Chapter-III

THEORETICAL ORIENTATION

An attempt has been made in this chapter to develop theoretical framework which will provide basis for linking empirical findings to logical reasoning. Different concepts and processes have been discussed in this chapter. This will help in their better understanding and providing a theoretical basis to the methodology and logical reasoning to the findings.

3.1 COMMUNICATION

The word communication originates from the word 'communis', which means common. So communication is an act by which a person shares the knowledge, feelings, ideas, information, etc. in ways such that each gains a common understanding of the meaning, intent and use of the message. A few definitions of communication are given as follows:

According to Leagans (1961), communication is a process by which two or more people exchange ideas, facts, feelings or impressions in ways that each gains a common understanding of the message.
Hovland (1964) defined communication as a process by which an individual, the communicator, transmits (usually verbal symbols) to modify the behaviour of other individual communicators.

Hartman (1966) said that communication is control of behaviour through descriptive and reinforcing stimuli.

Stevens (1942) described communication as a discriminatory response of an organism to stimulus.

So, it can be concluded that communication is a process of social interaction. Communication is an exchange of information, knowledge, ideas or feelings taking place between two individuals. Some kind of change occurs as a result of interaction. The change may be viable in terms of knowledge and behaviour.

3.2 ELEMENTS OF COMMUNICATION

Singh and Singh (1976) described "communication as movement of knowledge to people in such ways that they act upon that knowledge to achieve some useful result". Though communication models vary with reference to the situation under consideration, they all involve the important elements of source, message treatment of message, channel, receiver and feedback. A simple model of communication can be represented through a diagram (Fig. 3.1).
Fig (3.1) Communication process in operation
Communication takes place when the sender selects a certain message and gives it a special treatment for transmission over a selected channel to a receiver who interprets the message before taking the desired action. The process of communication is completed with the help of feedback mechanism.

The feedback from the receiver determines the nature of payoff. This payoff is usually evaluated in terms of the change effected in the stages leading to the adoption of an idea by the receiver in stages involving awareness, knowledge, attitude (leading to evaluation), motivation (leading to trial) and finally adoption.

In the present study, emphasis has been laid on the role of different extension teaching methods in terms of their effectiveness in bringing about gain in knowledge by the respondents through knowledge test.

3.3 PURPOSE OF COMMUNICATION

Seventeenth century school of thought described the purpose of communication as information, persuasion and entertainment. Schramm (1949) described the purpose of communication as immediate reward and delayed reward. Festinger (1950) described the purpose of communication as consumatory and instrumental.

According to Berlo (1960) the sole purpose of
communication is to influence. According to him, we communicate to influence, to effect with intent.

On the basis of above description, it can be said that the purpose of communication is to influence, to effect with intent. The approach used to fulfil this purpose could be information, persuasion or entertainment. For the purpose of this study, communication serves informative purpose of extending knowledge on 'hybrid seed production technology in sunflower', to the respondents.

Roger and Shoemaker (1971) and Axinn and Axinn (1969) have emphasized that communication is essential for effecting change, but the willingness and ability of the people to accept this change, depend upon various factors and hence to make the communication process effective, we must recognize these factors. Jha (1968) reported that type of medium and its frequency of usage is one of the main factors responsible for the effectiveness of communication process, the other factors being receiver's perception of the profitability, compatibility and communicability of the message, receiver's socio-economic status, his level of education, past experience with communicator's message. Thus, the effectiveness of communication depends more elaborately on these factors which are under consideration in the development of communication strategy.
For the purpose of this study, effectiveness is the impact that an extension teaching method makes on gain of knowledge by the respondents.

3.4 COMMUNICATION AND EXTENSION APPROACHES

Communication media and extension methods are the tools of approach as they increase the effectiveness of extension work. An extension worker, must first know "what methods are available to him", secondly, he should know, "when to use a given method", and thirdly, "he should become efficient in using each method".

These approaches are used for reaching the people. The purpose behind the approach is to stir the people to motivate them to act towards some specified goal. This may be to fire up their imagination for a higher standard of living through higher yields in crops, better animals, better home management, etc. These approaches according to Dhama and Bhatnagar (1985) may be grouped as in Fig. 3.2.
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*Fig. 3.2. Approaches in communication and extension*  
*(Dhama and Bhatnagar, 1985)*
3.5 COMMUNICATION AND EXTENSION TEACHING METHODS

Since extension education is the process of bringing about or producing maximum desirable change in human behaviour, there must be some tools to do so. These tools are called 'extension teaching methods'. They are the basic and proven methods for approaching, working with, encouraging and influencing people to accept and adopt improved practices of all aspects of community development, whether agriculture, health or agro-industry. They are the methods of contacting and extending "know-how" to the people by attracting their attention, arousing interest and leading them to have successful experiences with new ways of doing things that are an improvement over traditional practices (Dhima and Bhatnagar, 1985).

The methods employed have a direct influence on the effectiveness of the job undertaken. It has rightly been emphasized by Ensminger (1959) that "Extension teaching methods are to the extension workers what machines, wrenches, screw-drivers, vices and hammer, are to the mechanic. An effective mechanic has available tools and knows how to use the tools required to do a given piece of work. This effectiveness as a mechanic lies in his ability to do many complicated jobs; this in turn depends on his having access to the required tools and in knowing how to use them properly".
To become efficient in use of extension teaching methods, we must know what methods are available, when to use each method and how to use it effectively. In thinking about and using extension teaching methods, we must always search for those methods which will produce desired results. For the present study, the following three extension teaching methods had been used:

1. Video-film
2. Slide-tape synchronization
3. Method Demonstration

3.6 CONCEPT OF KNOWLEDGE

Knowledge is one of the essentials of an individual's behaviour and is an important variable. Moreover, the body of knowledge of an individual is one of the resultants of the learning process, the other resultants of the process being the skills and attitudes (Verma, 1977).

Dewey (1916) defined knowledge as a perception of these connections of an object which determine its applicability in a given situation. Bloom (1956) considered knowledge as the "behaviour and test situations which emphasized the remembering either by recognition or recall of ideas, material or phenomena". English and English (1958) defined knowledge as a "body of understood information possessed by an individual or by a culture".
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need to be valued on the basis of a number of criteria, not solely on a few limited aspects (Best 1959).

It also has been stated that a test is a series of questions or exercise or other means of measuring the skill, knowledge, intelligence or aptitude of an individual or group (Freeman, 1968). In common usage a test is any set of situations or occasions that elicit a characteristic way of acting, whether or not a task, and whether or not characteristic of the individual best performance (Ahmann, 1965).

According to Kerlinger (1983), "A test is a systematic procedure in which the individual tested is presented with a set of constructed stimuli to which he responds, the responses enabling the tester to assign the tests a numeral or set of numerals from which inferences can be made about the testee's possession of whatever the test is supposed to measure. This definition says little more than that a test is a measurement instrument.

3.8 KNOWLEDGE TESTS

3.8.1 Essential Considerations about a Knowledge Test

In a knowledge test simple and elementary questions are covered with various aspects of the practice. The form of the questions and the level of precision and exactness required should not be too different. Probably the art of
testing has been developed to the greatest extent in the measurement of knowledge (Bloom, 1956).

By way of summary, the following factors are given as those to be considered in selecting a knowledge test:

**Norms:**

The test must provide appropriate and accurate norms, whether they be in the form of age, grade, percentile rank, standard score, or any other types. Norms should be meaningful with regard to the purposes for which the test is intended and to the groups of persons with whom it is to be used (Freeman, 1968).

**Validity**

In general, a test is valid if it measures what it claims to measure. However, validity may be defined in a number of ways. Logical validity means that the test actually measures or is specifically related to the trait(s) for which it was designed.

**Reliability**

Reliability means that the procedure measures consistently and uniformly over the duration of the procedure. In tests that have a high coefficient of reliability, errors of measurement have been reduced to a
minimum. Reliable tests, whatever they measure, yield comparable scores upon repeated administration. Reliability is indicated by high coefficients of reliability and by low standard errors of score (Best, 1959).

**Time Requirement**

The length of the test should not be so great as to produce boredom, satiation or negativism; for when these set in, the subject does not perform at his best level. Specific time limits cannot be prescribed for all tests or for all types of testers; but in general, shorter time requirements are indicated for younger children and for the mentally retarded. Many tests are so constructed that they can be administered in a 30 to 45 minute periods (Freeman, 1968).

**Objectivity**

An objective test is one that produces the same score regardless of who marks it. A test should yield a clear score value for each performance, the score being independent of the personal judgement of the scorer (Best, 1959). The greater the degree of subjectivity that is involved in making judgements about the level of performance, the less objective is the test.
Suitability

When selecting a test, one must determine whether the instrument is suitable for his purpose. Will it obtain the type of data that he needs? Will it produce measurements that are sufficiently precise for his purposes? Will it be suitable for the age and type of subject and the time and locality in which he intends to use it?

A good researcher should carefully examine all the explanations when he is searching for appropriate testing instruments (Dalen, 1973).

Economy

The matter of expense of administering a test is a significant factor, if the testing programme is being operated on a limited budget (Best, 1959).

Simplicity of Administration, Scoring and Interpretation

Ease of administration, scoring and interpretation is an important factor in developing/selecting a test, particularly when expert personnel or an adequate budget are not available. The ease with which a test is administered should be considered from the point of view of the administrator (Downia, 1961).
Interest

Tests that are interesting and enjoyable help to gain the cooperation of the subject. It is important in developing a test to recognize the fact that a good test does not necessarily possess all of the desirable qualities for all subjects or for all levels of performance within a certain range of age, maturity, or ability, a test may be suitable. Research workers should select the most appropriate standardized tests available (Best, 1959).

Population Sample

The prospective user of a test must be certain that the test has been standardized on an appropriate sample of the population and for the same. The information given should include the following: total number of cases, age range and number at each age level, geographic distribution, socio-economic status and number to each category.

Functions of Traits Measured

The test manual should not only state the purpose of the instrument; it should also provide, so far as possible, an analysis of the functions or traits being measured.

Reports of Experiments

The ideal test manual includes summaries, findings
and interpretations of the most important experimental studies to which the test has been subjected. Such information will help users to understand more fully the nature of the test and the factors affecting performance on it. For example: What is the influence of cultural factors? of practice? of time limits? (Freeman, 1968).

3.8.2 Characteristics of Knowledge Test

Generally the tests are specifically designed to provide a more or less standard and known situation and to elicit certain kind of responses and these responses are in turn used to make inferences about a trait or traits of the persons tested. But apart from these common basic characteristics, test may and do vary greatly. The following variations are quite familiar:

(i) Tests vary with respect to their content, i.e., the kinds of responses they are designed to elicit and the traits to be evaluated. Certain tests are designed to assess intelligence, others achievement and skill, etc.

(ii) Some tests are designed to measure maximal performance, others maximal rate (speed), still others, typical behaviour of the individual when not instructed or motivated to perform maximally.

(iii) Tests vary with respect to information. Some tests consist of oral questions and oral answers, others have oral
questions and written answers. The other combinations can be written questions and written answers.

(iv) Tests vary in the degree of structure. This refers to the relative clarity or ambiguity of the total testing situation presented to the subject.

(v) Tests vary in regard to objectivity. The objectivity/subjectivity dimension is closely associated with the structured-unstructured dimension. Objective tests tend to be highly structured and subjective tests relatively unstructured (Bhatnagar, 1981).

3.8.3 Functions of Knowledge Test

1. The major function of a test is to measure knowledge and thus to contribute to the evaluation of the attainments.

2. Tests can, and often do, help instructors/extension workers, etc. to give more valid, reliable grades.

3. Major function of tests is to motivate and direct student/farmer’s training (Ebel, 1966).

3.8.4 Steps of Knowledge Test Construction

Many considerations must be kept in mind when constructing these tests. After identifying the population for which the test is intended, the researcher defines the precise ability-breadth and depth that is to be tested, analyzes all the factors that contribute to it, constructs
test items to cover each one, and keeps the number in proportion to the contribution of the factor to the ability. He makes certain that the test items are of suitable difficulty for the subjects, present appropriate tasks for testing the specific performance and conform to the rules that have been established for formulating various types of questions (multiple choice, matching etc.). In addition he may establish time limits for various phases of the test. After writing all the directions and test items clearly and concisely and developing a format that makes the questions easy to read and to answer and the results easy to tabulate, the researcher administers his preliminary test draft to a group of subjects.

The test constructor may also prepare norms to help users interpret whether their respondents are of average, above average, or below average level of ability. One of the most important tasks a researcher performs when selecting or constructing a test is to evaluate the objectivity, validity, reliability and suitability of the appraisal tool (Dalan, 1973).

Having decided the above preliminary things, one must go ahead with the following stages (Singh 1986):

1. Planning of the test
2. Writing items of the test
3. Preliminary administration (or the experimental try out) of the test.
4. Reliability of the final test
5. Validity of the final test
6. Preparation of norms for the final test.
7. Preparation of normal and reproduction of the test.

On the basis of the concepts explained in this chapter an operational model of study was developed (Fig. 3.3).
STANDARD CURVE FOR
TOTAL SUGARS

FIG. II