Extension Education - Concepts and Approaches

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The term extension education was coined and used in the year 1873 by the Cambridge University in England to mean an educational innovation and its purpose was to take the educational advantages of the University to the people at large, where they lived and worked. The American extension movement was started in Chicago in 1892. The terms agricultural extension and cooperative extension education were officially adopted first by the USA by passing the Federal smith Liver Act of 1914. The Act provides that

"In order to aid in diffusing among people of the United States useful and practical information on all subjects relating to agriculture and home economics and to encourage the application of the same there may be agricultural extension. Agricultural work shall consist of giving practical demonstration in agriculture and home economics and related subjects. Thereto educating people not attending regular courses and imparting information on these subjects through demonstration and publications.

Extension is effective use of developmental mechanism as educational means for changing the mind and action of people in such a way that they `help themselves' to attain economic and social improvements. Hence extension is a process of working with people, not for them; of helping people who are central actors in the drama, and not stage hands or spectators. In short it is helping people by means of education to put useful knowledge to work for them. This process is the essence of extension education. Extension education is the means of achieving community development. Empowerment of people is an integral part of rural development process, which can be achieved through extension education. Extension education and skill in its use will ultimately determine the success of development programmes.

Extension education: definition

The most accepted definition of extension education is that of J. Paul Leagan who is considered as the father of extension education. Going by the concepts of extension it is an applied science based on innovation in agriculture, psychology of farmers and their social settings.

Fisheries extension – need and importance

The most important objective of fisheries development is to increase the fish production of which provides low cost protein to the people, foreign exchange to the country and employment for people in the coast rural areas. In most of the earlier attempts to improve the condition of the rural population the emphasis was on the improvement of methods for increased food production. But the present concept of extension combines the concern for the development of people and the methods of increasing production.

Fisheries in India can mainly be categorized into marine fisheries, brackishwater fisheries and fresh water fisheries or can be classified into marine and inland fisheries. Marine fisheries refer to fishing in the sea and related activities. Inland fisheries is fish production through capture and culture methods and post harvest activities relating to the inland water bodies such as backwaters, lagoon, rivers, ponds, reservoirs and so on. In general fisheries consists of fish capture from the sea and inland areas, production of fish through aquaculture and mariculture practices and fish handling processing. The people who are engaged in the above areas need information on fishery resources, fish capture and processing methods. Today a great deal of information is available in fisheries and unless and until they are put into practice by those engaged in fisheries the objective of fisheries development will be hard to achieve.

Development and transfer of innovation in fisheries

One of the most important means of accelerating fisheries development is development and transfer of innovation. Extension plays a substantial role in this process.

Tech. Generation ⟷ Tech. Transfer ⟷ Tech. Adoption

Extension helps to bridge the gap between technology generation and technology adoption. A gap exists between the level of scientific knowledge available in the laboratories and what is actually being practiSed. Planned change is necessary to correct such imbalances. In many of the coastal areas fishermen and fish farmers use simple traditional fish production practices based on trial and error. Their practical experience is very important in increasing production, but the scientific knowledge helps them in effective utilization of their resources and earn maximum profits and sustainability. Values and beliefs of people have a great influence on their attitude towards innovations. Socio-economic factors are also the important determinants of fish production. Extension can influence what fishermen and fish farmers think and do and the way they make decisions. It encourages their participation by addressing their problems and needs related to their production activities.

Technology transfer and extension

Fisheries development takes place through technology generation and transfer. If technology transfer is the objective extension can be said to be the method. The term technology transfer and extension are synonymously used. But what is a technology? The simple and most practical way of defining the term technology is calling it as an improved way of doing things. Hence technology is synonymous with innovation. Technology in this context involves application of scientific knowledge to improve fish production. An innovation is something new. It also denotes the act of introducing new methods. To illustrate this we shall consider the example of motorization of traditional fishing craft. Here the outboard or the inboard motor is the technology or the innovation. The act of convincing the fishermen and influencing him to use this technology is transfer. To implement the process of transfer a series of different techniques influencing fishermen are required. The package of these techniques are called extension methods. The whole scientific process of identification and selection of the motorization technology, testing its contextual relevance to a group of fishermen, evaluating its economic advantage, educating them about the usefulness of this new device, motivating them to buy and adopt the motor and helping them

to solve problems in its use is extension. The fishermen and fish farmers need information on a wide variety of research results available in the research stations and passing of this knowledge based on their needs involves a full time work of extension specialists. As new changes are introduced newer knowledge is generated which need to be communicated to the fishermen and fish farmers. The job of technology transfer and extension is not restricted to the extension specialists alone. The knowledge of extension enables the researchers and the development administrators in effectively planning and implementing projects in the fields.

Role of extension in national development

It is not man's technology alone or his physical resources alone but what he does with them is of transcendent importance to his progress. What man does with his resource depends largely on the nature and extent of societies, investment in his educational growth. Education including formal, non formal and informal helps man improve his level of knowledge and standard of living. Development is an effective use of these mechanisms as educational means for changing the mind and actions of people in such a way that they help themselves attain economic and social improvements. Extension education helps to attain this purpose.

When technology and educational instruments for disseminating it are available, the key to development in human element. To bring about a change, in this area, which is sound socially, effective economically, permanent physically an enduring educationally decision must rest with the people. The educational approach enables changes in the following four broad areas.

i. Change in what people know – the knowledge of themselves, their society and the environment.
ii. Change in what people can do – skills, mental and physical.
iii. Changes in what people think and feel – their attitudes towards themselves, toward their society and toward their physical environment.
iv. Changes in what people actually do – their actions related to factors determining their own welfare.

The basic elements in extension are:

i. Man himself – physiological and psychological
ii. Man's environment – physical, economic and social
iii. Man created devices – technologies, infrastructure

Man is individual human personality possessing mental and emotional powers. He has desire to improve many things and at the same time has the tendency to resist changes.

Man's environment consists of physical, social, cultural and economic conditions. Environmental forces exert constant influence on man's behaviour and in turn influenced by him. He must learn to deal with the environment if he is to survive and progress. The major environmental conditions bearing our villages are:

- Low agricultural production
- Inadequate food supplies

- Low per capita income
- Poor housing and home amenities
- Poor health
- Unemployment
- Low educational level
- Over population
- Isolation
- Unsatisfactory tenure system
- Inadequate water resources
- Unsystematic credit system
- Insufficient implement and farming practices
- Outmoded systems and tradition

The man created devices to serve man is:

- Educational
- Technological
- Physical
- Economic
- Social
- Administrative
- Religious

The external stimuli that have bearing on Indian conditions are:

- Scientific knowledge
- Trained personnel
- Production tools
- Production materials and methods
- Communication media
- Policies and laws

Needs are represented by the gap between what is and what should be. Extension education is an instrument devised for identifying and bringing the gaps.

Need for extension training

The need for training in extension extends to all people who either have administrative responsibility, specialist role or who volunteers to improve village conditions.

The administrator must know that extension is an educational process. He must look upon the administrative role as that of providing the best possible conditions for organizing and carrying out programme of social and economic change through extension education. The administrator is the leader in creating conditions of organization, human relation, financial and physical facilities that enable and encourage specialists and grass root level workers to perform their roles effectively.

The specialists to be successful must, in addition to having high technical competence, be knowledgeable about the target group. In making recommendations the specialist must clearly understand the needs of the client and methods of approaching them. He must be sensitive to the requirement of the administrator.

The extension worker's role lies in mastering the extension technologies, educate villagers about their programmes get them interested in examining the new ways of thinking and help them try out innovation.

Training in evaluation of accomplishments and the effectiveness of programmes helps to increase competence and avoid mistakes. The evaluation helps to reorient the administrator, specialist and extension workers to the changing situations. The standards for professional proficiency are constantly rising in all fields. It is an intricate and complex educational task to design and execute extension programmes that significantly change the action of large number of people. Education is the central force in effective extension work and all training must emphasize development of leadership at all levels.

Technology transfer in fisheries

Modern fisheries require innovative technologies which systematically adapts scientific knowledge to production system. Field level technologies which are superior to the traditional ones are already available. The gap between existing level of technological knowledge and the available knowledge is not easily closed. Technological change is a very difficult and time consuming process and even made more difficult because much of these technologies being promoted is not suitable to the locality. Complementary services and delivery system are not available or unexpected cultural resistants emerges among intended beneficiaries. Norms and values systems do change, groups forms and dissolve, leadership changes, power relations alter, standards of behaviour modifies, role of men women and children gradually transforms. Changes is inevitable but the speed varies. In many rural areas agriculture is still carried on with simple tools and traditional methods based on trial and error.

What is technology

Any definition of technology encompasses a wide range of phenomena. Technology is translation of scientific laws into machines, tools, devises, instruments, innovations, procedures and techniques, to accomplish tangible ends to attain specific needs.

Characteristics of innovation

The success of technology transfer lies in fishermen's adoption and diffusion of technologies or innovation without bringing harm to the fellow farmer or the environment. Any technology to find a place in the fisheries situation has to fulfill the following characteristics.

Relative advantage: The technology should be superior than the practices being followed by the fishermen or fish farmers.

Economically feasible: Economic feasibility refers to the case of implementation within the fishermen or farmers economic situation. Investment on more expensive inputs may, in the long run, accrue him higher profits. But the fishermen or farmers may not be prepared for raising the required resources due to his low socio-economic conditions.

Socially acceptable: Technologies which had the chance of interfering with the social set up such as neighbourhood relationship, family structure or roles of members of the society may not be readily accepted. These situation can include change in role of women or displacement of labour due to introduction of mechanization of a manual fisheries activity.

Culturally compatible: Values and beliefs are important elements in introducing technological changes. These are crucial in influencing farmers' behaviour and decisions.

Consequences of technological change

Technology development and transfer in the field of fisheries has brought in considerable change in fish production and utilization. These include increase in catch, increase in export, improved marketability and enhanced fishing efforts. Innovations such as mechanization and motorisation increased the mobility of the fishermen enabling them reach farther fishing grounds. The increase in the size of trawlers has improved the endurance of these crafts and equipped them to store larger amount of fish for longer time. The use of devices such as echo-sounder and GPS allow detection of shoals and effective harvest. Use of ice is one of the very simple and important innovations in fisheries. Technologies for different gears have enabled selective fishing of valued species. Craft designs, alternative material for craft building and their protection and engineering have also contributed towards better fishing. In mariculture we have today a number of technologies for onshore production of fish and shellfish seed and their inshore and inland farming. The R&D agencies have gathered a great deal of information regarding resources, their exploitation and utilization. All these have led to spectacular changes in fisheries sector.

There are countless examples for change agents around the world of well intended efforts aimed at introducing new technologies ending up displacing people, reinforcing already existing inequalities or forcing changes in other areas of culture. As an example the motorization of fishing operating which generated great deal of enthusiasm among fishermen, at least in some parts of the coast equipped to increase the traditional fishermen's mobility, the mobility to the farther fishing grounds, mobility across fishing villages and great saving in their physical energy has later turned into heavy financial burden leading to regenerations and degeneration of groups, indebtness and shifting of assets. Another important technology which revolutionized the fishing industries is the development of synthetic net materials and their large scale production in the factories leading to displacement of women from their traditional role. Motorisation led to increase of size of the traditional canoes making them difficult to land in the traditional fish landing centers. Thus increasing centralization and commercialization of fisheries displaced women from retail marketing and homestead processing in villages. Similarly, the aquaculture world over is so developed that one in four fish consumed comes from farming. Technological improvement of aquaculture practice

helped us in bringing several species under inland and coastal farming but the faulty adoption of the technologies resulted in great disaster as in the case of shrimp farming.

The two serious consequences of change due to the introduction of technologies and their faulty use have led to severe restrictions (i.) in trawling and (ii.) in aquaculture resulting in trawl ban and CRZ Act. The consequences of these regulations are very difficult to be absorbed by the small fishermen and farmers.

Historically transfer of technologies has occurred by means of cultural contacts and migrations. Currently the introduction of technologies are expensive and labour displacing. Application of technologies developed by other countries need to be tested for their appropriateness into the farming systems. The key elements in technology transfer are adaptive research capabilities and institutionalized extension network with linkages to serve a wide variety of clientele.

During the50's and 60's economic growth as measured by GNP, per capita income etc. was the preoccupation of policy makers. But the pattern of increasing distortion in distribution of incomes, growing rate of unemployment and disruption of traditional way of life have created a series of priorities emphasizing social aspects of development. Indiscriminate transfer of technologies from abroad has added to the problems in developing countries as they has failed to meet the local needs.

The problems of inappropriateness of technology are created due to heavy concentration of R&D efforts in developing countries. This creates wrong orientation to the problems of developing societies. The science and technology institution in developing countries are closely linked to those in developed countries through various ways. In their effort to emulate the institutions in the developed countries, the scientist get involved in projects which may be of high scientific value but of little practical value to the society.

Extension programme planning

Programme planning is basically a process of making decisions that will carry into future actions. Decisions have to be made about `what the present situation is, how it could and ought to be changed and what means can be used to accomplish the new and more desirable situations. This is a conscious effort to meet the needs, interests and wants of the people for whom the programme is intended.

Principles

Extension programme planning

i. is based on analysis of the facts in the situation
ii. select problems based on needs
iii. determines objections and solutions which offer satisfaction
iv. has definite plan of work
v. is a continuous process
vi. is a coordinating process
vii. provides for evaluation of results

A good programme meets the needs and interests of majority of the people and motivates them to make necessary changes. To be effective, every programme must start with the people and situations as they are, and then build towards the ultimate goal of better family living.

Nature and scope of programme planning

Objectives of programme planning is to develop in people the ability to make a better living and to live more satisfying life as individuals, as family members and as citizens of their nation. How to obtain this objective is the key problem confronting the architects and current leaders of this scheme. It assumes the ability among the planners to distinguish important needs from unimportant ones. Such a programme must be based on people's needs to make it significant and their interests to make it effective. If we know where we are and where we ought to go, we can better judge what to do and how to do it. Effective programmes for rural improvement do not just happen, they have to be built.

Steps for making programmes

Programme planning process consists of the following nine specific steps:

i. Collection, analysis and evaluation of data

Good planning depends on the collection of adequate and reliable data and a scientific elaboration and interpretation of the same. Extension workers should have adequate knowledge of what fishermen produce, how and under what condition they produce it and how the production can be stepped up to the maximum for the purpose of formulating plans at the village and block levels.

ii. Determination of objectives

It is essential in the programme planning process that before deciding on the projects to be undertaken, the basic objectives of the programmes are determined by the villagers in consultation with the extension staff. This means that villagers must have a very clear understanding of the projects so that they are able to set up appropriate objectives for village programmes. In arriving at the objectives for village programmes, the villagers and leaders of local institutions should take the advice of the extension workers.

iii. Definition of the problems

In the process of programme planning at family, village or block level it is desirable that village activities are properly classified. This will give an opportunity to the planner and the participants to assess their potentialities and capabilities for executing the programmes.

iv. Finding solutions to the problems

The extension workers should have clear understanding of the village problems and keep themselves equipped for offering solutions to the problems of villages presented to them. The solutions offered should be practicable and economical and should result in satisfaction and learning.

v. Selecting problems to be tackled

All the problems cannot be tacked simultaneously, even though the solutions for them are known. Therefore, it is necessary for the extension workers and village institutions to select problems and concentrate their efforts on these projects in a phased way.

vi. Annual plan of work

A plan of work is the listing of activities by which the objectives already decided upon are to be achieved. It includes the methods of executing the programmes such as demonstration, discussion meetings, family contacts by the extension workers etc. It indicates the places, timings and persons responsible for carrying out the programmes along with the methods of evaluating the progress.

vii. Carrying out the plan

Success of a programme depends on how ell it is carried out. Steps should be taken to phase every activity in a proper perspective and arrange all things in time. Proper arrangements for supply of materials in connection with the programmes should be made much in advance. Efforts should be made to select the best type of local leaders who can shoulder the responsibility and multiply the efforts of the extension agency. All steps in carrying out the programme should be discussed with the villagers and their consent obtained at appropriate periods so that a partnership in the programme is built up and maintained. Steps for assistance and direction should be clearly stated so that there may be no confusion anywhere in launching the extension programmes.

viii. Continuous checking and evaluation of results

An effective plan of work requires the keeping of adequate records of each activity as a basis for future evaluation. Evaluation of the activities should be undertaken jointly by the extension staff, the village institutions and other important local organizations. Each future programme should be based on the evaluation results of the previous ones. Successful evaluation gives a correct direction to a programme. It should be remembered that evaluation is not mere recording of activities or achievements but is a process of comparing the results with the original objectives.

ix. Review of progress and projection of plans

At the end of each cycle of the programme building process, the situation should be reconsidered in view of the changes in the social and economic levels of the people so that the whole process may begin again with new or modified objectives. Programmes which have created an impact on the people and are being accepted by them should be expanded to the neighbouring areas where similar condition occur. Research should be conducted on the programmes which are not being accepted by the people and the reasons for their failure ascertained.

Programmes should never be considered as ends in themselves. They are merely tools for doing more effective work. A proper adjustment of time and energy spent in preparing a

programme has always to be maintained with the actual implementation of the programme in the field. It should be noted that evaluation, decision, planning and action takes place continuously, in varying degrees throughout all steps of the programme building process.

Communication in extension

The world has never seen a time when the role of communication as important as it is today. This is so because the world has never seen a time when there was so much to know and so many who want to know so much and so quickly. In rural development nothing is more important than the transfer of useful ideas from the person to another. In this process of communication lies the potential for million of people to overcome ignorance, poverty and disease, and to attain a status of economic well being. The challenge of extension is to have ideas useful to the audience to make their meaning clear, to get them accepted and motivate people to adopt them. To a large degree success of extension lies in communication.

Communication is the process by which two or more people exchange ideas, facts, feelings or impression in such a way that each gains a common understanding of the meaning, intent and use of message. It is a conscious attempt to give and gain information. Good communication is the essence of good extension work. Extension educators are communicators, scientists are discoverers of truth and administrators are the managers of programmes.

Forms communication

Basic means of communication is words. The spoken, and written and the combination of spoken and written are the major forms of communication.

The key elements of communication are:

i. **Communicator**: This is the person who starts the process of communication in operation. This is the source or originator of the message.
ii. **Message**: a message is the information a communicator wishes to communicate.
iii. **Channel**: a channel may be anything used by a reader of messages to connect him with the receiver.
iv. **Treatment**: Treatment is the way a message is handled.
v. **The audience**: The audience is the intended receiver of the message.
vi. **Audience response**: Action taken by an intended audience that can be attributed to a given communicative act is called audience response.

Good communication is a planned process. When we communicate we do not transfer ideas as such from person to person. The communicator has to encode his thoughts in a message which can be decoded and interpreted in the same way. Distortion of message takes place when the same and the receiver do not share common meanings for words, symbols and gestures. Different communication channels also have different effects. The interaction between the sender and the receiver is the most important factor in the communication process. Careful planning of communication is essential for delivering the right message to the right audience at the right time. Particularly in areas related to agriculture timely communication is critical in the implementation of technologies.

Means and methods of extension communications

Extension education is dedicated to helping people put knowledge work for them. It helps people not only to gain knowledge but influencing human behaviour to develop skills and improve production and living conditions. Methods of influencing human behaviour includes compulsion, exchange, advice, influencing knowledge level and attitude, providing means, providing service and change of the farmers social and economic structure. Extension education helps the client think systematically through the teaching learning process.

A wide range of extension teaching methods and techniques are in common use and hey are employed suiting to the situation. Extension methods can be broadly classified into following methods.

i. Individual contact
ii. Group contact
iii. Mass contact

Individual contact methods include farm and home visits, office calls, telephone calls and letters. Group methods include speeches and talks, demonstrations, excursions and group discussions. Newspapers, radio, television and other printed forms are the major mass methods used in extension.

Visual aids in extension teaching

The major ways by which people learn are seeing, hearing and doing – looking, listening and acting. Visual and audio visual aids offer extension worker unique opportunities to increase the effectiveness and clarity of ideas. Audio visual aids help a learner to:

i. Learn more
ii. Learn faster
iii. Remember longer and the helps teacher to organise his teaching materials
iv. Improves ideas indelibly.
v. Vitalise teaching
vi. Experiences outside ones environment
vii. Compact verbalism
viii. Arouse and hold interest
ix. Attract and hold attention
x. Stimulate thinking
xi. Change attitudes
xii. Save time
xiii. Overcome language barrier

Good visual and audio visual aids are therefore good communicators, but never a substitute to a teacher. The audio and audio visual aids must be selected in such a manner that they make learning very effective. The visual aids commonly used in extension teaching are picture, sketches, black board, flannel graph, charts, flash cards, posters, bulletin boards, models, films, record player, television, projector and hand outs.

Priorities for problem solving

A systematic approach right from policy planning to the grass roots level is essential to resolve the problems arising out of development and transfer of agrarian technologies. Programmes need to be developed for different sectors and appropriate methods of transfer employed involving peoples participation. The methodology of extension education is very well suited for this purpose though is importance is not fully recognized. We have in stock technologies developed with various objectives. These have to be taken to the field for trial and refinement. Credit and other input support particularly in the small scale sector has been lacking. A well formulated extension network with its capability to link technology generation and user systems can address such situations.