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Process of Training

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BLOCK 4 PROCESS OF TRAINING

We have already discussed the **Fundamentals of Training, Training Needs Assessment Methods** and **Trainer and Training Management** in detail. All those involved in training need to be aware of the various processes of training. This, **block 4** on '**Process of Training**' gives an idea about the training methods and tools, evaluation of training, impact assessment of training and training evaluation case study.

Unit 1 on '**Training Methods and Tools**' deals with various training methods and factors determining the selection of those training methods. This unit also covers training aids that can be used to make a training programme more effective.

Unit 2 on '**Training Evaluation**' discusses the meaning and importance of training evaluation. Besides, it also covers various principles and types of training evaluation. This unit discusses in brief, the training evaluation matrix and provides brief information for conducting training evaluation for different purposes.

Unit 3 on '**Impact Assessment of Training**' deals with the meaning, concept, and indicators of training impact assessment. It also describes the planning of training impact assessment and various methods of training impact evaluation.

Unit 4 on '**Training Evaluation Case Study**' discusses a case study on effectiveness of 13 training programmes organized in Andhra Pradesh. The key evaluation questions of the case study were on training methodology, relevance of course contents, knowledge and skill improvement, utility of the topics and overall effectiveness of the training programme.

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UNIT 1 TRAINING METHODS AND TOOLS

Structure

- 1.1 Introduction
- 1.2 Training Methods
- 1.3 Factors Determining Selection of Training Methods
- 1.4 Training Aids
- 1.5 Visual Aids
- 1.6 Audio Aids
- 1.7 Audio-Visual Aids
- 1.8 Let Us Sum Up
- 1.9 Keywords
- 1.10 References and Selected Readings
- 1.11 Check Your Progress - Possible Answers

1.1 INTRODUCTION

Organizations and trainers the world over have intensively explored ways and means to improve training methods. A trainer may use a range of training methods to provide variety in the delivery of training, sustain the interest of participants, and maintain the momentum of the training process. There are several training methods and no single method is inherently better than the other. Hence, a combination of methods is used, depending on the subject, time, resources, and type of participants.

After studying this unit, you should be able to:

- Explain the factors that determine selection of training methods.
- Discuss various training methods.
- Describe various types of training aids.

1.2 TRAINING METHODS

As in the teaching, in training programmes the trainers use different training methods, including the lecture method. There are a number of training methods which have different contextual applications. Some of the methods are discussed below.

1.2.1 Lecture

All of you might have been taught by the lecture method when you were at school / college. This is the classical methods of training. From ancient times, gurus and the sanyasis have used this method to teach their disciples. In this methodology, the trainer delivers lectures on various aspects of a subject that he wants the trainees to learn. He may also lecture about the uses, the merits, and demerits of the subject. A lecture is a method of describing conceptual knowledge. The trainer or the faculty plays the active role, while the trainees play a passive one. The trainees are assumed to be a homogenous group.

Advantages

- 1) A formal lecture helps in the building up of theoretical knowledge which can be used as a base for the participative training sessions and learning of motor or verbal skills.
- 2) It is direct. The learner learns the material directly from the instructor. Hence, there is less time consumed in search for the knowledge and also less distortion.
- 3) One important advantage of the lecture method is that a relatively large number of people can be instructed at one time. There is no other method that can be used to instruct 50-100, or more, trainees.
- 4) A lecture can deal with more facts, principles, and concepts in a shorter time than it would take to teach the same material in a conference, case study, or other group method.
- 5) If teaching resources are scarce, then the lecture method is the best.

Disadvantages

- 1) The most obvious disadvantage of the method is that there is a minimum of active involvement of the trainees. This, consequently, leads to less motivation. Moreover, the monologue may become dull after some time. Therefore, the lecture method cannot be used to teach skills which may require hands on practice.
- 2) It has a limited value in promoting behavioural or attitudinal changes. It is very difficult to convince anyone by merely talking to them; attitudes change when people convince themselves. Participative methods are better for such purposes.
- 3) The main disadvantage of the lecture comes from the fact that it is one way communication. Therefore, there is little opportunity to clarify meaning, to check on whether or not the trainees really understand what is being presented.
- 4) There is little scope for practice, reinforcement, or knowledge of results.
- 5) It has limited usefulness in teaching employees who cannot grasp verbal presentations.

1.2.2 Discussion Method

This is an intensive participation oriented methodology. The learning through this methodology is through discussions on a subject. Discussions involve the exchange of ideas between the trainees and trainers and, also, among the trainees themselves. It is a dynamic methodology. There is a possibility of participation by each and every member of the group. The participants who actively participate are trying to contribute to the ongoing discussion which may be an individualized one or a group discussion. Both methods are useful, but group discussions are more systematic and forceful in making the trainees learn more and more. In the discussion method, trainees can assume different roles such as a chairperson, a reporter, etc., and this makes the discussion methods livelier. The participants

are encouraged to express and exchange their ideas with others. The learning process is made simple and suits the mature adult minds. The participants bring out their real life and actual experiences during the discussion. These are useful for the other participants and for the trainer, too. The solutions and decisions made after the discussions can be useful in practical life. It should be understood by the trainees that discussion in a training situation is not a debate, a talk, or an argument. It is purpose oriented and focused on a specific topic.

Advantages of the discussion method

- 1) It is a participation oriented method and goes very well with the trainees irrespective of their age and designation.
- 2) In discussions, there is an exchange of ideas and experiences among participants. Therefore, synergy takes place and powerful ideas and solutions emerge.
- 3) It is a self learning methodology, and participants need not depend solely upon the trainers for learning. The learning is spontaneous and almost automatic.
- 4) The trainees get on-the-spot feedback from the co-trainees about their opinions and experiences.

Disadvantages

- 1) It is time consuming because, sometimes, everyone wants to add to the discussion.
- 2) Often, the discussions are side tracked from the main objective.
- 3) Some trainees may dominate the discussion, while others are silent throughout a discussion.
- 4) The outcome and decisions of discussions may be controversial and there are no solutions even after prolonged individual or group discussions.

1.2.3 Syndicate Method

The Administrative Staff College at Henley-on-Thames and at Hyderabad have contributed to this method. The Staff Colleges in India and abroad follow the syndicate method in their training and allied programmes. It is a widely known and popular method applicable to all groups of trainees, especially in giving training to supervisors, managers, and executives.

In this method, the trainees are divided into sub groups, called as syndicates and each syndicate has to work on various subjects. The syndicates discuss the issues related to the subject and prepare a report. A syndicate can be formed for any topic. The topic could be one that involves all the departments in an organization, and the members of the syndicate are selected from a cross-section of organizations. The syndicate has to complete the task assigned within a specified date and time.

The nominations of office bearers of these syndicates are by rotation, and so, everyone gets a chance. In some cases, resource persons and facilitators are appointed to keep in touch with the group and to motivate them to achieve the

assigned task. Expert lectures and guidance are arranged from external resources wherever necessary.

A trainer provides each syndicate with a carefully prepared document stating the issues and problems to be discussed by the syndicate. This is the base paper for the discussion. The papers prepared by the syndicates are circulated among all the syndicates for evaluation, critical remarks and suggestions.

Towards the end of the session, each syndicate presents their paper in a final form and this is followed by elaborate discussions with the groups. The chairperson of each syndicate presents the paper, and the other syndicate members answer the queries and doubts of the other trainees in the group.

Advantages of the syndicate method

- 1) All the participants are actively involved in the syndicate sessions.
- 2) It cultivates leadership qualities since the leadership roles – president, secretary, etc. - are filled by rotation.
- 3) It is a self learning and development process because each of the syndicate members comes out with his knowledge, experiences, and skills.
- 4) Generally, the issue is discussed in detail and the trainees look at the problem from many angles – production, marketing, finance, personnel, etc.
- 5) The syndicates are formed for certain definite purpose. The group's cohesiveness is enhanced along with competitiveness and conflicting interests. The existence of the syndicate is for some fixed duration and there is consistent interaction and understanding between trainees.

Disadvantages of the syndicate method

- 1) If the syndicate consists of members with wider interests and views, there may be disagreements on the issue till the end.
- 2) The syndicates should be carefully structured by the trainer. Hurriedly structured syndicates do not contribute anything.
- 3) There is no guarantee that every member of a syndicate will participate in the process of learning. The participation of members may be lopsided.

1.2.4 Seminars

Seminars are short term training programmes arranged for a few days – a day or two or maximum three days. Seminars are convened to have in-depth discussion on a subject from various viewpoints. In seminars, there are presentations of papers by various authors followed by discussions, questions, and answers. Trainees participate in discussions that broaden their knowledge and outlook. At the end of the session, the participants can come out with recommendations.

Advantages of seminars

- 1) This method helps participants to obtain the views, opinions, research finding, etc. of the experts through the papers presented by them. The method is faster than gathering knowledge by reading books and holding discussions.

- 2) Some seminars are forceful and thought provoking. They enable the participants to see different points of view, attitudes, and opinions.
- 3) In seminars, the trainees are given the opportunity to listen to experts from different fields who share their views on specific issues.

Disadvantages of seminars

- 1) If the audience for the seminar is too big, Individual attention, as in training situations, is not possible.
- 2) Many seminars have just become rituals without anyone giving much thought to the issues. As a result, no purpose is achieved by convening seminars. Interactions between participants are very limited.

1.2.5 Conference

Conferences are suited to executives and senior officers who are dealing with a complex problem which requires contributions from senior officers for a resolution. The issues and the subject matters of the conference are intimated to the delegates and participants well in advance, and they prepare the papers and related materials for the conference. The delegates present the papers and explain the various aspects of the problem. At the end of the conference, suggestions and recommendations are made, based on the deliberations and discussions. All the members in a conference are expected to have more or less equal knowledge.

Advantages of conferences

This method suits bigger groups and participants benefit from listening to senior speakers. They are induced to think over the problems, issues and solutions.

Disadvantages of conferences

The disadvantage of this method is that it is less participatory and the trainees are inactive during the programmes. It is difficult to determine whether the trainees learnt anything or not.

1.2.6 Symposium

Symposium is a Greek word and it denotes 'a drinking party' or 'a feast'. In earlier times, scholars engaged in philosophical and scientific discussions that were a feast for the intelligent. In a symposium, a particular subject is discussed widely and deeply from the viewpoint of several well-versed authors. The speakers are of approximately equal ability, to avoid one speaker dominating the meeting. The participation of the trainees is more rigorous and learning more thorough.

Advantages of a symposium

The main advantage of this method is the active thinking and participation by participants.

Disadvantages of a symposium

The disadvantage is that a lot of controversy and confusion in thinking may result in futile endeavour.

1.2.7 Role Play

The role play technique is highly participative. Every trainee is involved and absorbed in the session. In this method, some of the trainees assume the role of various characters and enact real life situations, as is done in a drama form. After the acting is over, there is discussion about the roles and functions; strong and weak points; merits and demerits of the situation; commissions and omissions of the characters; applications and criticisms of the roles; causes of the situations; decisions and solutions about the happenings and the final conclusions.

The role play technique is based on human interactions, individual and group, behavioural and psychodynamics, communication process, perception differences, imagination, creative abilities and judgment. The role play session should be carefully designed by the trainer. The trainer should not overdo or exaggerate in the role play.

a) Why Role Play?

- i) To promote understanding about the situation;
- ii) To develop empathy; and
- iii) Self perception is useful in helping individuals develop the art of interpersonal relationship.

The role play may cover the ordinary issues such as

- a) difference in receiving a trainee warmly with a smile and handshake and in receiving a trainee without such warm gestures;
- b) covering decision making situation, like a business meeting about the short fall in sales involving characters such as a general manager, sales manager, production manager, financial manager, etc.; or
- c) about a sensitive problem regarding persistent tardiness of an employee by a manager.

b) Types of Role Play

Role play can be broadly classified into three categories.

- i) Structured / Rehearsed Role Play.
 - ii) Unstructured / Spontaneous Role Play.
 - iii) Controlled and directed Role Play.
- i) **Rehearsed / Structured / Schemed Role Play:** without any scripts, the participants are told in advance about what action, attitude and behaviour each character should act out. It is a lively visual aid used to portray varying situations in the work field.
 - ii) **Unstructured / Spontaneous Role Play:** participants are involved in the role play without any brief or preparation. They act out according to their mind, attitudes, and styles. In many situations, the organization or departmental culture in which the trainees work reflects in their speech, gestures, and action. Even the trainers are curious to know about the outcome of this type of role play. It is a democratic type of role play.
 - iii) **Controlled and Directed Role Play:** The trainer gives directions to the participants of role play along with the script. The characters have no

choice or freedom except to act according to the wishes of the trainers. They have to memorize the script and present it before the audience. It is an effective tool for the trainer to present to the audience what he wants to say and the topics which he wants to cover.

Advantages of Role Play

- i) The trainees have a feel of a real work life situation. The role play bridges the gap between theory and practice.
- ii) Trainees have opportunities to develop skills in communication, interpersonal relationships, decision making, observation, etc., through this methodology.
- iii) Since it is an active methodology, and can be utilized by trainers during a post lunch session when the trainees feel drowsy and dull. This methodology relieves the monotony and dullness of the participants in hearing continuous lectures, or doing continuous practical exercises.
- iv) Spontaneous role play helps the trainees to think and analyze the situation independently and logically.
- v) There are many constructive criticisms and suggestion which serve as an eye opener for other participants and trainers.

Disadvantages of Role Play

The main disadvantage of role play is that it is time consuming and well experienced trainers are needed to conduct role play sessions.

1.2.8 Case Study

This method has been introduced by the Harvard Business School and widely used by many of the management institutes in India and abroad. Indian Institute of Management, Ahmadabad and Asian Institute of Management, Manila are the institutes that have adopted and extensively used the case study method. The case study methodology, when utilized, develops the analytical and decision making skills of the participants. The group processes e.g. positive meaningful interactions, two-way communication, give and take policy; mutual adjustments are observed spontaneously during the case study method.

The case that is under study could be about a success or a failure of an organization. The study is supported by adequate data and incidents. The case could be prepared on a single event or it may be about interrelated functions of some departments.

Some training experts divided case studies into the following two major headings.

- 1) Cases which require diagnosis by the trainees.
- 2) Cases which require solutions to certain problems.

Normally the trainees have to diagnose, as well as, provide solutions to the problems.

Some authors classify the cases under the following four types.

- i) The narrative type, which gives the details of the situation and the problems.
- ii) The story type, which gives the case in a story form.

- iii) The document type, collected from various files and documents.
- iv) The hybrid type, the mixture of one or two types or all the combination of above mentioned types of cases.

While conducting the case study method, observations from the trainees are also posted.

Advantages

- i) It is a lively and interesting method. It keeps the participant vibrant and encourages participation in the learning process.
- ii) It develops the thinking, analyzing, and problem solving skills of the participants.
- iii) It relieves monotony of listening to continuous faculty lectures.
- iv) Since cases are made out of real life situations, it helps the participants to solve the problems by applying the learning gained during training.
- v) Relationship building skills are developed, co-operation and understanding is found among the trainees while diagnosing and solving the problems.

Disadvantages

- 2) It is a time consuming and may be cumbersome at times.
- 3) Lack of provision of adequate data and incidents may dilute the case study method.
- 4) There is a shortage of appropriate cases.
- 5) If the case studies are lengthy, the participants may lose their concentration.
- 6) It requires skill on the part of trainer.

1.2.9 Programmed Instruction (P.I)

This methodology helps the trainees to learn on their own and at their own pace. It is an innovative teaching method, introduced in recent years. Programmed learning is a self instructional learning and the course material is prepared or programmed in steps. The subject matter to be learnt is divided into small steps and the order or sequence to be followed by trainees is given. The trainees start learning from simple steps and progress towards more complex steps / instructions. The program is structured in such a way that the trainees will be able to know the results or correctness of his learning then and there. The answers are provided at the end of each step or programme. When a trainee commits errors, feedback on errors is provided. Each learner is able to work and learn according to his own speed, the programmes are released in the form of books, brochures, audio and video cassette, exercises etc. The people who design the programmes are called as programmers.

Advantages

- i) This method enables the trainees to learn at their own speed and convenience. They can study the programmes and learn at home. It is a self learning methodology.
- ii) A large number of people can learn through the programmed learning method without any geographical or distance barriers. Large amounts of information can be given in this method.

- iii) The infrastructural facilities such as a well developed faculty, class room, and audio visual aids are not needed.
- iv) This method is highly elastic and flexible. The same programme can be used for many batches of trainees, year after year, and it is easier to introduce modifications in the programmes.
- v) The trainees get the psychological satisfaction due to immediate feedback, self pacing, and individualized learning.

Disadvantages

- i) Writing the programme is tedious, time consuming, and needs greater care, concern, and analysis.
- ii) Learning through this method requires strong motivation on the part of the trainees to learn, but many trainees, especially workers and office goers, may not have enough time and motivation for self learning.
- iii) It is a highly structured routine methodology. Some people may resent directed learning.

Activity 1

Visit any nearby training institute / training department and discuss with the functionaries about common training methods they are using. Write your observations.

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In this section you read about several training methods. Now answer the questions given in *Check Your Progress – 1*.

Check Your Progress 1

Note: a) Write your answer in about 50 words.

b) Check your answer with possible answers given at the end of the unit.

- 1) Distinguish between the training methods that emphasize classroom training and the methods that are practical in approach.

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- 2) Define the following:
 - a) Case study.
 - b) Programmed Instruction.

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1.3 FACTORS DETERMINING SELECTION OF TRAINING METHODS

In the previous section, we discussed about the methods of training. Now, let us discuss the factors that influence training methods selection. Broadly, the factors influencing training methods selection are:

- Training objectives
- Subject matter
- Categories of participants, and
- Resource availability
- Time
- Location
- Budget
- Other considerations

1.3.1 Training Objectives

Training objectives specify the type of learning outcomes intended from the training programme. If the purpose of training is to increase knowledge, the training methods that allow you to present the concepts with examples in a logical sequence and review key points will be effective. The suitable methods for this purpose are listed below.

- 1) Reading assignment
- 2) Lecture
- 3) Audio and video tapes
- 4) Case study
- 5) Demonstration
- 6) Group discussion
- 7) Buzz session
- 8) Brain storming

- 1) If the purpose of training is to help the trainees to acquire new skills, it is necessary to choose training methods that will help in acquiring and

practicing the skills, along with providing positive and negative feedback about achievement of the objective. The appropriate methods include the points that follow.

- 1) Demonstration
- 2) Role play
- 3) Video tapes
- 4) Structured exercise
- 5) Workshop

If the purpose of training is to change attitudes, i.e., to help the trainees to acquire new values, opinions, and benefits, the methods that follow will be useful.

- 1) Role play
- 2) Case study
- 3) Demonstration
- 4) Field visit
- 5) Film and video tapes
- 6) Structured games and exercises
- 7) Instrumented exercises

1.3.2 Subject Matter

The subject matter or contents have a bearing on the choice of training method. For example, if the contents of the training are related to theoretical or conceptual clarity, then it would be necessary to choose methods such as lecture, audio and video tapes, and reading assignments. Again, if the subject matter has got only one right answer which needs minimum debate, training method such as lecture, audio, or videotape will be sufficient. However, if subject matter includes a debatable outcome, then training methods, such as group discussion, workshops, and case study method, are relevant.

The choice of training method will also depend upon whether the training is intended to develop a general or specific level of knowledge and skill. For example, development of a general level knowledge on pest control may involve methods like lectures, videos, and discussion. However, development of a specific level skill and knowledge on integrated pest management, for example, may include the use of field level demonstrations along with on-the-job work experience.

1.3.3 Categories of Participants

A training method may vary according to the participants, learning style, their experience, and the size of the group

- a) **Learning Styles:** The following four different categories of learners need different types of orientation.
 - i) The accommodators like self- discovery methods, independent study, clinical experience, practical exercises, and interviewing.

- ii) The divergers will be interested in group activities, brain storming, role play, simulation, debate, and discussion methods.
- iii) The assimilators prefer theoretical analysis, lecture, conceptual papers, and abstract problem solving.
- iv) The convergers choice consists of methods such as demonstrations, problem based learning, laboratory, and practical exercises.

b) Learners' Experience

An understanding of participants' educational level, age, and level of involvement in fieldwork will help in choosing training methods. Participants with postgraduate qualifications may not be averse to the lecture method of self study through reading, for clarification of higher level concepts. However, if the participants have only school level education and are involved in fieldwork, the appropriate training methods would be demonstration and on-the-job training.

c) Size of Group

The size of the trainee group is one of the most important factors in deciding the training method. For example, if one has to use the simulation method, a minimum number of eight to ten participants will be required. A reasonable rule of thumb for optimum number of participants required for use of different training methods is given in Table-1.

Table-1: Training Methods and Optimum Number of Participants Needed

Sl. No	Training Methods	No. of participants
1	Lecture	10-40
2	Group discussion	3-10
3	Case study	3-20
4	Role play	5-15
5	Field visits	5-25
6	Seminars and syndicate	15-40
7	Demonstration	5-15
8	Simulation method	8-20
9	Structured experience	8-20
10	Instrumented exercise	8-15

1.3.4 Resource Availability

Availability of adequate resources to conduct a training programme must be considered while choosing training methods. The following questions should be answered before the selection of methods.

- i) Do the trainers have adequate skills on the methods being contemplated?
- ii) Do you have financial provision to employ external resource persons?

- iii) What are the facilities available with regard to use of demonstration, audio–visual aids, and other electronic media?
- iv) Does the location of training give scope for conducting simulation methods?
- v) What about the availability of commercial audio and video materials related to the subject matter of training in the market?
- vi) Do you have enough financial resources and time to develop new resources?

1.3.5 Time

In many cases, the participants have a limited number of days to be spent for the purpose of training. As a result, the trainers are forced to cover a number of topics within a short period available for training, which has an effect on the selection of training method. For example, the concept of motivation can be dealt through lecture method within one hour. However, to teach motivation through experimental exercises requires a minimum of six to eight hours. The optimum time needed to handle different training methods is given in Table-2.

Table-2: Time needed for using different Training Methods

Sl.No	Training Methods	Time needed (in hours)
1	Lecture	0.5 to 1.0
2	Seminar and syndicate	1.5 to 2.0
3	Demonstrations	0.5 to 1.0
4	Use of instrumented exercise	1.5 to 2.0
5	Group discussion	1.0 to 1.5
6	Case study	1.5 to 2.0
7	Simulation method	1.5 to 2.5
8	Structured experiences	1.5 to 2.0

1.3.6 Location

The location of the training programme has a definite bearing on the choice of training methods. Most training is held indoors with classroom facilities. However, the field-based training programmes may limit the use of facilities which are easily available in the classroom. Further, if the location of the training is far away from the training organization, it will be difficult to make use of those training facilities available within training organization.

1.3.7 Budget

If funds are not a constraint, one can choose a method appropriate to learning objectives. However, if sufficient funds are not available, one has to be content with the best alternative method, which will fit into budget provisions. Who will bear the training cost? Whether it is borne by the participants or by the training organization will also play a role in the choice of training methods. Participants who bear the expenses of the entire programme are likely to come with higher level of motivation and expectations. Such participants are likely to anticipate some visible results or impact through the programme, on their job performance. Those participants whose training cost is borne by the training organization and

are sent for training as a ritual or a routine matter, and they may not have a sufficiently high level of motivation for learning. Participatory training methodologies will be effective for this group of participants to enhance their motivation and participation.

Besides these factors, there are also other considerations which the trainer has to take into account while choosing methods of training.

1.3.8 Other Considerations

The selection of training method will also depend upon the decision of training to provide opportunities for practice, involvement and feedback. The scope of training methods with regard to involvement, opportunities, and feedback is given in Table-3.

Table-3: Trainees' Involvement, Participation and Feedback under Different Methods of Training

Sl. No.	Training methods	Level of trainees involvement	Opportunity for practice	Feed back
1	Reading assignment	Very low	Very low	Very low
2	Lecture	Low	Very low	Low
3	Seminars and syndicate	Medium	Low	Medium
4	Demonstration	High	Low	Medium
5	Use of instrumented exercise	High	Low	High
6	Group discussion	Medium	Low	High
7	Case study	High	Medium	High
8	Simulation methods (role play in basket exercise and business games)	High	High	High
9	Structural experiences	Very High	High	High
10	T. Group/ laboratory method	Very High	Very High	Very High
11	On-the-job/ Field training	Very High	Very High	Very High

Activity 2

Visit a nearby training institute / training department and discuss with the functionaries the reasons for using different training methods. Write your observations with reasons.

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Training Method	Reasons for Using
Reading assignment	
Lecture	
Seminars and syndicate	
Demonstration	
Use of instrumented exercise	
Group discussion	
Case study	
Simulation methods (role play in basket exercise and business games)	
Structural experiences	
T. Group/ laboratory method	
On-the-job/ Field training	
Any Other	

In this section, you read about factors determining selection of a training method. Now answer the questions given in Check Your Progress – 2.

Check Your Progress 2

Note: a) Write your answer in about 50 words.

b) Check your answer with possible answers given at the end of the unit.

1) Outline the factors that determine the selection of training methods.

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1.4 TRAINING AIDS

Dear Learner,

In MDV-108 Block 2, we discussed ‘Extension Teaching Methods and Audio Visual Aids’ in the context of ‘Development Communication and Extension’. However, most of the extension teaching methods and audio visual aids can also be used as training aids. Please refer MDV-108 Block 2 for more detailed discussion on them.

In the previous sections you read about training methods and factors to be considered while selecting a training method. Now, let us discuss various training aids that make training effective.

The effectiveness of a trainer is determined by the degree and diversity of skill he or she has in communicating with the trainees. The trainer uses various aids to make his teaching and training effective. The training aids are supportive to learning. They should be carefully and selectively used and contextualized in order to make teaching learning effective. Nowadays, visual and audio-visual aids are extensively used in training programmes. Visual and audio aids offer the trainers unique opportunities to increase the effectiveness and clarity of ideas expressed to trainees. There is a saying that “the best way to a man’s heart is through his stomach but the best way to his brain is through his eyes and ears”. Therefore, use of visual and audio-visual aids in teaching and training programmes cannot be ignored.

For the proper selection of visual and audio-visual aids, the following points are important to be kept in mind.

- i) Decide what you want to say.
- ii) How important are visual and audio-visual aids for what you want to say.
- iii) Outline the subject matter, point by point.
- iv) Use visual and audio-visual aids prudently to delineate those points.
- v) Keep audio-visual aids ready before delivering the lecture.

The main principles in selecting visual and audio-visual aids are given below.

- i) **Who is your audience?** The following considerations have to be made while dealing with the nature of trainees:
 - a) Age level of the trainees.
 - b) Educational background of the trainees.
 - c) Experience of the trainees.
 - d) Inquisitiveness of the trainees.
 - e) Knowledge level of the trainees.
- ii) **The aid must be *easy to see*.** The size of visual and audio-visual must be of standard size and not too small. Besides, it must be placed in such a manner, so that it is visible to the entire audience. The trainees need to be seated in a way that the presentation is easily viewed..
- iii) **Easily Understandable:** The ideas expressed through the visual and audiovisual aids should be easily understandable by the trainees. The diagrams and pictures used in the visual must be clear and understandable.
- iv) **Easy to Handle:** The trainer must be trained in handling the audio-visual aids. Big and bulky teaching aids can be awkward to handle and difficult to transport.
- v) **Explain One Idea at a Time:** The visual and audio-visual aids used in explaining a subject matter, need to cover a single idea at a time. There may be more than one idea in a topic but a visual or audio-visual appearing in the screen must try to explain only one idea at a time. For various ideas, more than one visual aid may be used.
- vi) **Attractive and Clean:** To be effective, visual aids should be neat, clean, and colourful.

1.5 VISUAL AIDS ---

The following are some important visual aids.

- i) Blackboard
- ii) Charts
- iii) Flip Charts
- iv) Film Strips
- v) PowerPoint presentations
- vi) Overhead Projectors
- vii) Posters
- viii) Models

1.5.1 Blackboard

Blackboards are the most widely used teaching-training aids and are mostly used by trainers for writing down important points. It is either a black wooden board or a blackboard on the wall of the training hall. Different types of chalks are used for highlighting various points.

Some rules for the effective use of blackboard follow.

- i) Keep it clean and use clean dusters.
- ii) Make letters and drawings large enough so that they can be easily seen.
- iii) Do not stand in front of the board.

Advantages

- i) It is inexpensive and more durable than other visual aids.
- ii) It is easy to handle.
- iii) It creates interest among the trainees.

Limitations

- i) It is not suitable for illiterate learner.
- ii) Complex problems cannot be explained effectively.
- iii) It is not suitable for a large audience.

1.5.2 Charts

According to Dale (1954), a chart is “a visual symbol summarizing or comparing or contrasting or performing other helpful services in explaining subject matter”.

Charts are of the following types.

- 1) Table Charts: presents information in ordinary sequences.
- 2) Tree Chart: highlights the development or growth of a thing.
- 3) Flow Charts: lines, arrows, rectangles, etc. depict the organization, or structure of an organization, institutions, etc.
- 4) ISO type Chart: a pictorial representation of statistics.

- 5) Pie Chart: a pie or a circle is divided into segments, each representing a percentage of the whole.

The following points should be considered while using charts as aids in a teaching method.

- i) Large, short, and neat heading.
- ii) Complete and simple idea.
- iii) Related to topic or comparison of two ideas.
- iv) Support by other related aids.
- v) Large enough to suit the size of the class.

Advantages

- i) It is inexpensive and more durable than other visual aids.
- ii) It is easy to handle.
- iii) It creates interest among the trainees.

Limitation

- i) It is not suitable for large audience.
- ii) It is more time consuming.
- iii) Complex problems cannot be explained easily.

1.5.3 Flip Charts

Flip charts are a set of charts, where the pictorials are sequentially displayed to explain a particular subject matter. While preparing a flip chart, the trainer has to keep following points in mind.

- i) The pictures and graphs should be clearly drawn.
- ii) The sequence must be properly maintained.
- iii) The main outcome of the chart must be written on the bottom.
- iv) Chart paper must be used.

Advantages

- i) It is inexpensive and more durable than other visual aids.
- ii) It is easy to handle.
- iii) It creates interest among the trainees.

Limitation

- i) It is not suitable for large audience.
- ii) It is more time consuming.
- iii) Complex problems cannot be explained easily.

1.5.4 Filmstrips

A filmstrip is a series of still photographs, diagrams, drawing or letterings on a strip of 35 mm film. Perforated edges of the film fit over projector sprockets. Once adjusted to project, the first frame, each succeeding image will be in focus and in proper position on the screen. When audience participation is placed, projection can be placed at a speed suitable to the trainers as well as to the

trainees. From the 1940s to 1980s, filmstrips provided an easy and inexpensive alternative to 16mm projector educational films, requiring very little storage space and being very quick to rewind for the next use. Filmstrips were once commonly used by educators but now they have been overtaken by newer and increasingly lower-cost full-motion videocassettes and DVDs.

Advantages

- i) Filmstrips are light, easily stored and condense and give much information in a small package.
- ii) Film strips and filmstrip projectors are less costly than film projector.
- iii) It makes teaching-training interesting.
- iv) Most suitable for illiterate audience.
- v) It is suitable for large audience.

Limitation

- i) Costlier than visual aids like posters, charts, etc.
- ii) Preparation of filmstrip requires technical skill.
- iii) It depends on availability of electricity and, in case of load shedding, the method fails.

1.5.5 PowerPoint Presentations

Today, a number of training centres use PowerPoint presentations. At the outset, slides are prepared on a computer and then displayed to an audience. Some of the points which must be kept in mind while preparing PowerPoint presentations follow.

- i) The slides need to be properly prepared in sequence.
- ii) In case of power cut or computer trouble as a backup, the trainer must have lecture notes.
- iii) Rehearsal of presentation is a must in order to identify and rectify any errors.

Advantages

- i) The method is quite useful for large audience.
- ii) The method is interesting and more subject-matter can be covered in a shorter time.
- iii) Case studies pictorial can be scanned and shown on a PowerPoint presentation.

Limitation

- i) It is more expensive than some other visual aids.
- ii) It is less suitable for illiterate learner.
- iii) It requires skill trainer having knowledge on power point presentation.

1.5.6 Overhead Projector (OHP)

Transparencies on a subject are prepared and displayed to participants through the overhead projectors. Some of the guidelines to be kept in mind while using OHP follow.

- i) The OHP need to be kept in a proper distance from the projecting screen and must not have any technical fault.
- ii) Transparencies should be carefully prepared and a transparency must not contain more than 20 to 25 words.
- iii) The word used in the transparency must be large so that it can be clearly visible to all participants.
- iv) Separate transparencies need to be used for graphs and pictures.

Advantages

- i) It makes teaching-training interesting.
- ii) It enables trainers to impart more focused training.
- iii) If presented properly, it makes teaching-training more systematic.

Limitation

- i) It is not suitable for illiterate participants.
- ii) It requires a trainer who is trained to use OHP equipment.
- iii) It is costly as compared to other visual aids.

1.5.7 Posters

Posters are an important visual aid for teaching and training. Although through posters, it is not possible to educate all aspects of a subject-matter, yet it can stimulate and enthuse participants to learn about an idea and to get more and more information about the idea. The trainer must collect posters on a subject matter from different places about different ideas and display it before trainees in the teaching training programme. Some of the guidelines for the effective use of posters are given below.

- i) One poster should convey one single idea.
- ii) The poster should be clear, colourful and attractive.
- iii) The posters must be more pictorial and with less words.
- iv) Appropriate use of poster can make teaching training effective.
- v) Posters should be hung in places so that they are visible to the target audience.
- vi) After use, the posters should be properly folded and kept in IEC (Information, Education, and Communication) room.

Advantages

- i) It makes teaching training interesting.
- ii) It is appropriate for illiterate trainees and trainees with a low level of literacy.
- iii) It reduces monotony in teaching-training programmes.

Limitation

- i) It is more expensive than other visual training methods like charts, blackboard, etc.
- ii) It is difficult to get pictures for all issues in a subject matter.
- iii) A complex issue cannot be explained through poster.

1.5.8 Models

Models are prepared in different materials on specific aspects of a subject. It is used particularly in teaching science topics. Teaching-training through models makes it interesting and practical.

Advantages

- i) It makes teaching-training interesting and learner centred.
- ii) It is useful for illiterate and less literate learners.
- iii) It makes learning more practical.

Limitation

- i) It is costly.
- ii) It is not always easy to get model for all topics.

1.6 AUDIO AIDS

The record player, tape recorder, CD, MP3 and DVD players and radio are some of the commonly used audio aids. These methods are usually not used in classroom situation. Trainees are asked to listen to radio programmes related to a specific subject being broadcast either on the national or regional channels.

Some aspects required to be given considerations are:

- i) Encourage the trainees to listen to the radio programme regularly on the subject.
- ii) Encourage them to correspond with the broadcasting station and express their views, needs and opinions.
- iii) Supply trainees with cassettes and encourage them to listen by using their cassette players.

Advantages

- i) The learning is reinforced.
- ii) Talks by specialists serve the educational purposes.

Limitation

- i) Many people lack radio set.
- ii) The audio players may not be available with all trainees.
- iii) The audio quality is not always good.

1.7 AUDIO-VISUAL AIDS

An old Chinese proverb says, “If I hear, I forget; if I see, I remember; if I do, I know”. This proverb amply supports the belief that hearing alone is not enough in the learning process. One must see and do, along with the hearing in order to gain understanding. In recent years, television is widely used in the teaching-training programme. The Educational Television (ETV) has made teaching-training interesting and learner-centred. Kinder (1959) aptly remarked, “Television has literally captured the country. Its expansion has been much more dramatic than that of radio or the automobile. It has become an important part of our way

of life, so much so that it is difficult to say whether it is a luxury or a necessity.” Besides, its use in the class-room situation, the broadcasting of group-discussion, talks and panel discussions on different subject-matters has re-enforced learning. Crassiner (1960) said that when television lessons are presented with imagination, students are stimulated to active participation, in short when television teaching is at its best; it makes a distinct contribution to the institutions. According to Tyler (1958) the use of television to educational institutions can be classified as follows:

- i) Total television teaching.
- ii) Supplemented television teaching.
- iii) Television supplementing classroom.
- iv) Television as a teaching aids

Sinha (1961) told that, “audio-visual materials supply a concrete basis for conceptual thinking; they give rise to meaningful concepts to words enriched by meaningful associates. Hence, they offer the best antidote available for the disease of verbatim.”

Dale (1954) on the basis of his research work has highlighted the following advantages of audio-visual materials.

- i) They supply a concrete basis for conceptual thinking and hence reduce meaningless word responses of students.
- ii) They make learning permanent.
- iii) They offer a relativity of experience, which stimulates self-activity on the part of pupils.
- iv) They develop a continuity of thought; this is especially true of motion pictures.
- v) They contribute to growth of meaning and hence to vocabulary development.
- vi) They provide experiences not easily secured by other materials and contribute to the efficiency, depth and variety of learning.

Some of the guiding principles for the effective use of TV are given below.

- iv) The TV programme should be shown after the lecture-discussion on the topic.
- v) The trainees must be told about the contents to be shown in the TV.
- vi) Discourage discussion during the running of TV programme.
- vii) Keep TV in such a place so that every participant can comfortably see it.
- viii) It is better, if a separate room is kept for audio-visual.
- ix) Keep generator set ready, so that in case of load shading, the audio-visual communication is not interrupted.
- x) Initiate discussion after the end of the TV programme.
- xi) Use of colour TV will make teaching-training interesting.

Advantages

- i) It makes teaching-training interesting.
- ii) It is more useful for illiterate and less literate trainees.
- iii) Learning is reinforced.

Limitation

- i) It is expensive.
- ii) It is difficult to get TV cassettes on all issues.
- iii) Its use is conditional on the availability of electricity or a generator.

In this section, you read about various audio-visual aids. Now, answer the questions given in the Check Your Progress – 3.

Check Your Progress 3

Note: a) Write your answer in about 50 words.

b) Check your answer with possible answers given at the end of the unit.

- 1) Differentiate between PowerPoint and an OHP presentation.

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- 2) What do you understand by audio-visual aids and how is it different from audio aids?

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1.8 LET US SUM UP

In this unit we have discussed in detail various methods of training and the factors that determine the selection of a training method which includes subject matter, participants, resource availability, organizational factors, and other considerations. We have discussed the advantages, disadvantages, and applications of various methods, like lecture, discussion, syndicate, seminar, conference, etc. Lastly, we have discussed about the various audio-visual aids necessary for the conduction of training.

1.9 KEYWORDS

Lecture	:	It is a one way communication of the words spoken by the trainer.
Seminars	:	They are convened to have in-depth discussion on a subject from various view points.
Case Study	:	It represents a real life situation or hypothetical in the field and allows the participants to learn on the basis of a summary of a well documented series of events, centered on an organization, an individual, or an issue.
Role Play	:	It provides opportunities for participation, involvement and for action learning.
Programmed Instruction	:	This methodology helps the trainees to learn on their own and at their own pace.

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1.11 CHECK YOUR PROGRESS – POSSIBLE ANSWERS

Check Your Progress 1

- 1) The training methods that emphasize classroom training are lecture, discussion method, syndicate method, seminars, conference, and symposium. The methods that emphasize the practical aspects of training are role play, case study, and programmed instruction.
- 2)
 - a) Case study is a method that has been introduced by Harvard Business School and is widely used by many of the management institutes in India and abroad. The case study develops the analytical and decision making skills of the participants to a greater extent. Group processes like positive meaningful interactions, two – way communication, give and take policy, and mutual adjustments are observed spontaneously during the case study method.
 - b) Programmed instruction is a methodology that helps the trainees to learn on their own and at their own pace. The subject matter to be learnt is divided into small steps and the order or sequences to be followed by trainees are given. The answers are provided at the end of each step or programme, so that the trainee can know the correctness of his learning.

Check Your Progress 2

- 1) The factors that determine the selection of training methods are as follows:
 - i) Training objectives.
 - ii) Subject matter or content of training method.
 - iii) Participants, learning style, their experience and size of group.
 - iv) Resource availability.
 - v) Other considerations.

Check Your Progress 3

- 1) PowerPoint presentation is made by preparing slides on a computer and displaying it to an audience. The use of overhead projectors is common in many training programmes. The transparencies are prepared and displayed to participants through the overhead projectors.
- 2) Audio-visual aids are used for learning whereby both the senses of seeing and hearing are simultaneously used leading to an enhanced learning process. They supply a concrete basis for conceptual thinking and hence reduce meaningless word responses of students eg. Television. Audio Aids are the aids used for learning where only the hearing aspect of the learner is involved in the process of learning. eg Radio, Tape recorder and Record player.

UNIT 2 TRAINING EVALUATION

Structure

- 2.1 Introduction
- 2.2 Training Evaluation: Meaning
- 2.3 Purpose of Training Evaluation
- 2.4 Principles of Training Evaluation
- 2.5 Types of Training Evaluation
- 2.6 Kirkpatrick's Evaluation Model
- 2.7 Process of Training Evaluation
- 2.8 Statistical Tools for Evaluation of Training
- 2.9 Let Us Sum Up
- 2.10 References and Selected Readings
- 2.11 Check Your Progress – Possible Answers

2.1 INTRODUCTION

You will find a lot of literature on training evaluation in journals and on the websites of organizations dealing with training and human resources development. This unit on training evaluation will inform you about the meaning and importance of evaluation, types of evaluation, various methods of training evaluation, and statistical tools for evaluation of training.

As far as training evaluation is concerned, it is also necessary for you to remember the following points.

- Evaluation is not important for just for the trainer or teacher or an organization or policy-makers. Evaluation is vital for the learner, too. Therefore, it is important to complete the evaluation process properly, fairly, and with much encouragement in a positive environment, so that it may have a constructive effect on trainees.
- As training for different persons/ personnel varies as per their specific requirement, the training evaluation requirement also varies and needs to be designed by both the training providing organization and the client organization.

In this unit, various aspects of training evaluation are analysed, which will help a trainer to design the training evaluation strategy with appropriate instruments (methods, questionnaires, surveys, feedback, etc.).

After studying this unit, you should be able to

- Understand the meaning, importance and purpose of training evaluation
- Explain various types of training evaluation and Kirkpatrick training evaluation model.

- Describe the process of training evaluation and evaluation matrix.
- Identify various statistical tools for training evaluation.

2.2 TRAINING EVALUATION: MEANING

Evaluation of training refers to the process of examining the effectiveness of the training program in terms of the benefits to the trainees and to the organization, or company. According to Deb, “Training evaluation is the application of systematic methods to periodically and objectively assess the effectiveness of training in achieving expected results, their impacts, both intended and unintended, continued relevant and alternative or more cost-effective ways of achieving expected results.”

i) What to evaluate in a training evaluation?

According to Watson (1979), the following five areas of a training programme merit evaluation.

- **Reactions:** Trainees’ reactions to all facets of the learning experience itself.
- **Learning:** Changes in attitude, knowledge, and skills of the trainees.
- **Job Behaviour:** How and to what extent trainees behave differently because of the training; how they have applied what was taught on the job.
- **Organizational Impact:** How changes in trainees affect the functions of their organizations.
- **Additional Outcomes:** Results or by products of the training not identified or assessed by the other four areas, such as the social value of training, its effect on trainees’ self concept, its relation to trainees’ personal goals, and other such issues.

ii) Why conduct training evaluation?

Evaluation of training would answer the following four questions i.e. what did participants say about the training in general?; what knowledge, skills, or attitudes were learned?; did the training create visible behavioural changes?; and did the training pay off?.

It is also a process of collecting outcomes to determine if the training program was effective. A proper plan is to be made beforehand: how to collect various information or data, from whom the information has to be collected, what type of data has to be collected and when. Training evaluation determines whether the candidates are able to implement their learning in their respective workplaces, or in their regular work routines.

Evaluation of training addresses the methodology, how one determines, whether the goals or objectives were met and the impact that the training had on actual performance on the job or in the community. There is no single blueprint for training evaluation.

2.3 PURPOSE OF TRAINING EVALUATION

After imparting training or conducting a training we would like to know the following.

- The effectiveness of training, to see if it works. If so, what is it supposed to do? Change behaviour? Shape attitudes? Improve job performance? Reduce defects? Achieve targets? Enhance quality?
- How efficient is the training programme? How much time does the training consume? Can it be shortened? Can we manage with on-the-job training or can we completely eliminate training by substituting job aids instead?
- How much will it cost? Is it worth it? What are we trying to find out? For whom?

When given a range of options, decisions must be made about the focus of any particular evaluation. Patton (1997) suggests three distinct categories and recommends that evaluation should have a primary purpose, based on choosing just one of the following categories

- to judge merit or worth
- to improve programmes
- to generate knowledge.

This is explained in tabular form below

Three Primary Uses of Evaluation Findings	
Uses	Examples
Judge merit or worth	Summative evaluation Accountability Audits Quality control Cost-benefit decisions Decide a programmes' future Accreditation/licensing
Improve programmes	Formative evaluation Identify strengths/weaknesses Continuous improvement Quality enhancement Being a learning organisation Manage more effectively Adapt a model locally
Generate knowledge	Generalisations about effectiveness Extrapolate principles about what works Theory building Synthesize patterns across programmes Scholarly publishing Policy making

Source: Patton, 1997, P.76.

Generally, training courses are evaluated using standard tools that have been formalized through instruments such as feedback formats, questionnaires, verbal or presentation, etc., so that one can consistently evaluate courses against the same standards. The evaluation results are used to make decisions regarding the course design, development, implementation and impact. Considering the uses given by Patton (1997), evaluation of training is nothing but assessing indicators in order to quantify or measure. The results of training evaluation can be used for the purposes outlined below.

- i) Enhanced accountability and cost effectiveness for training initiatives which might result in an increase in resources.
- ii) Improved effectiveness -are the initiatives producing the results for which they were intended?
- iii) Improved efficiency -are the initiatives producing the results for which they were intended with a minimum waste of resources?
- iv) Greater credibility for the training staff to include information to accomplish the results effectively and efficiently.
- v) Stronger commitment by the management for approval of quality of organizational training.
- vi) Formal corrective feedback system for developing strengths and weakness of the trainees.
- vii) Management to decide whether to send prospective recruits to future training initiatives.
- viii) Availability of data for researchers in the field of institutional development and training designers interested in training research.
- ix) Availability of justification or scope for sponsoring future trainings.
- x) Increase in knowledge and expertise for the training initiative designer in the direction of designing result oriented training initiative.
- xi) Feedbacks during evaluation make the participants to recapture the defined objectives and give a thought process for linking it to learning outcomes.
- xii) The evaluation results are also used by the organization in personnel development programme such as promotion, etc.

2.4 PRINCIPLES OF TRAINING EVALUATION

By now, you have learned that evaluation of training is the process of establishing a worth or value, merit or excellence of the training. Criteria should be based on training objectives, its relevance, reliability, practicality and classification. Criteria should include reactions, learning (knowledge, attitudes and skill), results and return on investment (ROI).

To achieve the desired results, evaluation has to be based on sound principles that include the following.

i) **Clarity**

The trainer or evaluator must be clear about the purpose of evaluation in order to set the standards and criteria of evaluation. Moreover, he or she must be clear about various objectives of training programme both general as well as specific objectives.

ii) **Objectivity**

All objectives should be evaluated. The evaluation should be fair, free from any type of bias or subjectivity. Objectivity is the characteristic of a good trainer. Objectivity requires

- Measurable standards of assessment

- Designing valid and reliable research instruments
- Detailed analysis and interpretation of data in order to validate necessity of evaluation.

iii) Reliability

Subjective analysis of evaluation data cannot produce reliable results. The instruments used in evaluation must be reliable and should not deviate and should ensure certainty as far as following key points are concerned.

- Irrespective of the method used to gather the data
- When repeated by the same trainer again
- When interpreted by any other person

Normally, a good trainer uses more than one method of data gathering and data interpretation in order to achieve reliable results. Therefore, the evaluation instrument must ensure reliability.

iv) Feasible

The evaluation must be feasible. Following should be checked for feasibility

- Is it cost effective? Is it spending more on evaluation than the returns on training?
- Is your methodology practical? Do you have the human/other resources and time for executing the suggested methodology?
- Is the data useful? It is possible that a lot of time/money is spent on generating evaluation data without knowing, or being unable to put the data to any use, whatsoever. Therefore it is important to collect data which are useful only for evaluation purpose.

v) Evaluation Design to be custom-made

The design and approach to evaluation has to be custom-made to suit specific training levels and standards. General inference drawn from one evaluation design may not identify strengths and weaknesses of training meant for different set of objectives.

vi) Evaluation must emphasise on process and not end product

Evaluation is a process, but not an end product of training. As a process, it has to be continuous. The trainees' reaction at the end of the course evaluation especially when it gives conclusive and quantitative ratings such as "M" Excellent, "N" good, "O" average and "P" not good, cannot guide trainers for subsequent improvements in a programme. Therefore, evaluation has to commence before the actual training activity, and continue during the process of training.

In these sections, you studied about the meaning and purpose of evaluation and also principles of evaluation, now answer the questions given in *Check Your Progress 1*.

Note: a) Write your answer in about 50 words.

b) Check your answer with possible answers given at the end of the unit.

- 1) What do you understand by training evaluation? Enumerate the three primary uses of evaluation of training.

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- 2) Highlight the principles necessary for evaluation of training

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2.5 TYPES OF TRAINING EVALUATION

In general, training evaluation is categorized in two types: formative and summative evaluation. The evaluation is objective oriented. Besides, evaluators often talk about four different types of evaluations: formative, process, outcome, and impact. However, formative and process category can be clubbed together as a formative category, as it is largely monitoring activity. Similarly, outcome and impact can be put together in the summative category which is referred to as final assessment. Let us discuss them one by one.

2.5.1 Formative Evaluation

A formative evaluation is usually conducted in the first part or phase of a program and addresses questions about implementation and ongoing planning. This includes giving and receiving verbal feedback also. Formative evaluations are useful for various purposes.

It answers questions like, “Are the goals and objectives suitable for the targeted audience?” “Are the methods and materials appropriate to the event?” “Can the event be easily replicated?”

Formative evaluation furnishes information for program developers and implementers. It helps in programme planning and implementation activities in terms of: (1) target population, (2) programme organization, and (3) programme location and timing.

For example:

- a) This process may help in identifying problems at the initial stage so that the programme can be improved or corrected.

- b) During process of formative evaluation the trainer can understand the usefulness of different emerging outcomes based on which programme management can be improved.
- c) Formative evaluation provides an opportunity to collect baseline data or benchmarks for future summative (or, “impact”) evaluations.

The main objective of formative evaluation is to give importance to available strengths and try to convert weakness to strength. Some of the steps to conduct formative evaluation are:

- i) review the training material with a few trainees;
- ii) hold group discussions with trainees to get feedback;
- iii) use the material in a situation similar to that of an actual training programme and see how it works;
- iv) observe the behaviour of the trainees;
- v) conduct a pre-test on trainees.

2.5.2 Summative Evaluation

Summative evaluations assess programme outcomes or impacts, to determine the relationship of different factors to outcomes: like the formative evaluations, some information used in summative evaluation is collected during the early phase of a programme (e.g., baseline data, test scores).

Through outcome evaluation, data is collected to measure the ability of the trained participants to do a job at the end of training, and what they actually are going to do back on the job or in their community due to the changes in their behaviour as a result of the training received by them.

Summative evaluation answers the main question that is “What happened to the knowledge, attitudes, and behaviours of the intended population?” Summative evaluation takes place at the end of the training programme.

Some of the methods of conducting summative evaluation are:

- i) ask opinion of trainees about the training programme;
- ii) conduct a post-test on trainees;
- iii) ask the trainees how they will put to use, all that they have learnt, in their workplace.
- iv) measure the changes that has occurred because of training.

Summative evaluation basically asks questions: was the training useful? ; and, how can it be made useful in the future?

2.6 KIRKPATRICK’S EVALUATION MODEL

Donald Kirkpatrick in 1959 developed four levels of evaluation. The four levels of training evaluation model was later redefined and updated in Kirkpatrick’s 1998 book, called ‘Evaluating Training Programs: The Four Levels’.

The four levels represent a series of steps to evaluate training programs and are now considered an industry standard in personnel departments of Human Resources Development wings, and by training communities. Each level is important and has an impact on the next level. As one moves from one level to the next, the process becomes more difficult and time consuming, but it also provides more valuable information.

The four levels of Kirkpatrick's (KP) evaluation model essentially measure

- Reaction of trainees – what they thought and felt about the training
- Learning - the resulting increase in knowledge or capability
- Behaviour - extent of behaviour and capability improvement and implementation/application
- Results - the effects on the business or environment resulting from the trainee's performance.

All these measures are recommended for full and meaningful evaluation of learning in organizations, although their application broadly increases in complexity and cost, through the levels from level 1 to 4. The various levels of evaluation as envisaged by Kirkpatrick evaluation model follow.

Level 1: evaluation at this stage measures how the participant reacts immediately after the completion of the training program in which he has participated. It is observed that a positive and favourable reaction from a few key persons in the group influences the future of a program. In fact a less favourable reaction affects the motivation to learn among the participants. A negative reaction could greatly reduce the scope for conducting further training programs. This evaluation is made to know attitude and opinion of the trainees about various aspects of the training, viz., boarding, lodging, timetable, trainees' behaviour, classroom course content, etc.

Level 2: At this level, a simple standardized questionnaire on the subject of training is administered before and after the programs as a part of the evaluation process. This helps in assessing the degree of improvement/ change in knowledge, skills and attitude of trainees as a result of training.

Level 3: In this phase, the evaluation is done to know the extent to which the trainees applied the learning and changed their behaviour. Generally, this type of evaluation is done after 3 to 4 months, to assess the performance of the trainees.

Level 4: at this level, the final impact results are taken into consideration. The final results can be in the form of increased production, improved quality, decreased costs, increased sales, reduced turnover, and higher profits. It is the acid test.

The Kirkpatrick model is given in a tabular form below.

Level	Evaluation type (what is measured)	Evaluation description and characteristics	Examples of evaluation tools and methods	Relevance and practicability
1	Reaction	Reaction evaluation is how the delegates felt about the training or learning experience.	'Happy sheets', feedback forms. Verbal reaction, post-training surveys or questionnaires.	Quick and very easy to obtain. Not expensive to gather or to analyze.
2	Learning	Learning evaluation is the measurement of the increase in knowledge - before and after.	Typically assessments or tests before and after the training. Interview or observation can also be used.	Relatively simple to set up; clear-cut for quantifiable skills. Less easy for complex learning.
3	Behaviour	Behaviour evaluation is the extent of applied learning back on the job - implementation.	Observation and interview over time are required to assess change, relevance of change, and sustainability of change.	Measurement of behaviour change typically requires cooperation and skill of line-managers.
4	Results	Results evaluation is the effect on the business or environment by the trainee.	Measures are already in place via normal management systems and reporting - the challenge is to relate to the trainee.	Individually not difficult; unlike whole organization. Process must attribute clear accountabilities.

Source: <http://www.businessballs.com/kirkpatricklearningevaluationmodel.htm>

2.7 PROCESS OF TRAINING EVALUATION

An evaluation basically asks the questions: was the training worthwhile? And how can it be made meaningful in the future? In this section, we will examine the following processes/ methods of evaluation.

- i) Evaluation at the beginning of the training.
- ii) Evaluation during the training of the participants.
- iii) Evaluation at the end of the training by participants and staff.
- iv) Use of evaluation findings.

The indicators that are included in the evaluation by participants, staff, or outside evaluators are the performance of the trainers, the effectiveness of the training programme content, the perceptions of participants on benefits, and the attainment of the performance objectives.

2.7.1 Evaluation at the Beginning

The learner's skills and knowledge are assessed at the beginning of the training program and termed, entry test. During the start of training, candidates generally perceive it as a waste of resources because most of the time candidates are unaware of the objectives and learning outcomes of the program. Once aware, they are asked to give their opinions on the methods used and whether those methods conform to the candidates' preferences and learning style.

The purpose of this evaluation is to determine the level of knowledge and skills of the trainees before the training. This will help in making the trainees aware of their state of knowledge and areas where they are lacking, guide the trainers in planning the training program and evaluating the gain made, and sensitize participants to key concepts. It also helps the trainer to focus on objectives. And finally, it serves as a benchmark for the final test.

It is particularly important to reassure the trainees that this test is in no way meant to reflect on their capability or to categorize them according to some competence level. It may be advisable to give an objective type test, correct and return the test scripts, but not to do grading or marking on the scripts. Oral tests may also be given in instruments identification and use.

2.7.2 Evaluation during the Training

This evaluation is conducted when the instruction starts. It usually consists of short tests at regular intervals. The evaluation during the training is for both the trainer and the participant to know how well they are doing. This helps to improve the learning process and learning principles (e.g., adult learning). Some of the key principles of this type of evaluation are given below.

- The evaluation should be specific rather than abstract.
- Evaluation feedback is the trainer's best control over the learning process.
- Adult professionals want to know how well they are doing.
- Adults like to be evaluated if they take part and see the importance of the evaluation.
- When adults take part in the measurements, it adds to the learning process.
- Adults benefit from such evaluations if they can relate it to the specific objectives of the course.

This evaluation takes place during classroom lectures, discussions, tests, class problems and demonstrations. Brief examples of these types of evaluation are questions and answers.

The purpose of this evaluation is to obtain responses to specific questions. For example, in a course of micro-level planning for rural development, the trainer may ask the following questions in the class.

- What kinds of tools are used for Participatory Rural Appraisal survey?
- True/false questions on procedures for conducting a Participatory Rural Appraisal survey.

Again, evaluation at this stage is to provide the participant the feedback about

his progress as well as information to the trainer for improving the training activity. The evaluation during the training will make the teaching-learning process participatory and learner friendly.

2.7.3 Evaluation at the end of the Training

The evaluation at the end of the training can help to identify:

- i) The trainees' reactions to the course and the learning experience.
- ii) The learning or changes in attitudes, knowledge and skills of the participants.
- iii) The participants' evaluation of the performance of the staff.

This evaluation cannot ascertain the impact on job behaviour. It can only evaluate what was learned. The evaluation forms need not be excessively long. Short forms with specific questions often provide more usable information. This evaluation will broadly cover the aspects, below.

a) Participants' Reactions

Participants' reactions to the training programme are included in an evaluation form developed for the purpose. Sample form given below may be used by the participants for evaluation of programme objectives and subject matter.

Evaluation Form for Participants

Name of the Course: Duration

Sl. No.	Description	Rating		
A	Objectives	Very Much	To Some Extent	Not At All
1	Learned new ideas that would help me in my job			
2	Gained an up-dated matter knowledge on the subject			
3	Helped me in solving some field problems			
4	Broadened my contacts with fellow officers			
5	Learned much through exchange of information and ideas			
6	Helped me perform my work more effectively			
B	Subject matter	Yes	To Some Extent	No
1	Practical			
2	Provided useful new information			
3	Was too general			

4	Was too complex			
5	Was valuable for practical application			
6	Was too theoretical			
7	Was at an elementary level			
8	Related to my needs and interests			
C	Please write a paragraph suggesting specific measures for improvement of this course.			

The results of these evaluations can be biased by the trainer. Therefore, it is recommended that someone else who is not involved in the course needs to administer this evaluation.

b) Exit Test

Where an entry test was given, an exit test can be used to ascertain what learning actually took place. Some training institutions are using the exit test very effectively. These tests are developed around the objectives of the training programme. For example, a sample of test question can be used related to

- facts participants need to know
- key concepts and principles
- techniques, i.e., skills, methods, and procedures
- processes and where, when, and how to use them
- professional attitudes or values needed by participants.

The exit test need not be too long. The purpose is to assess behaviour and knowledge.

This test could also include practical exercises where actual field skills are demonstrated. Often, a practical exercise precedes the final written test.

c) Sample Interview

In addition to the final test, some trainers select a 10 per cent random sample of participants for an intensive face-to-face personal interview. This is time consuming but can yield some useful information. Again, this should cover

- the reactions of the participants to the total training programme
- the learning that took place
- the relevance of the learning to the participant's job
- the performance of the trainers.

d) Evaluation of the Trainers by the Participants

Trainers also need to know how well they have performed. Various evaluation forms can be developed. Without this evaluation, a trainer may not know the areas in which improvement is required. An alternative method is to have one's peers evaluate his training approach. One trainer evaluation form is given below for your understanding.

Participants' Evaluation of Trainer
Rating scale for evaluation of Trainer by Trainees

S.N	Item Description	Poor	Fair	Good	Excellent
1	Knew his subject matter				
2	Presented ideas clearly				
3	Provided ample time for questions				
4	Related theory to practical situations				
5	Used a good variety of training methods and aids				
6	Provided useful handouts				
7	Provided clear instructions				
8	Listened to participants				
9	Showed concern for participant's needs				
10	Related ideas to my (Participant's) job related issues				
11	Had enthusiasm				
12	Presented all the topics in a proper sequence				

e) Staff Evaluation of the Training Programme

The evaluation of a training programme by the staff of a training organization is followed by some training organizations. A practice followed by one training institute is to schedule a one to two day staff evaluation upon the completion of a given training programme. This is useful in that it identifies weaknesses and recommends solutions. The results from the other evaluations can be used for this staff evaluation. Focus is given on the planning, the objectives of the training programme, the content, training methods, and results.

2.7.4 Use of Evaluation Findings

Sometimes evaluations done but the results are not adequately utilized. Evaluation should never be done as a formal procedure. The purpose of evaluating a training programme is to determine its value or to identify ways for its improvements.

The three major uses of the findings of evaluations are for improving the training programme, improving the institute's training programme and promoting the value of the training.

a) Improving the Quality of the Training Programme

The results of the evaluation should help the training organizers make decision regarding several key questions.

- Was adequate time spent in planning the training?
- Did it meet its objectives?
- Were the training methods and aids adequate?
- Were the needs and interests of participants met?
- Was there adequate balance between field exercises and class room presentations?
- Was the duration of the course adequate?
- How can the course be improved?

b) Training Institute

The training institute is interested in improving its programme. Training programme evaluations can provide useful information about how to do this. Some questions which evaluations can help to answer are given below.

- Were the facilities for this training programme adequate?
- Is there a growing demand for the programme?
- Should the training programme be continued? Revised? Cancelled?
- What was the performance level of various trainers?
- Was the budget for the training programme adequate?
- If needed, when should the training programme be scheduled?
- Was there adequate support staff for the training programme?

c) Promotion of Training

Evaluation reports are useful for promoting and sharing information about training programme. Reports can be sent to the following.

- Organizations that send trainees
- Sponsors of the training

Evaluation by participants, staff or outside evaluators includes the performance of the trainers, the effectiveness of the training program content, the perceptions of participants, of benefits, and the attainment of the performance objectives. The participant's evaluation of different aspects of training and a course evaluation form are given below for your comprehension.

PARTICIPANTS TRAINING EVALUATION FORM

Name Address

Present Position Place

Discipline Background Date

Years at Present Position

A) Physical Facilities for Training Program (Put a “ in appropriate box)

Types	Very Good	Satisfactory	Needs improvement	Poor	No response
Classrooms					
Housing					
Food arrangement					
Transportation					
Lab equipment					

B) Training Equipment/Supplies

Types	Very Good	Satisfactory	Needs improvement	Poor	No response
Class teaching Equipment					
Field equipment					
DTP/duplication					
Handouts/Provided					
Video CDs/tapes					

C) Training/Teaching Methods

Types	Very Good	Satisfactory	Needs improvement	Poor	No response
Lectures					
Discussion					
Team reports					
Team planning Schedule of Events					
Objectives of Trainers					
Participation of Trainees in Discussion					
Field Exercise					

D. Quality of Subject or Discipline Training (Please include subjects/ topics that are taught) *For example*

Types	Very Good	Satisfactory	Needs improvement	Poor	No response
Demographic Studies					
Statistical Methods					
Environmental Studies					
Economics of Farm Operations					
Extension and Rural Sociology					

E. Quality of Training

Types	Very Good	Satisfactory	Needs improvement	Poor	No response
Learning field method					
Focus on understanding of other disciplines					
Team building					
Lectures					
Field studies					

F. Attitudes of Trainers

Types	Very Good	Satisfactory	Needs improvement	Poor	No response
Toward trainees					
Towards other disciplines					
Participation of trainees in discussion					
Listening to views of trainees					
Flexibility in modifying format and activities					

Understanding of trainees' needs					
Understanding of focused areas					
Ability to communicate					
Flexibility					
Interest in subject matter					

G) Relevance of Training

Types	Very Good	Satisfactory	Needs improvement	Poor	No response
To present job					
To professional development					
To my interest and felt needs					

H) Would you recommend such Training for

Types	Yes	No	Undecided
Other officers with a similar position to yours			
Other persons working in the Dept./ Unit/Project/Organization			

I) Please write one paragraph about how this training has been useful to you.

J) Suggest specific ways for the improvement of the training.

SAMPLE COURSE EVALUATION FORM

Course Date

Types	Comments
Course/ Duration	 Too long Ok Too short
Subject coverage	 Excellent Ok Inadequate
Value of subject matter to my job	 Valuable Average Not valuable

Participant involvement	 High Ok Too little
Number of exercises	 Many Ok Too few
Trainer knowledge of the subject	Excellent Adequate Poor
Enthusiasm	 Excellent Adequate Poor
Organization of material	 Excellent AdequatePoor

In these sections you read about the types and processes of training evaluation. Now answer the questions given in *Check Your Progress-2*.

Check Your Progress 2

Note: a) Write your answer in about 50 words.

b) Check your answer with possible answers given at the end of the unit.

1) Why is benchmark evaluation important?

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2.8 STATISTICAL TOOLS FOR EVALUATION OF TRAINING

The training coordinator may take the help of a statistician for the evaluation of a training programme. For example, it may be used to see the difference between pre and post test result of the trainees. The statistical analysis may be conducted internally or contracted out to external consultants if the trainees are large in number. Depending upon how complex the design is, how much data collection is required, or what the organizational requirements are, the statistical analysis may be made and stored on a standard spreadsheet application or relational database.

Participants' responses on any of the tools can be coded and entered into a spreadsheet or a standard statistical package for analysis. The way, in which, the participants' responses are entered depends on the response alternatives and format of the software to be used.

Before any calculation is performed, it is imperative to check the data for errors. It should be ensured that all numbers are in the correct column after coding. This can be done simply by printing the spreadsheet of data, highlighting every other column with a marker and systematically examining the columns.

Simple calculations that are most useful and can be easily computed by spreadsheet application include: Frequency, Percentage, Mean, Mode, Median, Range, Variance, Standard deviation

Sometimes, advanced spread sheets to calculate t-tests, correlations, regressions, etc can also be used. These analyses sometimes require a minimum number of participants or certain assumption levels which must be met by the data. If it is not met, the results may be inaccurate.

In these sessions, you read about the evaluation matrix and statistical tools to be used in the evaluation of training, now answer the question given in *Check Your Progress-3*.

Check Your Progress 3

Note: a) Write your answer in about 50 words.

b) Check your answer with possible answers given at the end of the unit.

1) What are the statistical tools to be used in the evaluation of training?

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2.9 LET US SUM UP

To sum up, the training evaluation process has the potential to provide useful information to multiple stakeholder groups. By designing an effective training evaluation process, an organization can obtain the information needed to improve both training program delivery as well as business performance, creating opportunities for continuous organizational improvement.

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2.11 CHECK YOUR PROGRESS – POSSIBLE ANSWERS

Check Your Progress 1

- 1) Evaluation of training refers to the process of examining the effectiveness of the training program in terms of the benefits to the trainees and the organization or company. Evaluation is a continuous process rather than a one-time activity.

The three primary uses of evaluation of training are: a) to judge merit or worth, b) improve programmes, and c) generate knowledge

- 2) The criteria necessary for evaluation of training are: a) Clarity, b) Objectivity, c) Reliability, c) Evaluation design and methodology d) Evaluation design to be custom-made e) Process and not end Product.

Check Your Progress 2

- 1) The learner's skills and knowledge are assessed at the beginning of the training program and termed as entry test. The purpose of this evaluation is to determine the level of knowledge and skills of the trainees before the training. This will help in making the trainees aware of their state of knowledge and areas where they are lacking, guide the trainers in planning the training program and evaluating the gain made and sensitizes participants to key concepts. It also helps the trainer to focus on objectives. And finally, it serves as a benchmark for the final test.

Check Your Progress 3

- 1) Simple calculations that are most useful and can be easily computed by spreadsheet application include: Frequency, Percentage, Mean, Mode, Median, Range, Variance, Standard deviation. Sometimes, advanced spread sheets to calculate t-tests, correlations, regressions, etc can also be used.



UNIT 3 IMPACT ASSESSMENT OF TRAINING

Structure

- 3.1 Introduction
- 3.2 Impact Assessment: Need and Concepts
- 3.3 Impact Assessment of Training: Meaning, Features and Benefits
- 3.4 Indicators for Training Impact Assessment
- 3.5 Process of Training Impact Assessment
- 3.6 Methods of Training Impact Assessment
- 3.7 Let Us Sum Up
- 3.8 References and Selected Readings
- 3.9 Check Your Progress - Possible Answers

3.1 INTRODUCTION

Training and capacity building are important aspects of development. They produce an indirect but effective impact on the efficiency of an individual as well as an organization. However, a lot depends on the quality of training. Therefore, assessment of the impact of training is essential for bringing improvement in training input, process, and output.

Impact assessment of training is a tool that gathers and organizes information so that firm inferences can be drawn and decisions can be made about what needs to be done in the workplace to enhance the impact of the training on day-to-day work behaviour and attitudes of the employees. The assessment process uses personal interviews and questionnaires to determine whether training has produced a desired effect.

In the previous unit we discussed that training evaluations are of the following two types.

- 1) Formative evaluation: pre-testing of material and management monitoring survey.
- 2) Summative evaluation: information recall and impact survey, for which data/information from the target beneficiaries are collected.

In this unit we will learn the meaning and concept of impact assessment and the parameters or indicators of training impact.

After studying this unit, you should be able to

- Understand the meaning and concept of impact assessment of training
- Plan training impact assessment
- Describe the various levels of assessment
- Identify and/or develop various indicators and how to measure the impact of training

3.2 IMPACT ASSESSMENT: NEED AND CONCEPTS

Impact assessment of training assesses the extent to which the learning process has made a difference in some targeted area, such as in the development of the production process, or at a community level, or targeted groups, or beneficiaries of an intervention project. The basic organizing principle of any good assessment of a training intervention is to ask the question: what would have happened in the absence of the training intervention? What would have been the development levels of particular organization, communities, groups, households, and individuals, or target level without the training intervention? Evaluation involves an analysis of cause and effect in order to identify impacts that can be traced back to the training interventions.

Before discussing impact assessment, let us learn some of the concepts related to impact assessment. These concepts follow.

Benchmark: A benchmark is a point of real reference for measuring change in performance *vis-à-vis* agreed targets. It is intended to indicate where one is at a given point in a process so that change can be measured and progress evaluated at later stages. Defining a benchmark requires that we identify the relevant indicators against which we want to assess progress. Because progress is a subjective concept - it depends on what direction we want to move in - it is important to ensure that such indicators are relevant to all stakeholders or participants in the exercise.

Inputs: An input is a contribution to a development intervention (e.g., a project, programme or policy) which is intended to steer the process of this intervention towards a specified goal. Inputs can be material and non-material, including human resources (staffing), physical and/or monetary resources as well as ideas, knowledge, skill, information, and training.

Outputs: Outputs are the products or results from specified inputs. For example, a typical output in a capacity building intervention could be a series of training workshops.

Outcomes: Outcomes are the consequences of specified outputs. For example, a typical outcome of a series of training workshops (a capacity building output) should be that workshop participants are familiar with the set of skills that were communicated during these workshops.

Impact: An impact is the wider consequence of a given set of actions or processes. Impacts can be experienced at the individual or the organizational level, are often multi-dimensional and can be intended or unintended. Attempts can be made to monitor impacts using a qualitative and quantitative baseline and accompanying indicators.

Impact Assessment: In general, impact assessment consists of measuring outcomes. More specifically, it is the measurement of short or medium term developmental changes resulting from an intervention or input.

3.3 IMPACT ASSESSMENT OF TRAINING: MEANING, FEATURES AND BENEFITS

Impact Assessment of Training

It is a process of measuring resultant outcomes or developmental changes consequent upon a training initiative. According to Stig Kjeldsen, “training impact assessment is concerned with the impact training can have on job performance and the influence the assessments can have on strengthening training programmes and services.” According to one definition “training impact assessment is a tool that gathers and organizes information so that sound conclusions can be drawn and decisions can be made about what needs to be done in the workplace to enhance the impact of training on day to day work behaviours and attitude.”

Features of Impact Assessment of Trainings

Some of the features of impact assessment are given below.

- Impact assessment usually takes a long time and costs a lot of money; it focuses on assessing whether or not the objectives are achieved.
- Impacts occur through an accumulation of outcomes.
- Impact assessment takes longer time than outcome evaluation.
- The focus is on changes that have occurred in key indicators which are used to gauge the levels of problem occurrence.
- Impact assessment is meant to answer the question, “How did the training help to handle the issue, or affect the problem, as a result of the learning process?”
- Impact evaluation tries to measure whether or not training has affected the initial problem identified.
- Findings are used as inputs in programme development and fund raising for training delivery programmes.
- Training might not be wholly responsible for achieving the target or bringing about the desired change.

Benefits of Impact Assessment of Trainings

Some of the benefits of impact assessment on training are as follows:

- It provides indicators of knowledge, attitude and skill transfer from the classroom to the workplace.
- It provides vital information that can be used to identify positive outcomes of training in the workplace.
- It improves training design and delivery.
- It implements workplace practices that can enhance the impact of training.

3.4 INDICATORS FOR TRAINING IMPACT ASSESSMENT

An indicator is a measure that is used to demonstrate changes in a situation, or the progress in, or results of an activity, project, or programme. In other words indicators

- are measures used to demonstrate changes over time
- point to the results
- are essential instruments for monitoring and evaluation.

In general an indicator is a measure; for example, Output (Total Output in Tons), or, the cost of produce per unit of irrigation water supplied (Rupees/cubic meter of water). Different types of indicators are given below.

i) **Direct indicators** correspond precisely to results at any performance level. For example, a training programme is meant for increasing irrigation efficiency through effective canal operation plan. In this case the number of field engineers or farmer leaders of various irrigation projects who received this technique from a training are direct measures of output; the number of irrigation projects in which such canal operation plans are implemented is a direct measure of training intervention outcome; and an increase in efficiency confirmed in so many (number or per cent) irrigation projects is a direct measure of training intervention impact.

ii) **Indirect or “proxy” indicators** are used to demonstrate the change or results where direct measures are not feasible. Some objectives, particularly impact objectives, are difficult to monitor. It is often necessary to select indirect or proxy indicators that may be easier for evaluators to measure. For example, the case for more qualitative subjects, like behavioural change, living conditions, good governance, etc. Some objectives of analysis can be measured directly quantitatively, but it is too sensitive to do so, for example level of income or, in the context of an HIV/AIDS intervention, safe sex, etc. In these cases indirect indicators or proxy indicators are used.

The use of an indirect indicator can be more cost effective than the use of a direct one. As such, indirect indicators are typical management tools. Generally, managers are not looking for scientifically reliable data but for management information. An indirect indicator may very well represent the right balance between the level of reliability of information and the efforts needed to obtain the data.

iii) **Quantitative indicators** are expressed on a percentage or share basis, or, in terms of rate of change or ratio. For example, reduction in infant mortality and maternal mortality are quantitative indicators of health.

iv) **Qualitative indicators** can be defined as people’s judgments and perceptions about a subject. For example: the number of people, or, per cent of people, that have adopted farm mechanization in a village after receiving training, is a quantitative indicator. The confidence that those people have in farm machinery as instruments of economic improvement is a qualitative indicator. Note that quality of life indicators, such as those that measure changes in a community programme on health, education, or employment, are often confused with qualitative indicators, as they both refer to quality. In fact, either qualitative or quantitative indicators can measure health, education, or any other subject.

v) **Result chain:** the result chain gives the hierarchy of indicators affected by an intervention. In Table-1, an example of hierarchy of indicators for a health education campaign is shown.

Table 1: Hierarchy of indicators for a health education campaign

Definitions of Indicators and Result Chains	Example of hierarchy of indicators for a health education campaign
Impact indicators: Long-term results Measure the quality and quantity of long-term results generated by programme outputs (e.g., measurable change in quality of life, reduced incidence of diseases, increased income for women, reduced mortality).	Reduction in morbidity and mortality.
Outcome indicators: Medium-term results Measure the intermediate results generated by programme outputs. They often correspond to any change in people's behaviour as a result of programme, e.g., training intervention for the use of septic latrine through water and sanitation programme in rural area.	Proportion of target population that meets prescribed standards of behaviour. Number of people whose behaviour changed
Output indicators: Short-term results Measure the quantity, quality, and timeliness of the programme— goods or services — that are the result of a training/ awareness campaign/ activity/ project/ programme.	Number of people whose opinions change. Number of people who learn the facts.
Process indicators: Measure the progress of activities in a programme/project and the way these are carried out (for example, referring to the degree of participation).	Number who acquired the skill of vaccination within the specified training period. Number of people amongst the participants who do not know how to administer a vaccine
Input indicators: Measure the quantity, quality, and timeliness of resources — human, financial and material, technological, and information — provided for a training intervention activity/ project/programme.	Percentage of participants felt the training has increased their required skill. Number of participants who have undergone training

The results chain is the expected sequence of results to achieve the desired training programme objectives, beginning with inputs, moving through activities and outputs, and culminating in outcomes, impacts and follow-up. It is generally just a reference for developing performance indicators, as it is obviously a simplification of reality. In practice, it is, sometimes, difficult to distinguish between a programme's outputs and outcomes, or between outcomes and impacts. An outcome indicator for a small project may represent an output for a larger programme. In addition, there are often multiple intermediate results, both for outputs and outcomes.

Impact and outcome indicators must be defined and interpreted with care. Demonstrating that a training programme or a project caused a particular impact is usually difficult since many factors outside the project, influence the results.

In these sections, you have studied the meaning and concept of impact assessment, and different types of indicators for impact assessment. Now answer the questions given in *Check Your Progress 1*.

Check Your Progress 1

Note: a) Write your answer in about 50 words.

b) Check your answer with possible answers given at the end of the unit.

1) What do you mean by benchmark?

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2) What is an indicator? Write the name of indicators that are used for training impact assessment?

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3.5 PROCESS OF TRAINING IMPACT ASSESSMENT

Training impact assessment (TIA) targets what, when, and how to evaluate, based on the objectives, available financial resources, and training or capacity building strategy. It is important to define feasible outcomes that can be measured precisely in a cost effective manner. The potential costs and benefits of getting certain evaluation data should be weighed. After spelling out evaluation questions and determining how success will be measured, an evaluation work plan needs to be developed that specifies evaluation methods. The work plan should designate how and when strategies and outcomes will be assessed, and the breakdown of costs for each evaluation method. Some phases of impact evaluations are narrated below.

As explained in the previous unit, training evaluation has four phases or levels according to Kirkpatrick.

Level 1: Evaluation at this stage measures how the participant reacts immediately after the completion of the training program in which he has participated.

Level 2: A simple standardized questionnaire on the subject of training is administered (same test) before and after the programmes as part of the evaluation process.

Level 3: In this phase, it is possible to evaluate the extent to which behaviour is changed as a result of training and which is ideally assessed between six to nine months after the completion of training.

Level 4: At this level the final impact results are taken into consideration. The final results can be in the form of increased production, improved quality, decreased costs, reduced frequency and/or severity of accidents, increased sales, and higher profits. It would help if the final objectives of a training program can be stated in these terms. It can take one to three years after the completion of a training to see improvement. However, it is also true that changes cannot always be singularly identified with the training received.

Level 5: after Kirkpatrick's four levels evaluation, there are works and advances in this aspect by various experts. A significant contribution is made by Dr. Phillips to measure the value impact of training and the approach is called the fifth level evaluation and known as Return on Investment (ROI). In other words, did the training programme show a positive ROI?

The last three levels, i.e., levels 3, 4, as well as level 5, contribute to impact assessment of training. According to Phillips Stone and Burkett, only 5-10% of an organization's training programmes are evaluated at level -5 (as given in figure -1).

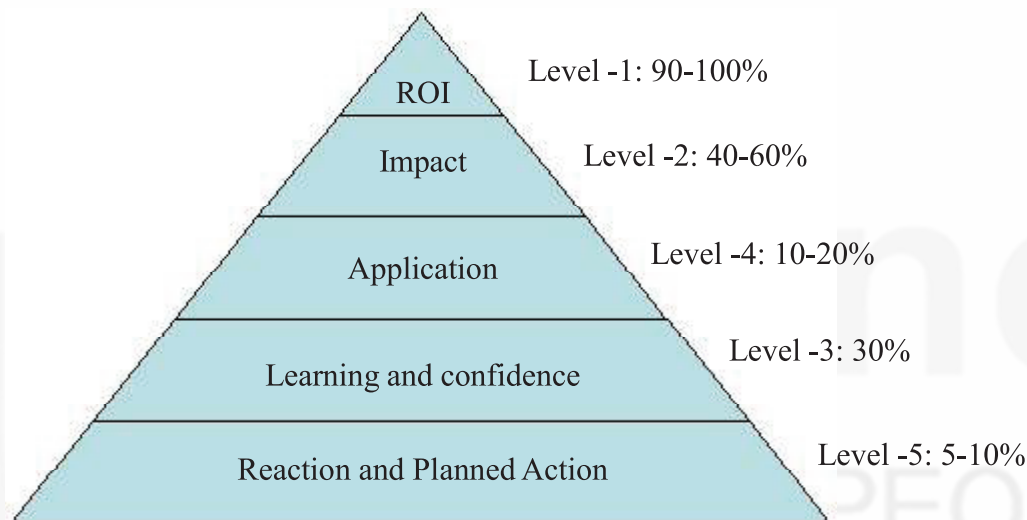


Figure 1: Levels of Training Programme Evaluation

Let us discuss these three levels of training evaluation in the context of planning impact assessment of training.

3.5.1 Planning for Level Three - behaviour

Level Three evaluates the job impact of training. “What happens when trainees leave the classroom and return to their jobs”? “How much transfer of knowledge, skill, and attitudes occurs”? The question asked by Kirkpatrick, in other words, is “What change in job behaviour occurred because people attended a training program?”

The guidelines for Level Three follow.

- Use a control group, if practical.
- Allow time for behaviour change to take place.
- Evaluate both before and after the program if practical.
- Survey or interview trainees, supervisors, subordinates and others who observe their behaviour.

- Make every effort for 100% response.
- Repeat the evaluation at appropriate times.

The benefits to conducting Level Three evaluations are given below.

- An indication of the time required to observe job impact.
- An indication of the types of job impacts occurring (cost, quality, time, productivity).

3.5.2 Planning for Level Four - results

Level Four of Kirkpatrick's evaluation looks at the business results or development consequences that accrued because of the training and is "the most important step and perhaps the most difficult of all."

The guidelines for Level Four are given below.

- Use a control group if practical.
- Allow time for results to be achieved.
- Measure both before and after the program, if practical.
- Repeat the measurement at appropriate time.
- Consider costs versus benefits.
- Be satisfied with evidence if proof not possible.

The advantages to a Level Four evaluation follow.

- Determine bottom line impact of training.
- Tie business or development objectives and goals to training.

3.5.3 Planning for Level Five - ROI

Measuring value and return on investment for training and learning process has always been important, but now organizations want to be assured that the money spent on training actually works. To prove the worthiness of training, its impact in terms of monetary value is important and central for taking decisions. In today's tight economy with reduced resources and tight budgets, learning and development professionals are finding it increasingly necessary to show the monetary value of the training programmes which they are proposing for the organization. In other words, today the success of training projects/programmes is measured by the financial contribution.

The Phillips ROI methodology has four phases:

- i) Evaluation planning
- ii) Data collection
- iii) Data analysis
- iv) Reporting

Evaluation Planning

In the evaluation planning, the training organizer has to develop evaluation plans and determine base line data; then develop data collection plan and ROI plan.

Data Collection

During the data collection phase, the organizers have to collect data on various aspects of training. Generally two sets of data are collected i.e. data collected just after the completion of training and second after some time gaps, once the trainees apply their knowledge and skills in order to know the impact of training.

Data Analysis

During this phase, the data collected from Phase 2 is processed and analysed, the result tells about results of the training programme.

The ROI method is applied to know the impact of training programme.

Reporting

The result of the ROI in this phase is brought out in the form of report for wider circulation on the impact of training programme. The report begins with introduction, and then followed by process of training, method of data collection and analysis and the findings.

Some of the guidelines to be followed are stated below:

- Use a control group, if practical.
- Allow time for results to be achieved.
- Determine the direct costs of the training.
- Measure productivity or performance before the training.
- Measure productivity or performance after the training.
- Measure productivity or performance increase.
- Translate increase in dollar or rupee value benefit.
- Subtract the dollar or rupee value benefit from the cost of training.
- Calculate the ROI.

ROI is a matter of comparing net impact in monetary term to the total programme cost, and expressing the ratio as percentage. ROI is an advanced level of evaluation and relevant if the assessment of income on investment was overlooked when dealing with the 'Results' level in Kirkpatrick's four level evaluation model. The formula used in the calculation of ROI is as follows:

$$\text{ROI} = \frac{(\text{total benefit} - \text{total costs})}{\text{total costs}} \times 100$$

Total benefits include money saved by the organization, money made, and anything that adds directly or indirectly to the bottom line.

Total costs include the development costs, learner's time away from doing something else, overhead of education department, physical materials, etc. (For instructor-led training, this includes program materials, meals/refreshments, facilities, cost of coordination, cost of job coverage during training, overhead of instructors, and any other cost incurred. Online courses include servers, graphics, web development or CD production, etc.)

The process of the calculation of ROI includes:

- i) Begin to gather the data from the organization (including the finance department)
- ii) Collect, in one place, all that factors than can tell you how much programme development costs, including indirect fees.
- iii) Add up any money gained from the program.

Again, quantifying ROI means accounting for all the costs of the programme. The costs may be of two types:

- i) Fixed Costs- independent of the number of participants
- ii) Variable Costs- dependent on the number of participants

There are costs at every step. Make sure to account for them all.

One example of ROI can be given. For example, two groups are working in an organization to complete a certain task. Group J is untrained and group K is a trained group. Their product values are compared below.

Group	Production Units(Pre-Training)	Intervention	Production Units (Post-Training)
Group- J	800	—	800
Group-K	800	Training	1800

Net Benefit: = Group-K post training performance – Group-J pre training performance = 1800 – 800 = 1000

Standard Training Impact = (Net Benefit/Production untreated) × 100
= 1000/800 × 100 = 125%

This shows that there is 125 per cent increase in production due to training.

ROI calculations are conducted by a few world class training organizations. They help the implementing organizations in the following ways.

- Quantify the performance improvements.
- Quantify the monetary value benefits.
- Compute investment returns.
- Make informed decisions based on quantified benefits, returns, and percent return comparisons between learning programs.

As discussed above, the results are assessed in harmony with the objectives of training. The final results can be in the form of an increase in production, improvement in quality, decrease in costs, reduction in frequency and/or severity of events, decrease in costs, and increase in sales, and higher profits. It would help if the final objectives of the training program could be stated in these terms. To assess improvement over the long-term, one may conduct impact evaluation between one to three years after completion of training. Moreover, it is to be borne in mind that changes cannot always be specifically identified with the training received.

3.6 METHODS OF TRAINING IMPACT ASSESSMENT

Training impact assessment can be conducted through various methods. A few important methods of training impact evaluation are discussed below.

3.6.1 Training Impact Assessment in the Field

For a practical training, impact assessment on personnel who have undertaken training on any aspect delivered by a training providing organization (TPO) are assessed on the following aspects.

- i) Learning retention of trained personnel (knowledge, skills and attitudes).
- ii) Training impact on the trainees' job performance.
- iii) Training impact on organizational effectiveness.
- iv) Impact on the market or environment or stakeholder's competency.

It should be highly participatory in nature, consulting stakeholders or consumers at the national, regional, council, ward and community levels across all areas of operation need to be involved in the process for assessing the impact of training of a particular trainee trained by the training organization. The design of training impact evaluation, which is to be undertaken in reality, should be within a relatively short time and with affordable resources. The findings should focus the comprehensive analysis of the final goal.

3.6.2 On-the-Job Evaluations

The most important and the most difficult evaluation is the follow-up of participants on-the-job. Though time-consuming, this is the only way to judge if there is an impact on job performance. Several ways of doing this are mentioned below.

i) Visit to Work Sites

Each training providing organization (TPO) needs to develop a network or data base of personnel who have undergone training (participants). Each year, selected staff can visit participants for discussions about the value of the course that they have completed. Alternatively, a group of participants can be invited to TPOs for discussion. This type of face-to-face contact not only builds up a good relationship with TPOs, but can yield some useful information.

ii) Surveys

About 4-6 months after completion of training programmes by the trainees, a brief questionnaire could be sent to the participants with specific questions about the training programme. The questionnaire may include the following.

- Specifically how has the training course helped you in your work?
- What activities in the training programme helped you most?
- What part of the training programme would you eliminate?
- What should be added to the training programme?

- Was there adequate focus on practical exercises?
- Was too much time given to theory?
- Would you recommend that your colleagues should take this programme? If not, why not?
- The participant may be assured confidentiality of his response and the option of not signing his replies.

iii) Meeting with Supervisors

The immediate supervisors of the participants might provide some useful information about the value of the training programme. In addition, they can provide some idea of other training needs of their staff. Therefore conducting a survey on supervisors would be more helpful. Discussion meetings with the senior officers or supervisors could be held at TPOs separately from those of the participants. This would be useful where a critical mass of participants have been trained. For example, conversations with executive engineers can indicate that they often have a good idea of how useful the training was for their staff.

iv) Special Meetings

TPOs may organise an alumni day, once a year. Personnel who had undergone same or similar training may be invited to come and give seminars. This is useful but there is the possibility that the members may not say much about how courses could be improved. These special meetings are more costly but can be useful too.

v) Comparison of Trained and Untrained Personnel

The evaluator can also frame questions that pertain to the ability and efficiency levels of trained and untrained personnel or perform comparisons with a control group.

Up to this section, you have studied process and planning of training impact assessment, and methods of training impact assessment. Now, answer the questions given in *Check Your Progress 2*.

Check Your Progress 2

Note: a) Write your answer in about 50 words.

b) Check your answer with possible answers given at the end of the unit.

- 1) What are the characteristics for select indicators for impact assessment of training?

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- 2) What are the various techniques of job evaluation in impact assessment of training?

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3.7 LET US SUM UP

In this unit, we read about the meaning and concept of impact assessment. We also discussed the types of indicators to be used for impact assessment of training. Besides these, two important aspects, the planning of impact assessment, and the methods of training impact evaluation, have been dealt with in detail, in this unit. These will enable a reader to conduct training impact evaluation of any training programme.

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3.9 CHECK YOUR PROGRESS- POSSIBLE ANSWERS

Check Your Progress 1

- 1) Benchmark is a point of real reference for measuring change in performance vis-à-vis agreed targets. It is intended to indicate where one is at a given point in a process so that change can be measured and progress evaluated at later stages. Defining a benchmark requires that we identify the relevant indicators against which we want to assess progress.
- 2) Indicator is a measure that is used to demonstrate change in a situation, or the progress in, or results of an activity, project, or programme. Different types of indicators are a) Direct indicators b) Indirect or "proxy" indicators c) Quantitative indicators d) Qualitative indicators e) Performance indicators f) Result Chain indicators

Check Your Progress 2

- 1) There are various criteria for selecting indicators for impact assessment of training. The desired properties of indicators will depend very much on the approach adopted, and on the nature of the project. Popular code to remember the characteristics of good indicators is SMART: S-Specific, M-Measurable, A-Attainable, R-Relevant and T-Time bound.
- 2) There are various techniques of job evaluation methods, like a) visit to work sites, b) surveys, c) meeting with supervisor, d) special meetings, and, e) comparison of personnel with training and without training.

UNIT 4 TRAINING EVALUATION - CASE STUDY

Structure

- 4.1 Introduction
- 4.2 Case Study Background
- 4.3 Methodology
- 4.4 Results and Discussion
 - 4.4.1 Training Curriculum
 - 4.4.2 Inputs
 - 4.4.3 Activities of Key Stakeholders and Publication
 - 4.4.4 Training Methodology
 - 4.4.5 Impact of the Training
 - 4.4.6 Suggestions for Improvement
- 4.5 References
- 4.6 Let Us Sum Up

4.1 INTRODUCTION

Dear Learner,

In the previous three units we discussed the training methods, evaluation of training and impact assessment of training. In this unit, a training evaluation case study is discussed on effectiveness of 13 gynecological training programmes organized for 212 field veterinarians in Andhra Pradesh. The key evaluation questions of the case study were on training methodology, relevance of course contents, knowledge and skill improvement, utility of the topics and overall effectiveness of the training programme.

After studying this unit, you should be able to:

- Explain the training methodology used and key findings.
- Apply the methodology and evaluate a training programme in your field.

4.2 CASE STUDY BACKGROUND

The pattern of growth in crossbred dairy cows and graded buffalos as per recent census indicates a shift towards economically more efficient species in Andhra Pradesh. The expansion in bovines is less in populations of males than females, mainly because bovine draught power is being replaced with mechanization and the importance was on producing milk (Livestock Census, 2012). This demonstrates that the livestock sector in Andhra Pradesh is both expanding and adapting to emerging socio-economic and technological forces, with firm implications for veterinary service delivery (Rao et al., 2015). While the bovine sector is registering phenomenal growth, several challenges remain unaddressed. One of these includes inadequate clinical competencies among field veterinarians (Hegde, 2010). To improve gynecological competencies among field veterinarians, the animal husbandry department (AHD) of Andhra Pradesh had

designed a tailor-made training programme and implemented 13 training programmes. The present case study evaluated the overall effectiveness of these training programmes.

4.3 METHODOLOGY

Residential training programmes of six days duration on 'Gynecological competencies up-gradation' were organized at State Animal Husbandry Training Center (SAHTC), Mandapeta, Andhra Pradesh. A total of 212 field veterinarians were trained in 13 batches. Following data was collected as part of evaluation:

- Inputs used in the training programmes in terms of money, human resources and training curriculum from office records.
- Effectiveness of training programmes in terms of change in knowledge and skills in Gynecology using pre and post evaluation tests. The test items consisted of 50 objective questions on various aspects of gynecology training curriculum. The scores were converted into percentages and average scores worked-out for 13 training programmes.
- The feedback on various aspects of the training was obtained on 1 to 5 scales.
- The major learning outcomes and suggestions to improve were also obtained from the participants and summarized.

4.4 RESULTS AND DISCUSSION

4.4.1 Training Curriculum

The training objectives were:

- Refresh anatomy and physiology of bovine female reproductive system.
- Refresh palpation of female reproductive tract, detection of heat mechanism, aberrations of heat, pregnancy diagnosis and differential diagnosis in bovines.
- Refresh important infertility problems of bovines, and
- Conduct village survey, collect data, analyze and interpret results on field problems.

A critical evaluation of training curriculum revealed that, core gynecological technical competencies were covered in the curriculum as per the training objectives with related topics from anatomy, physiology, pathology and process competencies (Box 1).

Box 1: Gynecology competencies up-gradation training curriculum

Technical competencies : Anatomy of bovine female reproductive organs on the slaughter house specimens; Physiology of female bovine reproductive system; Ovarian development and follicular dynamics; Rectal Examination-purpose, procedure, care & precautions; Heat behaviour, heat aberrations, palpable changes and pregnancy diagnosis; Differential diagnosis; Endometritis and latest protocols in treatment of uterine pathology;

Anoestrus and its management; Oestrus synchronization; Repeat breeding, and; Cryo-preservation of semen, thawing procedures and handling of AI equipment.

Process competencies / soft skills: Indian dairy industry-present scenario and SWOT analysis; Concepts of ideal dairy, farming practices/parameters; Data collection through households Survey –purpose and procedure; Data consolidation analysis, interpretations and identification of focal areas of interventions. Presentations by participants (Group work); Field visit for hands on training and practice; Veterinarians role in enhancing livestock productivity; Tips for enhancing conception at field level.

4.4.2 Inputs

The total money spent on 13 training programmes was Rs. 2,39,200/- (Rs. 18,400 per training) towards working lunch, snacks, reading material, slaughter house specimens, field visits and training material. There were 212 participants and five faculty members from the training centre involved in 13 training programmes.

4.4.3 Activities of Key Stakeholders and Publication

The activities allotted to and completed by the five resource persons were:

- Pre-training preparations and readiness
- Preparation of reading material and training manual
- Delivery of training sessions as per schedule
- Conduct of practical sessions, field visits along with participants
- Evaluation of pre and post training assessment test papers etc.

The activities of participants were:

- Registration with training centre
- Attending all theory and practical sessions
- Presentations as group work based on field visits and,
- Participation in pre and post training assessment.

4.4.4 Training Methodology

The training methodology followed in all 13 training programmes is summarized under the following heads.

Training Manual and Disc: A manual prepared by covering all the aspects of training curriculum was provided to each participant in addition to the text material from different sources. A compact disc with notes and all class-room presentations was also given to all participants.

Pre and Post Tests: To see the difference in skills and knowledge gain, pre and post training tests were conducted using similar questionnaires covering all the aspects of the training curriculum. This helped the faculty to assess the trainees' perception level and to impart training in a systematic approach covering the contents.

Expectations: At the beginning of the training, trainees were asked to give their expectations from the training programme. During the sessions, special focus

was given to the expectations of the trainees. At the end, it was discussed to confirm if the expectations were met.

Theory Sessions: The theory sessions were conducted as per the curriculum designed and the sessions were dealt in participatory and interactive learning methods. All the audio-visual teaching aids were practically utilized in dissemination of knowledge. A special emphasis was laid down to cover the focal areas of trainee's specific field application issues on bovine gynaecology. A special session on ethics/ motivation was also held in every training programme.

Field Survey: A field survey in each training programme was conducted by participants to assess the reproductive status of dairy animals in villages neighboring to Mandapeta (within 40 km distance). The survey questionnaire contained questions related to various management practices and reproductive parameters. The data were analyzed and conclusions were drawn about the reproductive health and status of the dairy animals in that village. The critical analysis and comparison of data with reference to the ideal parameters gave understanding of the virtual field situation and the various corrective and adoptive methods to be implemented in future. Participants made presentations in groups on each village covered during field survey.

Practical sessions: The practical sessions under each training programme had covered the following aspects:

- a) *Slaughter house specimens:* During the training days, fresh specimens of bovine reproductive system were procured from slaughterhouse and presented to the trainees for palpation and observation of the utero-ovarian physio-pathological conditions. On the last day, the trainees were asked to make blindfold examination of specimens and later to compare the same with visual observations for self evaluation.
- b) *Fertility Camp:* The trainees were divided into two groups in every training programme and each group attended a fertility camp organized in connection with the training program along with one of the faculty members as facilitator. The camps were conducted in the same village, where survey was conducted. There, each trainee examined animals and got on-field training from the faculty.
- c) *Exposure to Pathology Museum:* Trainees were taken to the museum of the institution and were exposed to different pathological conditions of the reproductive organs enabling them to visualize the wide variety of diseases and disorders of rare occurrence and enough text was supplemented on-spot to brief their queries.
- d) *Diagnostic Tests and Practice:* The trainees were demonstrated different diagnostic tests in bovine gynaecological practice viz. Fern pattern and bamboo stick pattern of oestral discharge, White side test for endometritis, pH of vaginal, cervical and uterine discharges, Prostaglandin induced milk flow test (PGIMF), Intra Vulvo Sub Mucosal injection of Oxytocin/ PGF2-alfa, and examination of stained smears of cervical discharge for phagocytes/ flagellates. Trainees were practically shown the application of rope in mechanical/ manual methods of managing pre and post partum prolapse. In each training program the obstetrical maneuvering methods, especially the de-torsion techniques were also demonstrated.

4.4.5 Impact of the Training

The data in Table 1 show the knowledge score obtained by participants during pre and post training tests. It is evident from the data that as a result of the training, the mean knowledge score of the participants rose to 77.43 from 48.39 registering an average increase of 29.03. This clearly indicates the positive impact of the training programmes in improving the gynaecological knowledge among the participants.

Table 1. Impact of the training on improving the gynaecological knowledge level

Training Batch	Pre-training	Post-training	Gain
1	45.33	72.67	27.34
2	40.33	67.67	27.34
3	38.43	69.41	30.98
4	45.33	74.00	28.67
5	41.57	81.17	39.6
6	47.33	74.67	27.34
7	60.00	80.00	20.00
8	50.37	83.33	32.96
9	47.59	80.37	32.78
10	59.78	83.11	23.33
11	43.33	81.66	38.33
12	53.53	77.84	24.31
13	56.19	80.71	24.52
Mean knowledge and skill gain	48.39	77.43	29.03
Standard deviation	5.14	5.22	5.75

The data further revealed that feedback on the training was perceived by the participants to be at high level in different components of training (Table 2). The mean feedback rating on overall components of the training programmes was 3.42 out of maximum possible score of 5, which indicates a scope for further improvement. The greatest feedback was in the areas of usefulness of the course (3.75), relevance of the course contents (3.69) and handling of sessions (3.63). Majority of the respondents (58.02%) felt that the duration of the training programmes was short, while 36.79 % of respondents felt the duration as sufficient.

Table 2 : Feedback on different components of training programmes

S.No.	Training component	Average Rating on '5' Scale for 13 trainings (Maximum score 5 and minimum score 1)
1	Usefulness of the course	3.75
2	Relevance of the contents	3.69
3	Practical exposure during the programme	3.01
4	Handling of sessions	3.63
5	Facilities for training	3.61
6	Library facilities	3.41
7	Boarding facilities	3.23
8	Facilities for stay	3.20
9	Fulfillment of the objectives	3.22
	Mean rating on overall training components	3.42
10	Duration of the training	Sufficient: 78 (36.79%) Short: 123 (58.02%) Long: 11 (5.19%)

The results also revealed that participants had learned few new technical and process skills while refreshing their prior knowledge and skills (Box 2).

Box 2: Summary of learning outcomes as perceived by the participants

- Oestrus synchronization
- Hormonal therapy
- Repeat breeding
- Endometritis
- Importance of field data collection
- Dairy farm management practices
- Heat detection
- Pregnancy diagnosis
- Palpation of ovaries
- Follicular dynamics
- Latest technological innovations
- Reproductive pathology

4.4.6 Suggestions for Improvement

The participants of the 13 training programmes made several suggestions about how to improve the training in future. Various suggestion on improvement of

Box 3 : Suggestions for improvement

Technical aspects

- Avoid longer hours in the class-room teaching.
- Increase the duration of the course to 10 - 15 days.
- Increase practical exposure through clinical cases.
- Add embryo transfer technology demonstration in the course.
- Oestrus synchronization to be demonstrated.
- Fodder variety demonstration in the SAHTC premises.
- Provide more slaughter house specimens.
- Introduce yoga as part of training.
- Experimental animals required during training.
- Video clippings (preferably 3D) to be shown for various topics.
- Topics on surgical approaches for obstetrical problems to be included.
- More diagnostic methods to detect reproductive problems.

Logistic aspects

- Improve food quality and hygiene.
- Provide mosquito nets in the hostel.
- Uninterrupted power supply and generator back-up.

Competencies of field veterinarians need to be enhanced to handle the intensive livestock farming challenges aroused due to increased number of crossbred dairy cattle and upgraded buffaloes. Overall, veterinarians need to provide three types of integrated support to the livestock farmers (Rao and Natchimuthu, 2015):

- i) Delivery of the technical services (gynecological, surgical and medical and para-clinical health care of livestock).
- ii) To make available and access to input services such as artificial insemination, vaccines, medicines, equipments, instruments, feed etc. (to augment production and productivity) and,
- iii) Livestock extension and advisory services as process skills (to enrich the knowledge and improve the skills of farmers).

To provide the integrated support efficiently, veterinarians need to have or attain core technical competencies, remain updated with emerging technologies and demonstrate competency in their services by attending continuing veterinary education programmes. The 13 training programmes organized by the SAHTC, Mandapeta is an effort in this direction to improve the technical as well as process competencies related to gynecology subject matter. The Planning Commission of India (Planning Commission. 2012) also emphasized that re-training of the field veterinarians to brace for the recent developments is paramount and they should attend mandatory refresher courses every five years during their career.

The overall effectiveness of the training programmes can be further enhanced by following adult learning principles in the delivery of technical training sessions. Constructivism, experienced learning and humanistic theories explain adult learning during training programmes. The constructivism theorist stressed that trainee should be an actor rather than spectator and should be actively engaged in constructing knowledge, attitude and skills (KAS) for themselves (Dennick, 2008). The constructivist implications for further improving gynecology training effectiveness include (Festinger, 1957; Bandura, 1977; Dennick, 2008): assertion and activation of prior KAS of participating field veterinarian; build on existing KAS and challenge misconceptions; use group work to facilitate peer learning; stress the context and situation (as practiced in the field visits in the current trainings), and; use active learning techniques and give responsibility to trainees for their learning.

Experiential learning (Kolb, 1984) is very useful for training during case studies / exercises in gynecology training sessions. The humanistic theories (Maslow, 1968; Rogers, 1983) provided the basis for trainee-centered or self-directed learning approaches to training. The implications of humanistic theories to further improve effectiveness of gynecology training include: respect field veterinarians' background; use their KAS as starting point for training; ensure physical and psychological conditions for learning in training; training and learning as relationship between trainer and trainees, and; encourage field veterinarians to explore self-directed learning.

By following mix of theoretical, practical and field based training methods, implications of adult learning theories have been taken care of partly by the training organization. However, training organizations need to build the capacities of trainers/ faculty from time to time in using adult learning methodologies besides technical subject matter for effective training of field veterinarians.

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4.6 LET US SUM UP

The comprehensive evaluation findings on 13 Gynecological competencies up-gradation residential training programmes of six days duration organized at SAHTC, Mandapeta in Andhra Pradesh are presented in this case study. The evaluation results indicated a high relevance of the training contents with an increase of 29.03 per cent of knowledge and skills among 212 participants in the areas of both technical and process competencies. To further improve the effectiveness of these trainings, the suggestions made by the participants need to be implemented wherever applicable. Standardize and scale-up the training curriculum using training methodologies embedded with adult learning principles.

The training programme can be scaled-up not only in Andhra Pradesh, but also in other Indian states using the training curriculum as an open education resource (OER) enabled by information and communication technologies. The OER generally means that the resource is freely available to others to reuse in different contexts (McMartin, 2008). Scaling up of gynaecology training programme can follow the four 'R's' (Hilton et al, 2010):

- *Reuse* – the most basic level of openness. The training faculty in the same institute or adjoining AHD training centres can be allowed to use all or part of training curriculum and methodology freely in unaltered form (for example, recording the theory, practical and field visit sessions to view / listen to at a later stage or uploading all the sessions to AHD website for listening in free time).
- *Redistribute* – sharing gynaecology training sessions to other state training centres for use.
- *Revise* – adapt, modify, translate or change the form (for example, translating into other regional languages).

Process of Training

- *Remix* – take two or more similar gynaecology training programme contents and combine them to create a new training programme.
- While progressing from the first ‘R’ to the fourth ‘R’, the openness as well as scaling up enhance and provide opportunities for new and innovative Gynecology training programmes.



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