These surveys provide pertinent information about the attitudes of the employees which can assist management in future decisions affecting employee satisfaction (Alper and Klein, 1971).

The channels through which a resource system may receive a feedback from its users are numerous. Some are more 'useful'

than others, depending on the kind of user information to be retrieved and the purposes for which the feedback is needed. The use of public archives of record keeping societies in America has long been a fruitful technique for the researcher attempting to learn about the behaviour or attitudes of particular group of people. Attitudes and opinion surveys are those channels by which the researchers determine reactions or preferences for change and innovations. Valuable feedback which is not contaminated by "user awareness" can often be retrieved from the user through direct observation of his behaviour or indirectly by observing the results of his behaviour. Referred elections, petitions, letters, protests, riots and revolts are a few other mechanism to receive feedback.

1.4.1.3. TWO WAY COMMUNICATION OF INNOVATION:

When the complexity of message requires detailed clarifications or when major attitude, behavioural or value changes are required, a two-way communication is most helpful (Schramm, 1963). In these cases the communications generated from the consumer system could take the form of a statement of needs, diagnostic information, evaluation of the new ideas, or indications of comprehension of the original message. Bhatnagar and Singh (1972) found that two-step flow of communication was more significant in the remote villages as compared to villages closer to urban centres. Face to face contacts between extension agents and farmers had the

greatest influence on adoption (Sharma, 1967). Dyadic exchange has the potential to support the deepest kinds of change in individuals. Dialogic communication contributes to effective functioning and personal growth. It helps to integrate individuals with their environment and influence communication behaviour (Thomlison, 1973). It is advantageous to communicate certain types of innovation messages within the context of a small group. The group and group discussion methods have been found the most useful in the later stages of the 'communication and change process'. The T-Groups (sensitivity training groups) and role playing are the important techniques for promoting change in small groups, while action research, collaborative action inquiry, organisational survey feedback, the 'grid' programme for organisational development, training labs and derivation conferences are a few important techniques which promote change in large groups (Havelock, 1973). Some form of a two-way communication medium or channel which permits involved interaction between the resource and the user is necessary for the ultimate adoption of a change by an individual, a group, or a total system.

1.4.2.0. COMMUNICATION BEHAVIOUR

Murthy (1969) found out that age has no significant relationship with the communication behaviour. According to him, education, ownership of radio, socio-economic status, rigidity-flexibility and need for change have

significant and positive relationship with communication behaviour. Patel (1967) concluded that more personal the form of communication, the more impact it has in bringing about adoption. Studies have shown that the communication behaviour of the principal has some relationship with his innovativeness. The communication behaviour includes his membership of professional associations, exposure to mass media, educational literature etc. Anybody who is to be an innovator or an opinion-leader has to be in constant touch with scientific information sources as well as be in close contact with other innovators and sources which are of impersonal nature. The communication behaviour includes general mass media exposure, reading a number of non-professional and educational journals, attending professional meetings frequently, keeping membership with a number of organisations and visiting inter-schools.

Miles (1964) writes that the mass-media influences the processes and the rate of educational innovation by stimulating the desire for change, adding communication between educational decision-makers and the large society, and serving occasionally as a kind of feedback on the public's attitudes towards particular innovative efforts. Rogers, Nanlin and others (1966) did not find any relationship between general mass-media exposure and change orientation of the principals in their Michigan study. However, Rogers, Joyce and others (1966) reported significant positive

correlation between general mass-media exposure and the adoption of innovations by the principal. Marion (1966) revealed that innovators and early adopters use mass-media sources of information. Buch (1972) did not find any relationship between the principal's exposure to mass media and school adaptability.

Reading about subjects other than one's own profession adds to one's professional knowledge and aids in participating in casual discussion with others. Buch (1972) concluded that principals hardly had the habit of reading non-professional literature. Lack of time and non-availability of non-professional journals were given as the reasons.

Professional journals is a very convenient medium through which the principal can keep himself abreast of the new innovations abroad as well as in India. The reviews, the abstracts as well as reports of experiments undertaken and published in journals with due comments give insights into the new practices even without visiting personally the places where these experiments take place. Carter and William (1957) concluded that "adequate information sources to scientific journals and degree of contact with universities was one of the five factors related to innovativeness".

Rogers, Nan lin and others (1966) reported a significant correlation between the number of professional journals read regularly by the teachers and the internalisation of innovation. Study by Rogers, Joyce and others (1966) pointed out the significant correlation between the number of professional journals read regularly by the teachers and the time of awareness, time of adoption and perceived beneficiality of innovation. Buch (1972) indicated no relationship between the number of professional journals read and the school adaptability. She found that most of the schools subscribe three to four professional journals which are available in Gujarati. In the absence of a large number of professional journals available in Gujarati language, even the innovative principals cannot read more journals though they would like to do so very much.

The extension centres of colleges of education, in order to promote new ideas and changes in the schools, periodically arrange professional meetings at the district, state and national levels. The underlying aim is to facilitate diffusion of new ideas by bringing together teachers, principals/headmasters with varied capacities, abilities, perceptions, experiences and ideas from different parts of the States as well as the country. Rogers (1962) found that innovators and early adopters always depended more on impersonal sources of information. The willingness to meet more unknown people from outside through such meetings is a sign of innovativeness. Carlson (1965a) indicated that "non-adopters" participated in fewer professional meetings. Rogers, Joyce and others (1966) concluded that principals who adopted innovations relatively early tended to communi-

cate more frequently with other principals. Buch (1972) indicated that the adaptability of a school was significantly related to the frequency of professional meetings attended by the principal.

There is a lack of communication between the schools and the educational resource system, between the schools and also within the schools. As a result of it a large number of innovations go unnoticed and undiffused. Professional journals, bulletins publishing new trends in school practices, research bulletins, etc., constitute some of the channels of communication. The direct experience of seeing a new practice in action is only possible through inter-school/educational resource system visitation. Lant (1950) found that without any plan to visit, or without checking up for which practice to visit, the inter-visitation does not serve any purpose. Kumpf (1952) advocated that the inter-visit programme is one of the means to infuse creativity and innovativeness in teachers. Carlson (1965 a) found that though inter-visitation was considered to be a powerful factor in making a superintendent aware of new practices but the intervisitation programme had the least relationship with the rate of adoption. Buch (1972) found that the adaptability of a school was related significantly to the extent of inter-school visitation programme of the principal.

1.4.3.0. iii) TYPES OF COMMUNICATION

Impersonal communication do not involve a direct face

to face exchange between the communicator and the communicatee and are usually spread via a mass communications medium.

They function mainly as rapid, one-way, efficient dispensers of information and are most effective at calling various decision alternatives to the initial attention of individuals.

Rogers (1962) concluded that impersonal information sources are at best able to create awareness of an idea. Wilkening (1952, 1956), Rogers and Beal (1958), Copp et. al. (1958), Sill (1957), and Rahim (1961) concluded that impersonal information sources were the most important at awareness stage and personal sources are the most important at the evolution stage in the adoption process. Wilkening et. al. (1960), Beal and Rogers (1957) and Lauthor'd (1960) who worked on cosmopolite sources have come to the conclusion that cosmopolite sources are the most important at the awareness stage whereas localite information sources are the most important at the evaluation stage. Bakhru (1963) concluded that the effectiveness of communication was said to be related to success of any joint endeavour. Barret and Franke (1969) found relationship with higher rates of growth corresponding to preference for the more democratic mode of communication. Bholra (1968) indicates that the nature and quality of communication determines the moral and social health of democracy. Singh (1974) opines that application of the art of communication to the efficient functioning of an organisation is called administrative communication. This administrative communication has got five main

elements, namely, the person who send the communication, the person who receives it, the content of the message, the symbol system used and the media of communication. The study by Goodworth and Walker (1973) indicated a relationship between the size of the school district central office and the frequency of formal and informal communication. There found to be a strong positive relationship between the communication characteristics of flow and the organisational climate of school district central officers. Jansen (1972) opined that there were numerous factors which contribute to the successful outcome of the communication. He found a positive relationship between the type of organisational structure of a state vocational education division and the resulting effectiveness of the communication process. The study by Stewart (1972) indicated that the leading methods of communication between university research institutes were through the receipt of publications, correspondence and telephone communication. The major contacts were through receipt of publications, correspondence and participation in workshop and seminars. The study by Pal (1974) concludes that formal and informal communications are essential for any industrial organisation. It is the social skill of managers that helps in building effective channels of communication. Myers (1974) found that 'democratic' pattern of communication than an 'autocratic' pattern of communication enhances the output in the long run and keeps the moral high in industrial settings. Lowe (1972) concluded that the performance of the market can be improved through the application of

current communication technology. The study by DeGisai (1974) indicates that cooperation and mutual respect among the management and the workers bring better results in industry. This, in turn, is possible only through communication systems that facilitate information and quick decisions.

Rogers (1962) opined that extreme differences in social status between a communicator and a receiver may impede communication and slow up and trickle down of new ideas. Because the sources of innovation remain generally outside the local community, and in most instances outside the educational profession. Innovations are channelled into the local community from outside, and their introduction on the local community level depends primarily upon the change-agent. The change-agent plays an important role in the diffusion and adoption of innovation in education.

1.4.4.0. CHANGE AGENTS

Rogers (1962) has defined change-agent as a professional who attempts to influence adoption decisions in a direction that he feels is desirable. He is a person or agency concerned with the development, introduction and adoption of innovation. Hughes and Archilles (1971) indicated that a supervisor might develop an operationally defined role as a change-agent in terms of initiating and encouraging change. It is postulated that the supervisor can determine where and how to enter the change process and with which

strategies necessary to encourage the successive steps in the change process. Hill (1971) explains that management development specialists and line managers are both change agents, in an organisation. Griffiths (1964) found that the single most influential change-agent in a school system is the superintendent or the principal. Reynolds (1970) found that the contributing factor to the adoption process is leadership behaviour of both the principal and the teachers. Brickell (1961), however, reported that teachers are not change-agents for innovations of a major scope. According to Carlson (1965a), the change agents play a major role in bringing about change and in promoting adoption of innovations. The lack of change-agents, to promote new educational ideas, is said to be one of the causes for the slow diffusion and adoption of educational ideas, as compared with innovations and ideas for agriculture and the medical drug industry.

According to Buch (1972), the superintendent or the principal of the schools is believed to be the key person for the entire innovative process taking shape in the school. He is supposed to create the image of himself as receptive to new ideas and operate in such a way that others in the organisation feel free to either bring ideas to him or to pursue on their own ideas which seem to have merit.

Chaparro (1955) and Lionberger (1959) found significant difference of status between the change-agent

(communicator) and the client system. Wellin (1955) found that hygiene workers were having the greatest effect on those who were most similar on economic, cultural and background level. Similar incidents are found in education. Katz and Lazarsfeld (1955) concluded that the lack of faith of schools in training colleges as pedagogical masters could be attributed to this factor of status difference. Personal influence and communication on a wide variety of matters are generally limited to individuals of about the same social status.

It has also been found that the community norms also influence the adoption process. It was concluded that an individual's innovativeness varies directly with the norms of his social system on innovativeness (Rogers, 1962; Coleman and Marsh, 1955; Flinn, 1961; Vanden Ben, 1963). The major implication of this conclusion is that innovativeness of a system depends upon its linkage with external systems. In other words, if the community norm is low and the adopting unit does not have extra community association, the adopter is liable to turn to be non-innovative.

Gaikwad (1969) is of the view that contacts with the change-agents is the most effective change producing variable. The contact with change-agents is capable of producing at least some change throughout the adoption process. The study by Gaikwad and Verma (1970) indicates that a high percentage of leaders and other farmers directly depend upon the

government functionaries, such as village level workers and block development officers for getting information or new ideas about agricultural practices. The study by Singh and Pareek (1971) indicates that the person who is higher in socio-economic status, superior in social preference, and has greater contact with change-agents is a better adopter and has the skill to communicate effectively. The study by McAffe (1973) indicated that an assistant superintendent and the identified persons communicated face to face more than by written or telephone messages and the majority of the face to face communication was in meeting. Most of the decisions were made at meetings. The verbal communication between the assistant superintendent for curriculum and the identified persons on the high school level was formal. The study by Singh and Pareek (1966) indicates that the sources of communication play an important role in the adoption of innovation at the various stages of adoption process. Change agent is important at need stage. Change-agent and other farmers within the village combined are important sources for awareness. The coverage of the two are nearly equal at the awareness and interest stage. At deliberation stage other farmers within the community are important. At the evaluation stage only fellow farmers are important and the impact of mass media was found to be less at all stages and completely absent at the deliberation and evaluation stage. The study by

Mukhopadhyay (1975) indicates that the communication between the resource system and the user system is two-way in the case where the user is innovative, and it is one way in the case of non-innovative user systems. District education officers communicate more successful innovations than the other resource systems. The frequency of communication, especially informal, is more between a resource system and an innovative user system than their counterpart. The written media communicates more innovations than oral media but the two media do not discriminate the innovative and non-innovative schools. The oral media is more successful than the written media. The study shows that infrequent communication between the resource system and the adopter system, the one way communication and insufficient use of communication media by the resource system are major barriers to the functioning of the resource systems working for educational change. The study further indicates that the principal of an innovative school encourages two-way communication, whereas in non-innovative schools communication is relatively poor and one way. The professional communication between the resource system and the schools is usually unidirectional, i.e., from the resource system to adopter system. The resource system use both oral as well as written media for communication. It was found that schools adopted innovations communicated either by written media or oral media by the district education officer. But the

innovations communicated orally maintained better innovative character during adoption. It was found that schools in Gujarat have better linkage with resource systems than in West Bengal schools. But in both the States innovative schools maintain greater contact with the resource system than the non-innovative schools. He concluded that the lack of communication and linkage between the resource system and the adopter system works as a barrier to change.

Adoption of an educational innovation involves some other variables also. It will be worthwhile to have a glance at the researches done on the adoption process, particularly in education, and in other disciplines, in general.

1.5.0.0. ADOPTION PROCESS

Adoption process is different from the diffusion process. The essential difference between the two process is that the adoption process is an individual matter whereas the diffusion process occurs among persons or among social systems. The diffusion process is the spread of an idea from its creation to its ultimate users or adopters. Researchers have studied the adoption process in terms of stages of adoption, adoption time and school system as an adopter.

1.5.1.0. STAGES OF ADOPTION

Adoption of a new practice, by an individual, in any field is not a sudden decision. It is a result of a

process consisting of certain stages through which the individual passes. Ryan and Gross (1943) in their study of the diffusion of hybrid seed corn recognised the existence of stages in the adoption process. They used four stages: (i) awareness; (ii) conviction; (iii) trial and acceptance; and (iv) complete adoption. Wilkening (1952) was first to report that adoption involves decision and that it is a process composed of stages or steps. He described the adoption of an innovation asa process composed of learning, deciding and acting over a period of time. The adoption of a specific practice is not the result of a single decision to act but of a series of actions and thought decisions. He used four stages : namely awareness, obtaining information, conviction, trial and adoption. Later on he suggested only three stages : namely, awareness, decision-making and action. The concept of stages of adoption was supported later on by several studies like Beal, et. al., (1957), Emery and Oeser (1958), Rahim (1961), Bose and Dasgupta (1962) and so on.

Researchers differed in nomenclature, number and sequence of stages. The most widely accepted stages of adoption are those suggested by the sub-committee for the diffusion of farm practices, North-Central Rural Sociological Committee, U.S.A. (1955). These five stages of adoption process are: (i) awareness; (ii) interest, (iii) evaluation, (iv) trial and (v) adoption. Rogers (1962) in his study of farm innovation has given five stages of adoption process,

viz., (i) awareness, (ii) interest, (iii) evaluation, (iv) trial, and (v) adoption, wherein according to him, adoption implies the continued use of the innovation in the future. Pareek (1962) has suggested that 'need' be added as the first stage. Singh and Pareek (1968) proposed a paradigm of the adoption of three agricultural practices. The proposed paradigm consisted of seven stages. The seven stages in sequence were: (i) need, (ii) awareness, (iii) interest, (iv) deliberation, (v) trial, (vi) evaluation, and (vii) adoption.

Sinha and Mehta (1971) are of the opinion that awareness is not a stage in the process, but a prerequisite for the process.

The stages that have been used in India (Pareek and Corey, 1960) are problem identification, hypothesis formulation, hypothesis testing, action procedure and evaluation.

The various studies in the field of adoption clearly show that adoption is seldom an impulsive act, and that it consists of a series of events following through a period of time. However, the dispute is at the number of stages in the process, the sequence of the stages and the nomenclature of the stages. Champawat and Intodia (1970) found that the college extension workers and the village level workers were the main sources of information at awareness, interest,

evaluation, trial and adoption stages. Neighbours were important source of information at awareness and evaluation stage.

1.5.2.0. ADOPTION OVER TIME

Adoption of new ideas (Tarde, 1903) follows a normal S-shaped distribution over time. This means that in the earlier stages, only a few individuals adopt new ideas and then the number of individuals accepting the new ideas increased and finally the rate of adoption slackens. The idea of the S-shaped adoption curve was further studied by Chapin (1928), Ryan and Gross (1943), Griliches (1957), Rahim (1961) and Mansfield (1961). In education diffusion tradition it is found that adoption of educational innovations take the S-shaped curve (Ross, 1958). Interaction effect was found to be the possible reason for the S-shaped adoption distribution through which individuals in a social system, who have adopted an innovation, influence those who have not yet adopted (Sheppard, 1960). There is a considerable time lag between the recognition of an educational need and adoption of an innovation to fill the need (Ross, 1958).

1.5.3.0. SCHOOL SYSTEM AS AN ADOPTER

School is the target system in the change process. The researches in India on school system reveal two groups. One group was concerned with the social structure of school while the second group studied only one aspect of the school,

either the principal or the teacher. The first group studies were done by Pillai (1974) and Mukhopadhyay (1974). Pillai (1974) found that higher staff morale and an openness of climate make the social structure of the school more conducive to adoption of innovation. Mukhopadhyay (1974) revealed that a school with social structure characterised by personnel with higher enthusiasm, change proness, awareness, democratic leadership of the principal, supporting academic peer ascribed teachership from teachers, low cohesive friendly groups and openness of climate was more congenial for installation, implementation and institutionalisation of innovation. Agarwal (1973) found that teacher morale, teacher rapport with principal, satisfaction with teaching, teacher salary, community support of education, school facilities and services predicted more innovative practices in the School. Sharma (1975) concluded that the following agencies were responsible for change in central schools: (i) the team spirit of teachers; and (ii) the effective leadership of the principal. The effective leadership and clear planning of innovative designs helped the change process in central schools.

In the second group, the major study on principals is by Buch (1972). She studied forty-nine different variables pertaining to the principal's characteristics and his perceptions as predictors of school adaptability. She found that out of forty nine variables as many as twenty

five were significantly related to school adaptability. These factors belong to four meaningful clusters/categories. These are: a) exposure of new ideas; b) administrative ability; c) positive reinforcement from authority; and d) community involvement in schools. She revealed that training college personnel, in service training, programmes, feeling of security, parents involvement in the school, interest of management, perception of the training college personnel to provide expert guidance, frequency of professional meetings attended, inter-school visitation, cosmopolitan orientation were important factors for school adaptability. Fifteen variables have been found to bear significant relationship at 0.01 level and ten variables at 0.05 level with the adaptability of innovations in the secondary schools. Doctor (1973) revealed that headmasters of the high innovative schools processed higher innovative practices. Mukhapadhyay (1974) found that the laissez-faire type leadership of headmasters resisted innovation. Patel (1975) reported that young headmasters adopted innovations readily and frequently. Rai (1972) studied thirty different characteristics of teachers as predictors of teacher's acceptance of innovations under the broad heads, namely, demographic variables, institutional categories, socio-economic organisational climate and psychological and personality variables. The study identified the factors which are related to the diffusion process within the school system.

She found that self-designated opinion leadership, cosmopolitanism, general mass media exposure, age, socio-economic status, teacher's perception of students' benefit from the innovation, perceived principals support of the innovation, communication about the innovation and perceived change orientation of the principal were the best predictors for the time of awareness. The time of adoption was predicted by eleven variables, namely, similar communication about innovation, professional communication behaviour, ascribed opinion leadership, feeling of security, cosmopolitanism, sex, age, vertical communication, self designated opinion leadership, urban-rural background and attitude towards teaching profession. The innovation internalisation was predicted by seven independent variables, namely, teacher's perception of students' benefit from the innovation, perceived change orientation of the principal, ascribed opinion leadership, perceived cohesiveness of the school faculty, organisation climate, role satisfaction and need for autonomy. She indicated that the predictors of the diffusion process as a whole were perceived change orientation of the principal, teachers' perception of students benefit from the innovation, ascribed opinion leadership, cosmopolitanism, socio-economic status, teachers' perception of students attitude towards the innovation, experience and general mass media exposure. Bhogle (1969) found that the democratic headmasters with a favourable attitude towards teaching, low role conflict, with high

salary and teaching experience were more ready to accept innovation. She reported that age of teachers is significantly related to acceptance of innovations. Adoption of innovations in schools showed positive correlation with factors, such as, size of the schools, pattern of school, qualification of teachers, student-teacher ratio and the age of teachers. The personality of the headmasters and the organisational characteristics of the school were found to be more important than the personality factors of teachers in accepting innovation. Subba Rao (1967) concluded that academic and professional qualifications of the headmaster influenced the diffusion process. For innovations in classroom instruction, extension service departments, experienced teachers and headmasters were found to be the promoting factor, whereas lack of experience on the part of the headmasters and teachers, lack of time, heavy syllabus created hinderance for adoption of innovation. Leadership and experience of headmaster, management policies, co-operation of staff, community and parents were found to be promoters of innovation in the field of administration and community relation. The inhibitory factors were found to be the old set-up in school organisation, traditional work habit of the headmasters and staff and lack of cooperation from staff, etc. The study further indicates that schools with qualified and trained cosmopolite staff are more innovative. Less turnover in staff, and more professional behaviour were found to be conducive to diffusion of innovations. Patel (1972)

and Agarwal (1974) also studied a few characteristics of teachers facilitating innovations. Trivedi, et.al., (1973) concluded that headmaster's leadership style, the financial position of the school and the value system of the institution influenced the diffusion process.

In addition to these there are other variables which influence the adoption of innovation. Researches have been conducted in agriculture and medicine which reflect the influence of other variables on adoption process. A few important researches are reviewed here for that purpose. Throat (1970) revealed that out of social and personal background variables, education and caste rank had a strong association with the adoption of health practices. Knowledgeability, self-reliance and empathy were found to have significant association with adoption of health practices. Urban contact and experience of non-rural living, cinemas, radio listening and change agency contact were significantly and positively related with adoption of health practices. Both traditional and non-traditional aspects of status-caste and level of living were found to have significant influence on adoption of health practices. Dube (1973) revealed that the adoption of four selected improved farm practices was more in the case of farmers who were older in age, had higher education, belonged to large-sized families, had better financial position and had large size holdings. The majority of the non-adopters said that they did not follow improved

farm practices because they were not fully convinced of their usefulness. Prashad, Shukla and Sohal (1971) concluded that factors like 'practice' against 'nature' and low extension contacts scored more and were ranked first and second most important factors for non-adoption of artificial insemination in animals.

1.6.0.0 Implications of the Research Review for the Present Study:

The literature survey indicates that researches have been undertaken more in the adoption process and school adaptability. The studies in the area of school adaptability have concentrated in identifying the factors related to it. In India, very few researches have been conducted on the educational resource system except Mukhopadhyay's study (1975). He found that besides District Education Officer (D.E.O.), the Extension services (Ahmedabad), community Centre (Ahmedabad), Bureau of Psychology (Calcutta) and English Institute (Calcutta) were also found to play the role of the educational resource system. The researchers have emphasised on locating the educational resource systems in India (Buch and Buch, 1973; Trivedi and et.al., 1973; and Mukhopadhyay, 1974 and 1975). Havelock (1973) explained the important factors of the resource system in general and their relationship to diffusion process. None of the research study in education was carried out to study the characteristics of the educational resource system and their relationship with diffusion process.

Very few studies have been conducted on the process of developing innovation in the educational resource systems. The studies of Subha Rao (1967), Bhogle (1969) and Ehagia (1973) deal with either the characteristics of the innovation ~~or the~~ psychological traits of principal and teachers. How is an educational innovation developed in an educational resource system which has some significant relationship to adoption process has not been studied in the Indian context? The process of communicating innovation has been studied by various investigators in other fields and least in education. There is hardly any research study on the communication of innovation from educational resource system to the client system. Though studies have been done in terms of communication behaviour, change-agents, key communicators, opinion leaders and means of communication but majority of these research studies are conducted in other fields and least in education. Shama (1976 and 1978) reported that areas like characteristics of educational resource systems, process of developing and communicating innovations have remained unexplored except a modest beginning in a few studies. It can be concluded that these three variables, namely, the characteristics of the educational resource system, the process of developing innovation, and the process of communicating educational innovation have not been studied in detail by the researchers in India. These variables have to some extent an impact on the adoption of educational innovation and require more attention. To

develop greater insight into the adoption of new ideas, it is necessary to study the characteristics of the educational resource system, the process of developing and communicating educational innovation. It is also important to study the impact of these three variables on the adoption process. The present study is an attempt into this direction.

1.7.0.0 THE OBJECTIVES OF THE STUDY

The purpose of the present investigation is to study the characteristics of educational resource system and the process of developing and communicating innovation and their impact on adoption process. In order to accomplish this purpose the following objectives are framed.

- i) To study the characteristics of the various levels of educational resource systems.
- ii) To study the process of developing innovations at various levels of educational resource systems.
- iii) To study the process of communicating innovations at various levels of educational resources systems.
- iv) To find out the relationship between the characteristics of the educational resource system and the level of adoption of innovations. ✓
- v) To find out the relationship between the process of developing innovations and the level of adoption of innovations.
- vi) To find out the relationship between the process of communicating innovations and the level of adoption of innovations.

It can be seen from the above objectives that the present study is mainly concerned with the study of the characteristics of the educational resource system (CERS), process of developing innovations (PDI) and process of communicating innovations (PCI) from the educational resource system. The study also attempts to find out the relationship between the level of adoption of innovations and the three independent variables, viz, characteristics of the educational resource system, process of developing innovations and the process of communicating innovations.

1.8.0.0. Definitions and clarifications

The dependent variable under study is the level of adoption process and the independent variables are the characteristics of the educational resource system (CERS), process of developing innovations (PDI) and the process of communicating innovations (PCI). These terms are defined as below.

1.8.1.0 Educational resource system:

The resource system is operationally defined in this study as the organization/institution which develops educational innovations. In this study research organisations at national level, state institutes of education, regional colleges of education, colleges of education and university departments of education are studied as the educational resource system. The researcher intended to study the characteristics of these resource systems. The characteristics studied are as follows:

- (i) Linkage: Linkage as a factor simply signifies the degree of interpersonal or intergroup connection. It is the extent to which mutual communicative relations exist among two or more parties.
- (ii) Structure: It is the degree of systematic organisation and coordination.
- (iii) Openness: It has been defined as the willingness and readiness to listen to the needs of others and to give help. It involves willingness and readiness to accept outside help.
- (iv) Capacity: It is the capability to retrieve and marshal diverse resources. It includes power, size, centrality, intelligence, cosmopolitanism, mobility and the number of the diversity of existing linkage.
- (v) Reward: It has been studied in terms of frequency, amount, mutuality and structuring of positive reinforcements in the educational resource systems.
- (vi) Proximity: It has been studied in terms of nearness in time, place and context. It includes familiarity, similarity and recency.
- (vii) Synergy: It has been defined as the number, variety, frequency and persistence of forces that can be mobilised to produce a knowledge utilization effect.

1.8.2.0 Innovation:

Any idea that is perceived as new by the individual is an innovation. It is a phenomenon that just happens in

everybody's life; more specially so in that of a teacher in the school. What one requires is the eye to see, an inquisitive mind to question and a desire to go deep into the newness perceived and finally a stubborn will to experiment with.

While observing in everyday practice, even casually, there is always a change of noticing something that will raise a doubt on the existing practice. The doubt will sometimes be followed by an idea about ways in which the practice might be improved. Whatever the sources of the idea, the next stage will ordinarily be to find out if it works. This is innovation.

Oxford dictionary (1933) defines innovation as the action of innovating the introduction of novelties; the alteration of what is established by the introduction of new elements or forms.

Barnett (1953) has defined innovation, as any thought, behaviour or thing that is new, because it is qualitatively different from existing forms. (Barnett, 1953, P.I)

Rogers (1962) defines innovation as, an idea perceived as new by the individual (Rogers, 1962, P.13).

According to him it is the novelty of the idea to the individual that determines his reaction to it. It does

not matter much whether or not an idea is objectively new as measured by the amount of time between adoption and its first use or discovery. Miles (1964) defines innovation as, a deliberate, novel, specific change, which is thought to be more efficacious in accomplishing the goals of a system. (Miles, 1964, p.14).

Adiseshiah (1977) used the term innovation in the sense, as used in the engineering sciences, as referring to bring into a new product or a new process - the process by which an invention or an idea is translated into a programme. According to him the term innovation is used to refer to a situation where some result of a piece of educational research is turned into an educational process. It is some educational idea, some educational break-through and, in rather rare case, an educational invention that flows out of research which provides the base for educational innovation. Innovation would then be turning the idea into an educational process design, bringing together the material and non material factors to effectuate the process, preparing, training and orienting the persons who are to be involved in the process, and operating the process and evaluating the resulting system. Putting it into the model form, it would appear somewhat like this.

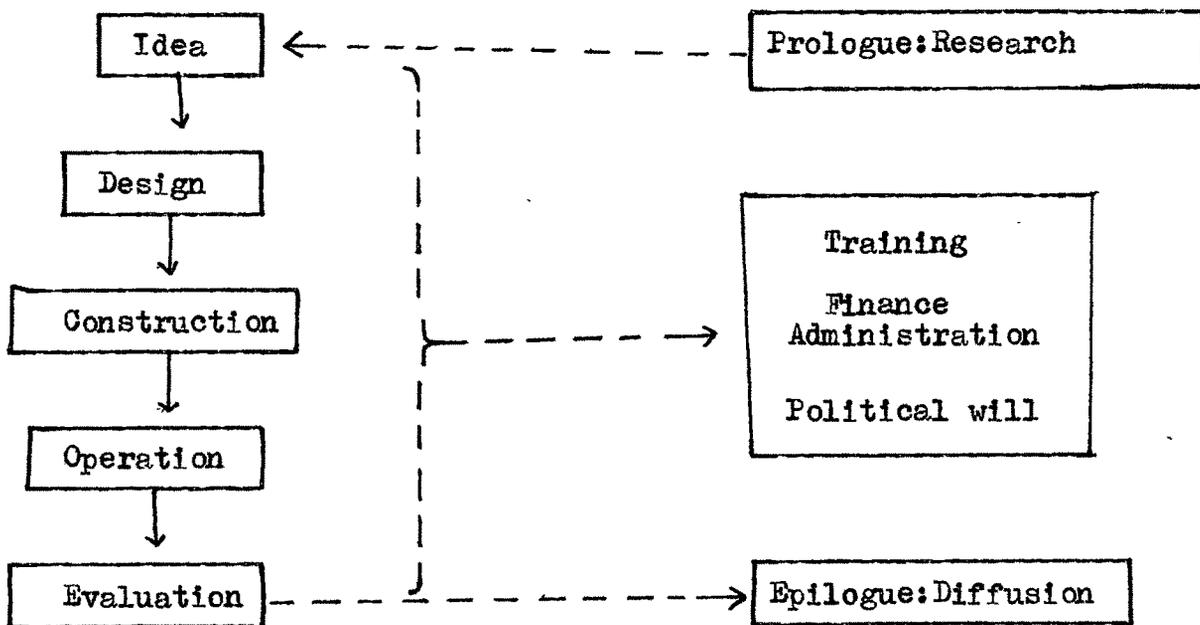


Figure 1.1.0.0. showing innovation process.

1.8.3.0. Process of Developing Innovation

The process of developing innovation at the educational resource system has been studied in terms of

- (i) Awareness of innovations,
- (ii) Sources of getting ideas about innovations, and
- (iii) Shaping of innovation.

The important dimensions of the process of developing innovations studied are: sending expert abroad, transplantation of innovation, selection and initiation of innovation due to financial aid, by other institutions and prestige; survey,

research reports, journals and newspapers as sources of getting innovative idea; taking suggestions made by various agencies; administration of innovation; individual vs team working; trial and modification, freedom and security to the subordinates and characteristics of innovation. These above mentioned dimensions are studied under the heading of sources of getting ideas about educational innovations and shaping of innovation.

1.8.4.0. Process of Communicating Innovation

i) Communication: Communication signifies conveyance of an information from one party through some media to the other party. The present study has worked at the communication of innovation between the educational resource system and the client system. Three important communication strategies have been studied for this purpose.

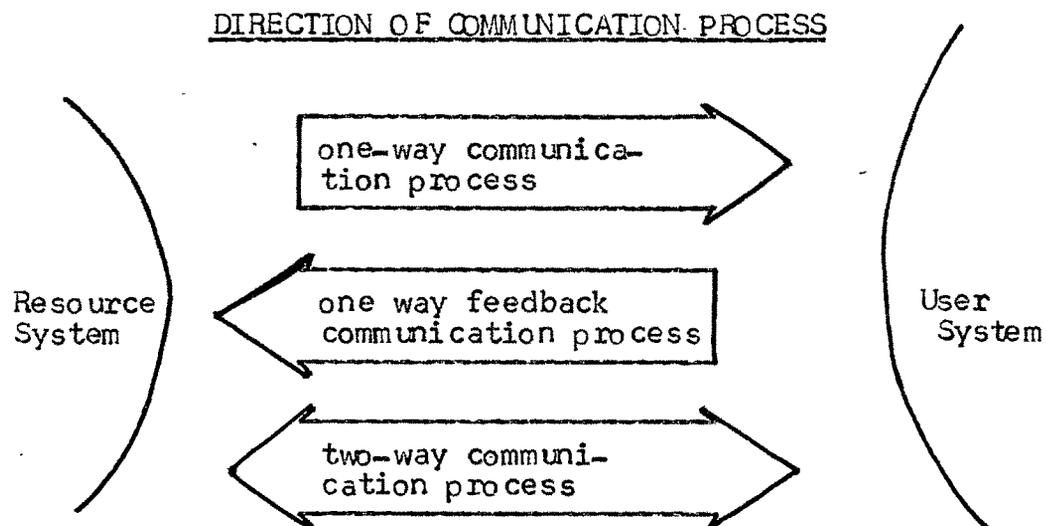


Figure 1.2.0.0. showing directions of communication process.

(Havelock, 1973, p.9-3)

i) ONE WAY COMMUNICATION OF INNOVATION

It has been defined as the process in which the innovation is packaged and communicated in such a manner that the user has little or no opportunity to influence the originator or to change the nature of the message.

ii) ONE WAY FEEDBACK COMMUNICATION OF INNOVATION

It is an essential mechanism for obtaining receiver's information in large systems where two way communication efforts are unpractical. It is especially appropriate when major status or power differences exist between the sender and the receiver of the feedback. The message indicating needs flow in an opposite direction, from consumer to practitioner to researcher.

iii) TWO WAY COMMUNICATION OF INNOVATION

It involves the transmission of information about innovations in a setting where free and immediate feedback is received and responded to. Two way communication medium or channels involves interaction between the resource and the user. This interaction is necessary for the ultimate adoption of a change by an individual, a group or a total system.

1.8.5.0. ADOPTION PROCESS

The adoption of a new practice by an individual be it in education or agriculture or industry is a complex behaviour. Adoption of new idea or a practice is not sudden decision. Rogers (1962) defined the adoption process

as the mental process through which an individual passes from first hearing about an innovation to final adoption. The term adoption process has been used in the present study as the level of adoption of educational innovations in the education system as perceived by the educational resource system.

1.9.0.0. HYPOTHESES

Many variables favour the level of adoption of educational innovations in the client system. The important ones are the characteristics of the educational resource system, the process of developing and communicating innovations. Consequently the variability in the level of adoption of innovation in the client system could be accounted for the procedure of developing and communicating innovation. Some innovations might have failed to be adopted to a greater extent because they were not developed and communicated properly to the clients from their educational resource systems. Some other innovations might have succeeded to be adopted to a great extent because the educational resource systems might be having high characteristics and they developed and communicated innovation properly to their clients.

Based on this rationale, critical observations of the past studies and the objectives of the present study, three specific null hypotheses were formulated which the investigator attempted to examine. These are as follows:

i) There is no relationship between the characteristics of the educational resource system and the level of adoption of innovation.

ii) There is no relationship between the process of developing innovation in the educational resource system and the level of adoption of innovation.

iii) There is no relationship between the process of communicating innovation from the educational resource system and the level of adoption of innovation.

It is obvious that the hypotheses framed about the relationship of the level of adoption of innovation and the three independent variables viz., characteristics of educational resource system, process of developing and communicating innovation are null hypotheses. These null hypotheses are based to some extent on the researches mostly in agriculture and industries on these variables which are reviewed in this chapter.

1.10.0.0 SUMMARY OF THE CHAPTER

The present chapter deals with the statement of the research problem, review of researches, implications of the researches, objectives, definitions and clarification and hypotheses. The researches have been reviewed for the resource system, process of developing innovation, process

of communication of innovation and adoption process. Independent variables and dependent variable have been defined and some clarifications have been made. The next chapter deals with the research method, experimental design, selection of sample, tools employed, data collection and statistical techniques used.