Vertical Integration course for Trainers

(As per STCW 95, Regulation 1/6 detailed in Section A -1/6 of Code A)

Asha International Institute Of Marine Technology

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Vertical Integration course for Trainers

Aims

This model course is designed to facilitate the delivery of training in the competence standards required by J IMO Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended Its aim is to provide a useful introduction for those with limited teaching experience and introduce r^ approaches or serve as a reminder of skills and techniques for those who have been teaching for some ii$_{me}$ It is not the aim to provide a full course of trainee instructor training. In addition, it provides a sound basis for the delivery of other training programmes.

Objectives

After learning the course, the trainees should be able to meet the requirements as specified in sections **A-I/&,** A-l/8 and guidance contained in sections B-l/6, B-l/8 of the STCW Code. It includes the planning and preparation of effective teaching and instruction, the selection of appropriate methods of instruction and teaching materials, and the evaluation of the teaching and learning process.

Entry standards

Trainees wishing to deliver training in the competence standards required by the STCW Convention and Code should already have the necessary technical knowledge and be qualified in the task for which training is to be conducted. This model course assumes that the trainees are appropriately qualified in the technical aspects of their subjects. It would also be useful if at least some of the group of trainees have had some experience of training others and can appraise and/or demonstrate basic teaching skills.

Required attendance:

100% attendance is required for successful completion of the course. However, in exceptional circumstances, a student is allowed absence of up to one day subject to his attending the lectures missed out during the next course at the same institute. The institute shall keep proper records of such cases.

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TIME TABLE

DAY	0930-1100	1115 - 1245		1330-1500	1515-1645
1	Course Introduction 1.Overview of STCW Convention and code and requirements for competence-based training *ALPHA*	1.Overview of STCW Convention and code and requirements for competence-based training (cont.) 2.Planing an effective learnig environment *ALPHA*	L U N C H	2. Planning an effective learning environment (Cont.) *BRAVO*	2. Planning an effective learning environment (Cont.) *BRAVO*
2	2. Planning an effective learning environment (Cont.) *ALPHA*	2. Planning an effective learning environment (Cont.) *ALPHA*		2. Planning an effective learning environment (Cont.) *BRAVO*	2. Planning an effective learning environment (Cont.) 3. Training aids *BRAVO*
3	3. Training aids (Cont.) *ALPHA*	3. Training aids (Cont.) *ALPHA*		3. Training aids (Cont.) *BRAVO*	3. Training aids (Cont.) *BRAVO*
4	3. Training aids (Cont.) *ALPHA*	3. Training aids (Cont.) *ALPHA*		3. Training aids (Cont.) *BRAVO*	3. Training aids (Cont.) 4. Using teaching activities effectively (Cont.) *BRAVO*
5	4. Using teaching activities effectively (Cont.) *CHARLIE*	4. Using teaching activities effectively (Cont.) *CHARLIE*		4. Using teaching activities effectively (Cont.) *BRAVO*	4. Using teaching activities effectively (Cont.) *BRAVO*
6	4. Using teaching activities effectively (Cont.) *CHARLIE*	4. Using teaching activities effectively (Cont.) *CHARLIE*		4. Using teaching activities effectively (Cont.) *BRAVO*	4. Using teaching activities effectively (Cont.) *BRAVO*
7	4. Using teaching activities effectively (Cont.) *CHARLIE*	4. Using teaching activities effectively (Cont.) *CHARLIE*		5. Producing a subject-related lesson plan *BRAVO*	5. Producing a subject-related lesson plan *BRAVO*
8	5. Producing a subject-related lesson plan *ALPHA*	5. Producing a subject-related lesson plan *ALPHA*		5. Producing a subject-related lesson plan *BRAVO*	5. Producing a subject-related lesson plan *BRAVO*

9	**6.Evaluating /assessing teaching and learning** ***ALPHA***	**6.Evaluating /assessing teaching and learning** ***ALPHA***		**6.Evaluating /assessing teaching and learning** ***BRAVO***	**6.Evaluating /assessing teaching and learning** ***BRAVO***
10	**6.Evaluating teaching and learning** ***BRAVO***	**6.Evaluating teaching and learning** ***BRAVO***		**7. Course design** ***ALPHA***	**7. Course design Assessment** ***ALPHA***
11	**7. Course design** ***ALPHA***	**7. Course design** ***ALPHA***		**7. Course design** ***BRAVO***	**7. Course design Assessment** ***BRAVO***
12	**7. Course design** ***ALPHA***	**7. Course design** ***ALPHA***		**7. Course design** ***BRAVO***	**Assessment** ***BRAVO***

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Chapter-1

Overview of STCW Convention and code and requirements for competence-based training

1.1 Understand the overview and development of STCW convention and code

The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), 1978 sets qualification standards for masters, officers and watch personnel on seagoing merchant ships. STCW was adopted in 1978 by conference at the International Maritime Organization (IMO) in London, and entered into force in 1984. The Convention was significantly amended in 1995.

The 1978 STCW Convention was the first to establish basic requirements on training, certification and watch keeping for seafarers on an international level. Previously the standards of training, certification and watch keeping of officers and ratings were established by individual governments, usually without reference to practices in other countries. As a result, standards and procedures varied widely, even though shipping is extremely international by nature.

The Convention prescribes minimum standards relating to training, certification and watch keeping for seafarers which countries are obliged to meet or exceed.

The Convention did not deal with manning levels: IMO provisions in this area are covered by regulation 14 of Chapter V of the International Convention for the Safety of Life at Sea (SOLAS), 1974, whose requirements are backed up by resolution A.890(21) Principles of safe manning, adopted by the IMO Assembly in 1999, which replaced an earlier resolution A.481(XII) adopted in 1981.

One especially important feature of the Convention is that it applies to ships of non-party States when visiting ports of States which are Parties to the

Convention. Article X requires Parties to apply the control measures to ships of all flags to the extent necessary to ensure that no more favourable treatment is given to ships entitled to fly the flag of a State which is not a Party than is given to ships entitled to fly the flag of a State that is a Party.

The difficulties which could arise for ships of States which are not Parties to the Convention is one reason why the Convention has received such wide acceptance. By 2014, the STCW Convention had 158 Parties, representing 98.8 per cent of world shipping tonnage.

1.2 Understand STCW Convention and code requirement for competence based training

The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), 1978, as amended, sets the standards of competence for seafarers internationally.

Amongst its provisions is a requirement for Parties to the Convention to communicate information to IMO on the measures adopted to implement the Convention nationally. That information is subject to scrutiny to ensure that the Convention is being given 'full and complete effect' and, if this is so, the Party features on the "List of confirmed STCW Parties" and "Information related to Reports of Independent Evaluation".

One key STCW Convention provision requires Parties to provide information to allow others to check the validity and authenticity of seafarers' certificates of competency. This is important as unqualified seafarers holding fraudulent certificates of competency are a clear danger to themselves, others on board and the marine environment.

In order to assist with uniform interpretation of the STCW Convention, IMO has agreed a number of clarifications of the Convention's provisions and has also developed further guidance to assist Parties to meet their Convention obligations.

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For maritime training institutes worldwide, IMO has also developed a series of model courses which provide suggested syllabi, course timetables and learning objectives to assist instructors develop training programmes to meet the STCW Convention standards for seafarers.

Chapter-2

Planning an effective learning environment

2.1 Identify the factors which influence the teaching and learning process

ANDRAGOGY AND PEDAGOGY

DIFFERENCES BETWEEN ADULT AND CHILD LEARNERS

The following table is from D. Brundage and D. Mackeracher, Adult learning principles and their application to program planning. The minister of education Toronto 1980.

Adults in general

- Adults have extensive pragmatic life experiences that tend to structure and limit new learning. Learning focuses largely on transforming or extending the meanings, values, skills and strategies acquired in previous experience.
- Major pressures for change come from factors related to social and work roles and expectations and to personal need for continuing productivity and self-definition.
- Learning needs are related to current life situations.
- Adults are more likely to use generalized, abstract thought.
- Adults are likely to express their own needs and describe their own learning processes through verbal activities that allow them to negotiate and collaborate in planning their own learning programs.

- Adults have an organized and consistent self-concept and self-esteem that allows them to participate as a self-separate from other selves and capable of acting independently of others.

- Adults are assigned a responsible status in society and are expected to be productive.

Children in general

- Children have few pragmatic life experiences; learning focuses largely on forming basic meanings, values, skills and strategies.

- Major pressures for change come from factors related to physical growth, to demands for socialization and to preparation of future social and work roles.

- Learning needs are related to developing organized patterns for understanding future experience

- Children are more likely to use specific concrete thought.

- Children are likely to express their own needs and learning processes through non verbal activities, which leads to planning by "expert" observers and interpreters.

- Children have a relatively unorganized and inconsistent self-concept that allows them to perceive themselves as a separate form but dependent on others.

- Children are assigned a non-responsible status in society, and are expected to play and leam.

ADULTS AS LEARNERS EACH ADULT LEARNER IS A COMPLEX AND UNIQUE HUMAN BEING.

Each adult will view, organize understand and interpret the world in his/her own way. It is an emotional as well as rational 'construct' of the world, which

selectively filters, and distorts reality. An adult's needs and motivations may be concealed. Each adult will have a unique learning style. Some like precise directions and rules. Others need approval and acceptance.

ADULT LEARNERS EXPERIENCE ANXIETY. DOUBTS, AND OFTEN FEEL THAT THEIR SELF-CONCEPT. THEIR IDENTITY IS ON THE LINE.

Adult learners may experience fear of the unknown; of not being accepted; of falling behind and being replaced in a rapidly changing world; of making mistakes, especially in public; of not meeting standards; of being revealed as incompetent; of looking dumb.

This self-esteem needs involve both respect for self and gaining the respect of others. Anxieties and low self-concepts lead adult learners to not participate or contribute; to show greater difficulty and hesitancy in social interaction; to work at much less than full pressure and ability because they are afraid that if they really try they might fail; to refrain from asking for help or clarification; to hide individual learning problems and needs; to behave defensively or aggressively; to be unimaginative, less flexible, less creative, shy, dependent,guarded; to avoid self analysis; to set lower aspirations and expectations for success. Research is indicating that self-esteem may be as important as intelligence. Anxieties and low self-esteem may 'result's adult learners being resistant to change. (N.B. effective education programs are designed to help us change.) They may react by 'fight' (aggression, conflict) or 'flight' (withdrawals, red tape, trivializing.)

ADULTS FACE UNCERTAINITY. ROLE CHANGES AND DEVELOPING LIFE STAGES.THEY HAVE MANY ROLES AND RESPONSIBILITIES AND PROBLEMS IN ONE AREA MAY OVERFLOW INTO ANOTHER

AS PEOPLE GROW OLDER THEY EXPERIENCE PHYSICAL CHANGES WHICH MAY ACT AS BARRIERS TO THEIR LEARNING

Capacity to leam decreases very little with age. However, the rate of learning may be slower, short-term memory may deteriorate, reactions may slow down, energy levels may differ, ability to change focus from near to far objects

may be slower, and hearing may deteriorate. They can be compensated for by improved facilities, sensitivity and a slower pace.

For many adults, the power of comprehension and skills in organizing materials may increase. And, of course, they have a wealth of experience that will enrich their learning. Adults tend to leam in a series of 'plateaus'-they may do well then level off. They will need encouragement during the plateaus

WHEN DOES MAN LEARNS?

1. When urged by needs

Man is said to lean things quickly and without hesitation when urged by needs.

2. When advantages and disadvantages are known

Man learns things by realising that learning enables him to gain and that he loses if he does not leam. Man foresees that the results of study help him to accomplish objectives or fulfill needs.

3. When there is interest

Man soon absorbs a considerable amount of knowledge of a thing in which he is interested in. "What one likes, one will do well". This proverb must be throwing some light upon it.

4. When man faces a problem

Man prepares himself for study when he faces problems that stands in the way of fulfilling his needs or accomplish his objectives. We come across numerous difficulties in our daily life. The mere existence of a problem does not necessarily induce man to solve it immediately. Man has to be effectively stimulated to want to find a solution and incentives have to be continuously given until it gets solved.

5. When preparations are made

Man learns when preparations are made. Preparation is, in another word, maturity. Preparations in all respects of physiological, intellectual and emotional aspects make him ready to learn a job.

6. When motivated

Man is urged for action, being motivated by wants and desire. Man seeks for the means of accomplishing his purposes when motivation is present

7. When relations are understood

Ideas and meaning of things can never be thoroughly grasped until mutual relations are clarified. Man may know many facts, principles, laws and formulae, but learning never begins until the mutual relations are clear. Man acts blindly unless meaning.

BASIC CONDITIONS THAT FACILITATE ADULT LEARNING

1. The learners must feel a need to leam.

2. The learning environment must be warm, friendly and free from threat.

3. The learners must perceive the learning goals to be their goals.

4. The learners must participate actively in the learning process.

5. Learning must be related to and make use of the experience of the learners.

6. The learners must see they're achieving their goals.

7. The learning environment must involve effective 3-way communication.

"Teaching" vs. "Learning"

For many years, the emphasis in the classroom is on "teaching" rather than the "learning" role. As such, it has been assumed that the responsibility for a student's acquisition of new ideas and insights was directly placed upon the teacher, and his or her ability to "get it across".

This was accomplished, supposedly, by a variety of laws including cajoling, threatening or rewarding, through aggressiveness, loud speech, or very soft speech. This assumption demanded that the teachers not only be far cleverer than the students, but they also be inexhaustible, since without their constant supply of information, the students were lost. This theory is gradually fading away in elementary and secondary schools. However it is inexcusable that it should ever be taken seriously in adult education.

As has been stated before, adults do not need, nor do they wish, to be controlled in their learning experiences. They are self directed, autonomous human beings, and desire a strong sense of dignity and individual worth. Nothing will offend this sense of dignity more than some individual throw bits of information at them, like raw chunks of meat, and demand that they accept them.

The adult is a learner; as such, the responsibility for learning should be placed upon him. He will choose, if allowed, what he leams and how he learns it and decide the rate and speed at which he leams best. He will need helpful advice and suggestions, however, as to how he continue his self-directed learning....and this is where the teacher comes in, as a helpful aid who is prepared not to answer the students every question, or to solve his problem, but to help him develop the skills to solve his own problems. The teacher should not attempt to play God. Her adult students are as matured as she, and in certain cases probably more so. With a deep interest in the student the teacher can help him find his own way, but find his own way he must.

PRINCIPLES OF LEARNING

1. Removal of obstacles

2.Awakening the will to leam

3.Learner-centered guidance

4.Realistic and practical guidance

5.Maximum use of five senses

6.Application of the sense of success

7.Continuation by repetition

a) By removing uneasy feeling.

b) By relieving tensions.

c) By creating effective surroundings for learning.

a) By appealing to the learner's interest, concern and desire.

b) By appealing to advantages that are to be gained by learning.

c) By associating learning with recent experiences and impressions.

d) By clarifying purposes.

a) From the known to the unknown.

b) Present the whole first, then its parts, and finally give the conclusion.

c) Consider individual differences.

d) Use terms suitable for him.

e) Deepen his understanding by letting him realize why.

f) Guide according to his maturity.

a) Use actual examples and guide him upon the basis of facts.

b) Connect the subject matter with actual works or problems so that it will help him to promote them or solve them.

c) Let him experience things, for he frequently learns by way of imitating others as well as and error.

d) Let him recognize his errors, however offer him constructive advice and guidance right away.

a) Appeal to as many senses as possible.

b) Intensify impressions as far as possible.

c) Associate of ideas.

a) Offer right things from the beginning.

b) Offer one thing at a time, by considering the limit of attention.

c) Praise learning successes.

d) Encourage independent endeavor.

Let him repeatedly apply and practice.

Remove obstacles for repeated practice.

Use all possible means to accomplishing the intended purpose.

The principles of learning stated above are from the standpoint of "With a view to proving fruitful results on the side of learners" from the aspect of the "Leaner-centered" method of assistance.

2.2 Establish an effective learning environment

Whatever teaching method you choose there exist a host of factors which will affect the learning of your students. Some of these factors will be within your power of control, others not. Some will assist your students to leam others will detract from their learning. In some cases it is fairly easy to predict what the effect of such factors will be but the effects of others will depend very much on the circumstances.

This, then gives us three classes of factor

+ (generally has a positive influence on students) (generally has a negative influence on students) ? (cannot say without further information)

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On the next page we have listed - in alphabetical order - thirty factors and we would like you to place the appropriate class

symbol (+, - Or ?) against each, according to how you see them influencing students.

Since there will not be the space on the next page to repeat these instructions, we have given you a reminder of the task by placing the first three factors in a class.

Checking this is like seeing if you've won a fortune on the pools-except that the enrichment you may get will not (directly) be financial!

1. Absence of students

2. Active involvement of students

3. Audio Visual aids

4. Clear aims and objectives

5. Content organisation made clear

6. Content relevance

7. Crammed syllabus/list of objectives

8. Criticism of students

9. Distraction

10. Feedback to students

11. Handouts

12. High motivation of students

13. Illustrative examples, models and analogies

14. Interesting/enthusiastic presentation

15. Knowledge of study skills

16. Lecturer - student interaction

17. Lengthy expositions

18. Note-taking

19. Personal characteristics

20. Physical environment

21. Punishment

22. Praise

23. Regular testing

24. Repetition

25. Social structure of student group

26. Student passivity

27. Summaries

28. Time of day

29. Use of appropriate language and symbols

30. Varying the teaching activity

WHAT TO DO IN SUCH OCCASION?

1. When participants show lack of enthusiasm

a) Lead them with patience.

b) Offer topics in which all participants are interested.

c) Awaken their interests and concerns by quoting realistic examples and illustrations.

d) Create discussion by asking question to anyone who can respond to it, so that the rest of participants may eventually take active part.

e) Pose questions, which can be replied by "Yes" or "No" first and then, proceed to the questions asking "Why"?

f) Throw questions that may appeal to their curiosity or give them incentives.

2. When there is a shy participant

a) Pose a question that he can answer.

b) Encourage him with praise if he offers fine opinion.

c) Take up his opinion by all means, even if it is not a fine one.

3. When discussion goes off the point

a) Ask how the irrelevant point is related to the subject matter under discussion.

b) Connect the rambling speech of a participant with the subject matter under discussion and lead him to resume the proper line of argument.

c) Offer a new topic closely related to the subject matter.

d) Propose to quit debating the stray subject, and obtain participant's consent.

e) Sum up the contents that have been discussed and settle the matter there.

f) Allow debate on the stray topic for some time.

4. When dissension is caused

a) Leave it as it is for some time.

b) Control it by turning eyes upon the party.

c) Stand up so that the participants will pay attention to the complicated affair.

d) Use a blackboard and show the central point of discussion, or rearrange the contents of speech so far made.

e) Take a question to an influence person among the participants so that he will mediate in the dispute.

f) Throw a question so that the problem will be discussed from another point of view.

g) Lead the situation skillfully and with a firm attitude so that it will resume orderly debate.

h) Declare a resume depending on the situation.

5. When a quarrel starts among the participants

a) Leader tries to settle it.

b) Leave the party for a while so that they may get cooled down.

c) Ask other participants for their opinions.

d) If the contents of the quarrel are serviceable for discussing the subject matter under debate, write them on the blackboard so that all the participants will deliberate these

6. When there is a participants revolting against the Leader

a) Control him by letting some other participants to talk.

b) Try to listen fully to what he intends to say.

c) Leader should never try to oppress this participant.

7. When there is a participant who tries to not approve the Leader's conclusion

a) Lead the discussion carefully so that a conclusion with the same meaning will be obtained from the participant even if his expression may differ.

b) Let him understand the opinions of the rest of participants by making use of relay questions.

c) Count the number of supporters and opponents.

8. When there is a habitual opponent

a) Try to let him consider from the other person's standpoint as much as possible.

b) Take his opposing intention into consideration.

c) Restate his view so that the other participants will receive it.

d) Let him understand the opinions of the rest of participants by using relay questions.

e) Let him speak up what he wants to say, by posing him a throwback question.

9. When a superior is present in the meeting

a) Handle him in the same way as the other participants.

b) Do not drive the other participants to awkward spots in front of him.

c) Request the superior in advance not to state anything conclusive.

d) Request the superior not to take any note of the participants' opinions so that they may not get shrunk nor speak up for the competition of marks.

10. When participants become restless or unenthusiastic in discussion due to causes unrelated to the meeting

a) Take action to remove the cause.

b) Use the cause tactfully to lead the meeting in a way so that the atmosphere of debate will improve.

c) Declare a recess, or change the schedule of meeting so that it is held some other day.

Dimensions of Learning

	From	**Toward**
1.	Dependence •	► Autonomy
2.	Passivity •	► Activity
3.	Subjectivity •	► Objectivity
4.	Ignorance •	► Enlightenment
5.	Small abilities •	► Large abilities
6.	Few responsibilities •	► Many Responsibilities
7.	Narrow interests •	——► Broad Interests
8.	Selfishness •	► Altruism
9.	Self-rejection •	► Self-acceptance
10.	Amorphous self-identity •	——► Integrated self-identity
11.	Focus on particulars •	► Focus on principles
12.	Superficial concerns •	► Deep concerns
13.	Imitation •	-—► Originality
14.	Need for certainty •	——►Tolerance for ambiguity
15.	Impulsiveness •	► Rationality

Principles of learning

> The learner must be motivated to leam.

> The learning situation should take account of individual differences in the speed of learning, depth of learning amount learned and the sequences in which responses are learned.

> What is learned should not conflict with present views or attitudes - these should be unlearned first. New learning should be built on the learner's present knowledge and attitudes.

> What is learned should be reinforced.

> The learning situation should give opportunities for practice and allow for plateau.

> The learner should be an active participant trying out new responses rather than just listening.

> The material to be learned should be divided into learnable units and be given in an appropriately paced sequence.

> Coaching or guidance should be given in the development of new responses.

> What is learned should be capable of being successfully generalised from the training situation to the work situation and of being appropriately used.

> What has been learned should be integrated into other activities and other learning.

> The material to be learned should be presented in a way that will emphasize the characteristics to be learned and do so in a way which is as meaningful as possible to the learner.

Chapter-3

Training Aids

3.1 Demonstrate the use of range of teaching aids

Research and experience have shown that audio-visual techniques can significantly increase and reinforce learning. Not only do they add interest to a presentation, but by engaging more than one of the senses, they also facilitate listening and remembering.2 In the teaching of abstract concepts or unfamiliar subjects, visualisation can be essential to understanding.

Visual aids will not automatically increase teaching effectiveness however; they must be carefully designed to support a lesson and to suit a particular audience and situation. The planning and preparation of such aids requires time, thought and imagination, in:

selecting the points to be visualised; translating ideas into suitably visual forms; choosing the most appropriate medium; designing layout and choosing colour; making the aid;

evaluating its effectiveness and revising for future use.

A certain willingness to experiment and ability to improvise are especially important where aids must be hand made out of a limited budget and with a restricted set of materials.

What follows is a review of some of the basic visual devices, their strengths and weaknesses, and some tips on designing and handling visual displays. The comments are intended to be suggestive rather than comprehensive, as ideas for usage will come with practice.

DECIDING WHICH DEVICE TO USE

Proper use of visual aids requires a considerable investment of time and thought. It is better not to use any device unless you are prepared to give the time and attention that is required in designing your talk arid the visuals which are to be used, and in adequate rehearsal and other preparation required to use the visuals properly.

No one device is the best answer to all visual aid situations. In choosing the best device for use in a particular presentation, the following are among the factors which must be considered:

Circumstances

To whom is the presentation to be made (one man, a class, a convention)? Where is the talk to be held (man's office, classroom, auditorium)? Tnis will affect the size of the display.

Is it to be given once or many times? Most one-time presentations do not justify the time and cost of preparing elaborate visuals, but o^ce in a while ar.y expense is justified.

Will it be given in your own office building or in another location? That is, will you have to transport any of the display equipment and will you need people to help with this? Do you have portable equipment? Will electric power be available in the room chosen?

1 Adapted from Visual Aids and Classroom Facilities by R.E. Reynolds, Man.Dev./Briefing Courses/3.

2- It is said that people remember 20 per cent of what is heard; 30 per cent of what is seen, and 50 per cent of what is seen and heard at the same time. (See also the demonstration on the flannel board in the beginning of the film "Visual Aids".)

Cannot modify formal visuals in response to new situations and in answering questions.

Cannot quickly modify portions of handwritten visuals in answering questions.

■ **Handling tips:**

Have visuals (transparencies) in exact sequence.

Rehearse the use of special effect visuals such as slides, flip-offs and flip-ons. For flip-offs, make sure that a tab is raised for you to take in your fingers.

Fasten or mark guides on the projector ao that visual frames can quickly be placed in exactly the proper position over the ground glass.

Top of projection screen must be tilted toward audience to eliminate keystone image.

Switch off the projector when not in use.

Test felt pens to make sure the ink does not evaporate.

DESIGNING THE VISUALS

A visual —aided talk is a composite thing. It is not just a talk with added visuals. Many talks must be modified and simplified in order to make proper use of visuals. Quite apart from the problem of designing visuals, this result is a good thing because many talks are too complex or are organised in a con¬fusing way, and the process of developing visuals v/ill improve many talks.

When you have a first GOOD draft (after perhaps three or four rewritings) you will probably be ready to start designing visuals. Go through your talk sentence by sentence, idea by idea, and decide what needs to be visualised and what can be visualised, and then start thinking of ways and maans. The things that can be visualised include ideas, concepts, relationships, processes. Start with the belief that ANYTHING can be translated into visuals. Visuals can be used:

- tc bring out a series of facts and the conclusion to which they lead;
- to bring out points which need to be emphasised;

to attract attention through unusual devices or colour;

- to present complex processes (industrial, mathematical, chemical);

to introduce new and unfamiliar objects and concepts;

to show relationships which exist among facts or objects;

to show in outline form the growth of a complex idea, or the treatment of a subject so as -to enable people to see readily which are the major and which are the subordinate points.

Methodology

Use pictures wherever possible - supplemented as necessary by words and figures.

Use words (singly or in phrases) as a second choice.

Use the image area as a graph: to present statistics and statistical pro-cesses; to present mathematics.

Use the image area as a form: to present accounting reports, statistical tabulations, and similar matters.

Use unusual devices: lines, arrows, elastic, movable ribbons, multiple- layer images.

Use colour as often as possible (see section below on uses of colour) for coding, stressing key facts, etc.

Use complex images as necessary.

Use your imagination! Complex Images

It ia often necessary during a talk to have an image area filled with a very complex set of visuals. It is a fatal error, however, to present such a result to an audience all at once. Build it up item by item. An audience can readily absorb one idea at a time and be quite ready to accept a complicated final picture

With what types of aids is the speaker already familiar? Making due allowance for experimentation, ail instructor or lecturer will make a more effective pre¬sentation using visuals with which he feels comfortable.

Subject

Is any particular effect required in the presentation, such as realism? surprise? shock?

Does the information demand a gradually built-up display? Does it have segments to be manipulated? The flannel board and magnetic boards offer more possibility of movement than the writing boards. It is easier to build up a display on the overhead projector than on the flip chart, etc.

Cost

Most of these devices cost considerable sums. The overhead projector and its screen are the most expensive; followed by the flannel board and magnetic board, which are roughly on a par. Flip charts are least expensive but procuring suit¬able pens may be difficult. The chalkboard, if one is available, requires no additional expenditure.

Availability

If you don't have it and can't get it you can't use it.

DEVICES AVAILABLE

Chalkboard

■Advantages:

Generally available and inexpensive - nothing to carry.

Requires no advance preparation of visuals (advisable, however, to carry your

ov.-n chalk and eraser). Especially helpful for such matters as demonstrations of the construction and use of mathematical and chemical equations, where much erasing occurs.

■ **Disadvantages**:

Requires speaker to turn away from audience.

Encourages speaker to talk to board and forget hia audience. Can be seen only a limited distance. Dusty and messy to hands and clothing. Dramatic, unusual effects not possible.

■ **Handling tips:**

Write for the audience, not for yourself. Use print or block capitals for extra clarity.

Keep the work neat and tidy; cut down to essentials; don't overcrowd. Clean the board v/hen the work is no longer relevant. Use coloured chalk for emphasis.

Flip Chart or Newsprint Pad m Advantage=:

Can be used as blackboard, or as previously prepared sheets.

Especially suitable for one-time briefings which do not justify much time and

money in preparation of more elaborate visuals. Good for telling consecutive story with a number of points which need to be

emphasised in outline fashion. Quick. Avoids mess and the time required to erase.

If sheets are just flipped over and not torn off, material is available for

recapitulation and review. Easily portable models are available commercially.

H Disadvantages: Pages have limited space.

Presents a transportation problem, though not a great one, to speakers who are

travelling to place of talk. Dramatic effects greatly limited.

Prepared drawings must be stored flat to avoid paper curling. ■ Handling tips:

Conceal the top of the chart with one or more blank sheets until you are ready for it.

Roll sheets smoothly over the top so as to avoid a crinkle which will become increasingly annoying as more and more sheets are turned over. Stand zo one side when displaying and turning the chart. When the chart is merely a summary of the main points the lecturer is to nake, it ia a good idea to reveal them one at a time. The "strip-tease" chart permits this.

Each heading is covered by a strip of white paper which is attached by paper clips or drawing pins and removed at the appropriate moment. The process creates a certain amount of auspense and added attention. It can also be applied to diagrams and drawings whenever it seems desirable to concentrate attention on one stage at a time. When finished with the talk, roll up the pages "topside out" so that, when you next give the talk, the bottoms of the sheets will not curl out toward the audience and possibly conceal the bottom line of your chart or words. If it is necessary to refer to special pages, nark them in some way such as

folded corners, paper clips, etc. Keep extra felt pens on hand as they tend to dry out. Drawings can be prepared "invisibly" in light yellow pencil.

Plastic Writing Board or Whyteboard

Advantages:

Permits wide use of colour.

Less messy than chalk; writing smooth, clean and silent. Bright, clean and pleasant to look at.

Electrostatic quality permits adhesion of thin papers and plastics for displays. Light surface can also be used as a projection screen.

■ **Disadvantages:**

Expensive and not easily available in some regions.

Special pens difficult to obtain; if wrong pens are used (which happens fairly

readily), stains are difficult to remove. Some boards scratch easily.

Handling tips:

See under "Chalkboard" for writing tips. Cut-outs of coloured plastic will also adhere.

Magnetic Board B Advantages:

Permits combination use of prepared visuals and as a blackboard.

Good for shaped props (often used by courts trying traffic offences to show loca¬tion of streets, automobiles or pedestrians, lights). Can also be used as a pin-up board, with magnets serving as drawing pins.

Disadvantages:

Board is very heavy, a factor if portability ia essential.

Board is expensive, and unless it is needed to display heavy items or to be used as blackboard, it has nothing to offer that cannot be offered by a flannel board.

Suitable, cheap magnets sometimes hard to find. B Handling tip°:

A dramatic effect can be achieved by lightly "throwing" the display items onto the board, making a sharp clicking sound. Such a gesture needs to be rehearsed. Permanent outlines for recurring talks can be painted on the board.

Flannel Board

The essential parts of any flannel board visual are a taper surface seen by the audience and flocked material on the aide away from the audience. It is this flocked material which enables the visual to stay in place when it is placed on a piece of flannel. Sandpaper, blotting paper, felt or flannel can be used in place of flock; foam rubber aponge, light balaa wood and nylon hook-and-loop material (Velcro, Teazlegraph) will also adhere.

This combination of oualitiea (paper surface plus flocked back) can be obtained in three waya: (l) by purchasing paper commercially prepared whichhaa a flocked back; (2) by using ordinary paper and purc.haaing commercidly

prepared flock with an adhesive back which can be placed on the back of the other paper, or (3) by gluing on aandpaper or flannel as backing to ordinary paper. Photo¬graphs, poatera. illuatrations from magazines, may all be mounted in the manner described in (3).

■ **Advantages:**

Can be prepared beforehand and reused.

Permits quick back and forth adjustment of bits of the talk in preparation of

revised talk for different audiences, and in answering questions during a talk. Permits build-up of logical sequence. Colourful.

Can use variety of kinds of visuals: words and phrases, lines, mathematical/

chemical symbols; outlines, photographs or drawings of physical objects. Permits dramatic effects (several-level visuals), thus adding the attention-

generating factor of movement. Do-it-yourself models easy to construct.

Disadvantages:

Unlike other boards, cannot be used as chalkboard for writing in front of class. Visuals must all be prepared ahead of time.

Handling tips:

Plan in advance the exact appearance of the board at any one time, so as to determine where to place each visual on the board. Positions can be marked in light chalk. Arrange the cut-outs in order before you begin.

Place the visuals exactly where you want them. Most visuals should be set on a

horizontal plane. This takes some rehearsing. Place the pieces on the board with a gentle downward movement so that the fibres

engage. Erush the flannel occasionally to clean and roughen it. Keep cut-outs flat in storage.

Overhead Projector

This machine, which comes in models of various weights, projects large-size transparent images onto a cinema screen under normal daylight conditions. Trans¬parencies may be conveniently produced by drawing or writing directly onto trans¬parent acetate sheets (up to 25 cm square) with grease pencils or felt-tip pens of a type suitable for working on glass or plastic surfaces. They may also be pre¬pared using a photocopy process, in which case the drawing is prepared on an ordinary sheet of white paper. A piece of sensitised plastic is placed on top of the paper and the two are run through the Thermofax Duplicator. This produces a black on white visual. If a coloured image is desired, coloured adhesive film may be added, or a coloured pen may be rubbed lightly over the image area. When photocopying diagrams or excerpts from books in this manner, remember that type¬script will generally be too small for the audience to read, even, when projected.

Cardboard frames are available as permanent mounts for the plastic sheets. They also serve as a base on which to attach overlay sheets and tabs to be used in flip-off and flip-on displays', as illustrated in Exhibit A.

Advantages:

Speaker can always face his audience.

Speaker can work and write sitting down. He may also use more elaborate notes

without it being so noticeable. Permits use of a number of methods of visual presentation: prepared visuals

'from elaborate, professionally-made, multi-colour, multi-effect to simple home¬made visuals), and use of a roll of plastic to use as - r blackboard"- in writing your own visuals in front of the class. Easier to write on horizontal surface.

Permits elaborate effects: slides, flip-offs, and drop-downs. Permits use of colour. Is clean and quick.

Can be used without complete darkening of room - permits note-taking. B

Disadvantages:

Some types of writing pens smudge easily or evaporate on plastic.Requires heavy equipment: a projector and screen, and a source of electric power. (Always a problem when portability is a factor and often a problem even in moving from room to room in speaker's home building. Note that porfeble pro¬jectors and screens are available - but always carry a very long extension cord and an extra lamp.) Light from the projection, base can be hard on the speaker's eyes. Device projects a keystone-shaped image unless top of screen-can be tilted toward audience.

Sometimes difficult to place screen and projector with respect to windows, source of power, and" other equipment already in the room so as to permit audience to see and speaker to talk.

Thus: never present a blackboard full, or a flannelboard full of mathe¬matical equations. Put on one at a time, perhaps even broken into segments.

Thus: never present a complex industrial process aa a completed matter. Show one piece of equipment at a time (or a portion thereof) and keep adding pieces or portions. Different materials flowing through pipes can be shown by different coloured lines, added one at a time.

Thus: never present a statistical graph all filled in. Show first the graph and explain the co-ordinates used. Then add the figures or computed points a few at a time.

A flannel board is an excellent device for presenting complex final results a bit at a time, and is particularly suitable for use as a chart or graph.

The overhead projector is even more flexible for presenting complex results through three devices": (1) slides; (2) flip-offs; and (3) drop-ons. A slide

conceals all but that portion which is to be introduced and can be pulled out bit by bit as new portions of the image are to be revealed. A "flip-off" can be used to accomplish the same result, especially for complex visuals in which odd- shaped portions can be revealed. A "drop-on" is a visual in which items are added to a basic foundation. For example, an accounting report can be presented in this manner, with the accounting form as the basic visual. The entries in the columns or lines of the form can be "dropped-on" as needed. Each part of the drop-on is on a separate sheet of plastic which is fastened to the top, bottom, or one side of the visual in the proper place so that, when the drop-on is flipped over on its hinge and lies on top of the basic visual, the image of the drop-on is in proper "register". The number of drop-ons for a particular visual is limited only by the transparency of the plastic material: i.e. the addition of too many sheets of plastic transforms a transparent condition to an opaque one. Many kinds of images can be presented through the drop-on tech¬nique: charts, reports, mathematics, mechanical and chemical industrial processes. These various arrangements are shown in Exhibit A.

Use of Colour

Colour can increase the effectiveness of almost any display by drawing attention to key points, coding (thus reducing to simpler terms) the functions represented in a complex diagram , improving visibility.

Contrast is best: black on white, white on black, black on yellow, yellow on black. Avoid such combinations as light green or dark green.

Orange is a wonderful attention-getter, but people do not like it as a colour. One investigator has found that colours rank in this order in terms of attention: orange, red, blue, black, green, yellow, violet, grey. And that colour preferences were in this order: blue, red, green, violet, orange, yellow. Taking the two together indicates that red and blue are the best two colours. Apart from black on white, and white on black, the best combinations are dark blue on white, brown on white, and green on white. Other acceptable combina¬tions are cream on reddish-brown, light blue on dark green, yellow-orange on grey, orange on black. .

Use of Symbols

Where ideas or objects can be symbolised rather than represented in words or in complex drawings, and providing the meaning of the symbol is clear, under¬standing is more rapid and the display more concise and bold. Consider the following symbols for persons:

Working out effective symbols takes time and imagination, but the end result can be well worth the effort. Here are a few examples:

Simple, Bold and Clear

All visual aids, whether charts, graphs, models or diagrams,, should aim to be:

Simple. Key phrases and words', full sentences are unnecessary and crowd the display. Uncrowded layout of displays. Simple design lines and shapes. A few well-chosen colours. Complexity can be distracting if not well handled.

Bold. Large enough to be easily seen by the audience for whom it is intended. Sections of the display show up clearly if colour, lettering style and size, and layout have been properly selected.

Clear. Is the display easy to understand? Does it reflect exactly the message of the lesson? Is it logically arranged, well-spaced and uncrowded? Do the main points stand out?

Lettering

Pre-cut letters in different types and different sizes can be procured commercially. High quality lettering can be done by yourself or by a graphic arts draftsman with the aid of the lettering guides made by

commercial firms. Lettering can also be done freehand by the use of a felt-tipped pen (Magic Marker and similar products) through the use of a standard alphabet.

If the person doing lettering will look at his letters from a distance of 10, 20, or 30 feet he will quickly realise the need for LARGE letters WIDELY SPACED. Letters such as a, c, e, u, o should not be less than 2 cm. tall, and preferably

should be 3 cm. Letters such as b, d, f, j, p, q should not be less than 3 cm. and preferably 4. The thickness of the line used for letters must be increased with the size of letter used. It cannot be emphasised too strongly that major errors in lettering are to make letters too small, and to crowd them too close together. Persons doing lettering think that because they can see the letters clearly, an audience will too.

Before doing any hand lettering, rule every line of letters on the visual lightly in pencil so as to guide your eye. Only in this way will your letters be sufficiently uniform in size, and the lines straight ... and plan ahead so that you don't run out of paper before your words are all on the visual. In making visuals using words, a useful rule is "the shorter the better" (even as short as one word).

3.2 Select the appropriate teaching aids

Whenever possible visit "the room where the talk is to he given several days in advance- If you cannot visit it, ask someone who knows the room. Inspect:

sight lines. Decide how to place the flip board, the flannel board, or the over¬head projector and its screen with respect to the seats so as to avoid bad sight line s which interfere with the sight of the visuals by members of the audience;

seats. Decide whether it is possible or necessary to arrange the seats so as to improve sight lines or avoid glare from windows;

source of electricity. Overhead projectors and motion picture machines require electricity. Determine that it is available, of the correct type (AC or DC) and of the proper voltage. Ascertain how long an extension cord will be needed to reach from the source of electricity to the machine. Ascertain whether elec¬tricity will continue to be available when the room lights are turned off - that turning off the room lights does not also turn off the projector.

Go to the room early on the day of the talk to:

arrange the room (if you have the time or authority to do so). Place the seats so that everyone can see. If the seats are in rows and are moveable, try to stagger the seats in alternate rows;

place your equipment. Take with you an extra long extension Cord and extra lamp for the projector if you plan to use such equipment. Take lalong a piece of chalk and an eraser if you plan to use the blackboard. Be sure you have felt pens (or other writing devices) if you plan to use the flip chart. Place and test all the equipment. Place the overhead projector in exact alignment with the screen and test the focus and size of the image, and the degree the screen must be tilted to avoid a "keystone" effect (an image wider at the top than at the bottom).

arrange all your visuals and other props so that they are as inconspicuous as possible but readily available to you. Be sure that they are in proper sequence.

An equipment checklist can be useful in completing your preparation. An example appears as Handout I for this session; see also a "Course and Conference Planning Sheet" annexed to Handout I of Session 27.

EQUIPMENT CHECKLIST FORJISUAL AID PRESENTATIONS

(For Adaptation to Individual Needs)

When considering the use of visual aids equipment, ask yourself the following questions:

What equipment do I need?

- Where is the equipment?
- When and where should it be put in the conference room?
- Who will arrange to put it in the conference room at the right time?

CHALKBOARD - white chalk, coloured chalk, eraser or sponge, pointer.

Is the board large enough for the purpose? Is the board clean?

- Are the chalk and eraser at hand? Is the erasing sponge wet?

Is there a ruler or other pointer available? FLIP CHART - tripod or stand, paper pads, felt pens.

- Have prepared pages been securely attached to the pad?
- Are writing pens at hand? In several different colours?
- Are pens full of ink (and not dry)? Is the stand stable?

Have special pages to which you must refer been marked With a clip or folded corner?

FLANNEL BOARD - on tripod or wall, with prepared appliques.

Is the board slanted and positioned for easy viewing? Is the stand stable?

Does the flannel surface need to be brushed up?

- Have you planned the arrangement of your appliques?
- Are the appliques arranged in the order they are needed?
- Do all pieces stick on?
- Are letters and figures clearly readable?

OVERHEAD PROJECTOR - roll of plastic, prepared transparencies, screen, grease

pencils of felt pens, erasing cloth, alcohol for erasing if necessary, extra bulb.

- Where are the electrical outlets ? Is an extension cord needed?

Has the projector beer, prefocused centred on the screen?

Has the screen bean tilted to avoid a trapezoidal projection image?

Are the prepared transparencies arranged in order of use?

Do the transparencies lie flat on the projector?

Is there a supply of blank plastic sheets at hand?

Are the pens full of ink?

Do the pens write smoothly and darkly, without evaporation?

FILM PROJECTOR - SLIDE PROJECTOR - TAPE RECORDER - screen, extra bulb, extension

cord, film reels and slides, tapes.

Has someone been asked to set up and run the projector at the proper time? Have preparations been made for darkening the room?

- Where are the electrical outlets?

Are the chairs well placed for viewing?

Has the lens been focused on the screen?

Is the sound control adjusted for the size of the room?

Is the machine ready to run when it is turned on? Must it warm up first? Is the loudspeaker, or the recording microphone, well placed?

LENS HEAD

PLATEN

STOP SCREW

FOCUS OB

FOCUS KNOB TENSION SCREW

MOUNTING SCREW

ACCESSORY MOUNTING HOLES

PLATEN LOCK LEVER

LAMP CHANGE LEVER

ON-OFF SWITCH

safety systems

The projector is equipped with a safety interlock and a heat-sensitive thermal fuse. To unlock the Platen to lift it, the ON-OFF Switch must be in the OFF position.

in the event of cooiing obstruction, a thermal fuse is used to prevent excessive temperature rise and subsequent damage to the projector. To prevent unnecessary fuse replacement, be sure that the projector fan is operating properly and that the air openings are not blocked.

PROJECTION DISTANCE (FEET)

* Avoid transparencies that are too busy. A full printed page of material is fine in book torn, but contains entirely too much material for the viewer to grasp easily when projected. Use as few words as possible to put the points across.

■ Have the lettering large enough for legibility without strain. If material must be typed, use a billing typewriter or one with standard capital letters.

■ Bright contrasting colors make transparencies interesting and stimulating. Colored gels, wax pencils, colored ink pens, etc., may be used for this purpose.

■ Avoid the use of fine detail in the corners or at the edges of the transparency. Keep the main data centered for maximum clarity.

■ Use overlays to show data changes or the "building" of segments into an overall picture.

■ If you need to cover up portions of the transparency to reveal only certain portions at a time, use a piece of heavy white paper UNDER the original. Move the paper occluder as needed to reveal the desired parts of the transparency at the proper time. Be sure to use WHITE paper instead of black to prevent unnecessary heat build-up.

■ Do not cover the transparency from the top or place any opaque materials on top of it with the lamp on. Because projection lamps give off heat, the transmitted light may be reflected back with a white material but must not be absorbed or stopped by dark material.

■ The use of regular photographic film (not heat-developed film) should not be attempted as these materials tend to absorb an excessive amount of heat due to silver content. Transparency films are designed especially for overhead projecto use and should be the only type employed.

■ Your audio-visual dealer is an expert on overhead projector transparency materials and techniques. He'll be glad to help.

Chapter-4

Using teaching activities effectively

4.1 Demonstrate a range of teaching activities appropriate to trainee needs

A technique that encourages the generation of ideas without evaluation. Can also be used in conjunction with problem- solving and various forms of creativity. Emphasis is on ideas, not solutions, provided in a freewheeling and non-judgemental atmosphere. Related terms: creative thinking, think tank, synectics.

brainstorming

An oral or written account of an event, incident or situation used to develop critical thinking skills and gain new insights into concepts and issues. Related terms: action maze; in-basket; incident process; role-play.

Caso Study
A one-to-one method characterized by intensive learning through demonstration and practice involving immediate feedback and correction. Related term: interactive modelling.

computer-assistod

A highly structured. self-paced strategy. A series of learning segments, is presented by a computer, with the learner asked to respond. The computer electronically processes the responses and provides immediate feedback to the learner. Related term: programmed instruction.

conference A group of people discussing a common problem or need. Not all conferences focus on learning objectives. Generally, a variety of strategies are used during a conference/Related terms: symposium; workshop.

confrontation, soarch and cope (CSC)

A three-part experience in which the learner is faced with a problem or a need (confrontation) and is then responsible for seeking out a solution (search) and applying the solution to the problem (cope). Related term: laboratory work.

contract

A written document developed by the learner and reviewed by the instructor. Contains the objectives, methods of reaching them and evaluation. Although time-consuming to implement, this method can result in improved learning for each student who develops a learning contract. Contracts can be renegotiated during the course of learning.. Related terms: confrontation, search and cope; home study; peer-mediated learning.

demonstration

A presentation that shows how to perform an act or a procedure. Can be done live or through a prepared videocassette. Should be brief, allowing for interaction with the learner, and can then proceed to the next point. Related terms: observation, behaviour modelling; mock-up.

diagnosis, prescription and treatment

A method whereby the learner's needs and weaknesses are uncovered by some means (diagnosis); a course of action or plan of study is developed to meet the need (prescription) and the learner follows the prescribed treatment in order to correct the diagnosed weakness (treatment). Related terms: confrontation, search and cope; peer-mediated learning.

discussion

A relatively unstructured exchange of ideas among members of a group on a topic of mutual interest. Related terms: dyad; dialogue.

drill

Repetitive, structured practice - which can be written oral, or motor-to reinforce previous learning. Related term: exercise.

dyad

Another name for a pair, such as when two participants work together or talk together. The dyad can remain in the room or move to another convenient place. Usually, some form of feedback is required when using a dyad. Related terms: discussion; peer-mediated learning.

exercise

A structured learning experience, usually involving the use of some instrumentation or guide sheets. May be used to introduce a new topic or for skill practice, review or evaluation. Related terms: drill; game; workbook.

feedback mechanism

A response system (mechanical or non-mechanical) that provides feedback on learning to both facilitator and learner. Related terms: computer-assisted instruction; programmed instruction.

fish-bowl

A discussion group that is divided in two - the inner circle, which discusses, and an outer group, which observes. A member of the outer group may "tap in" or exchange places with a member of the inner group. Related terms: discussion; laboratory.

game

An activity characterized by structured competition to provide the opportunity to try out previous learning. Related terms: exercise; simulation.

group work

A method whereby a class is divided into small units, generally of no more than six trainees. The groups meet simultaneously, to react to a topic or charge

given to them. Emphasis is on ideas, if the time is limited to ten minutes or less. Provision must be made for feedback. Related terms: discussion group; work group; workshop.

hand-out

Printed materials distributed as part of a learning experience. They should be made available at the appropriate time before, during or after the session. An ample supply is provided so that each participant has an individual copy. Related term: bibliography.

home study

A learning activity that is largely self-directed, with facilitator- learner interaction accomplished by mail or visits. Related terms: correspondence course, distance learning.

in-basket

A simulated, reinforcing exercise in which the trainee responds to a collection of memos, directives and problems that force hirn or her to prioritize, make decisions, and handle the difficulties that might be faced on the job. Related terms: action maze; case study.

incident process

A variation of the case study in which the trainee is only given some basic data and must then probe the instructor further to obtain the additional data required to complete the assignment. The instructor must have carefully prepared data sheets that can immediately be made available to the learner when the appropriate question is. asked. Related terms: action maze; case study; exercise; game; simulation.

independent study

Approach in which the learner undertakes assigned readings or research on his or her own without special guidance or instructions.

interactive modelling

A means of learning new behaviour by observing model, or ideal, behaviour, trying the new behaviour and receiving feedback. The cycle is repeated until the new behaviour is learned. Sometimes called behaviour modelling. Related terms: demonstration; role-play.

interview

A strategy for using a resource person, who is asked questions; the learners listen to the response. The questions can be spontaneous or given to the resource person earlier to allow for preparation.

Job instruction training

A form of on-the-job training, characterized by supervisory responsibility for the training of new employees. Related terms: coaching; on-the-job training.

laboratory

An environment equipped for experimentation and testing by the learner. Can be used for a variety of objectives, including cognitive, affective, and psychomotor.

Lecture

A one-way presentation in which a speaker addresses trainees.Can be supplemented with other strategies. Is much maligned, since some lecturers do not know how to focus a strictly oral presentation so that it is a stimulating learning experience. Related term: interview.

listening groups

A method in which participants are divided into several groups,each of which is assigned the task of listening to and observing an assigned part of a speech, a demonstration panel and so on.

Mock up

A full-sized replica built accurately to scale, but not the real object. Related term: model.

Model
A physical item generally presented in something other than its usual form in order to facilitate learning. Can also be used to present ideas and show the flow of a series of actions. Is not the real thing but represents the real thing or idea. Related term: mock-up.

Modelling
A method whereby the participants, individually or as teams, represent decision-makers in an organization. They make the same kind of decisions they might make in a real-life situation, but the data and the environment are simulated. Modelling is usually done by means of a game. Generally, the game uses a model with a set of mathematical relationships built in. Games can be paper-and-pencil exercises or computerized. They usually closely approximate the real world, in that the data used by the trainees are real, but operate in a compressed time¬frame.

non-verbal learning
A learning experience that does not involve the use of anyspoken communication. Speech must be used to give instructions and process the learning after completion of the non-verbal experience, however. Related terms: exercise; laboratory.

peer-mediated
A method in which learners are grouped with their peers and facilitate each others' learning under the guidance of a group job instruction training leader, who provides them with specially prepared materials.

performance
A method in which learners practice, perform and apply, under controlled conditions and close supervision, the skills and knowledge that have previously been explained and demonstrated.

Practicum
A study programme that allows the learner to pursue a special project under the guidance of an instructor. Related term: tutorial.

Programmed Instruction

Subject-matter presented in a series of small, carefully graduated sequential steps, so that the student achieves mastery of the material presented and delivery is self-paced. Related terms: computer-assisted instruction; feedback mechanism.

Project

A specially designated task in which the participants work independently on an assignment, such as a term paper or a book review. Related term: role-play.

Reading assignment

Assigned readings in textbooks, manuals, periodicals, or other printed media, followed by a written report, class discussion or other positive activity.

Role-play

Interaction among two or more individuals on a given topic or situation. Often used to provide practice for trainees on previously presented material Has many variations, including multiple role-play and role reversal. Related terms: case study; interactive modelling; laboratory; simulation.

Seminar

A form of learning in which each learner in the group is expected to have attained a sufficient level of knowledge to participate actively. The instructor serves as a resource person, with the members of tha seminar being responsible fcr the interaction during the seminar. Related terms:

Sensitivity training

A method consisting not only of "training" but also of "education". It involves a group that is deprived of a leader, an agenda and norms. As the group struggles to fill those gaps, members exhibit behaviours that are then used as the basis for learning. Reiated term: laboratory.

simulation

A learning environment constructed to allow the learner to experience the desired performance without incurring the risk associated with the real-life situation. Related terms: game; role-play.

Structured or guided discussion

A method whereby questions prepared in advance are directed to students to guide their discussion along a preconceived path. The discussion is restricted within predetermined boundaries to ensure that the group stays on track.

Study guide

Document that provides an organized, progressive learning experience leading toward predetermined objectives. Useful for individual learning, although also suitable for use with groups. Related terms: hand-out; workbook.

Symposium

A series of related speeches by several persons qualified to speak with authority on different phases of the same topic or on closely related topics. Related terms: dialogue; interview.

Team building

A concept that uses various instructional strategies to promote effective group interaction. Related terms: exercise: laboratory; role-play.

textbook

A manual of instruction; a book containing a presentation of the principles of a subject used as a basis for instruction. Related term: reading assignment.

tutorial

Tailor-made sequences developed to help an individual engage in self-directed inquiry, with periodic consultation on his or her progress and problems. Related terms: contract; correspondence course.

Unstructured discussion

A learning experience in which a spontaneous discussion is controlled by the participants, who also provide the subject- matter expertise. In addition, participants provide the direction and effort toward reaching the desired goal.

Workbook

A book of questions or written exercises that provides space for the learner to write answers. Related terms: drill; exercise.

Work group

A group whose members work toward stated objectives and produce a tangible product. Related terms: discussion; laboratory.

workshop

A group learning experience designed to produce a product by fostering a high level of involvement among participants. Related terms: conference; seminar.

4.2 Orient teaching activities to context and trainee needs

A further consideration to be taken into account when choosing a range of teaching methods is the number of students that there are in a particular class. Some methods are more applicable to a group size of 1, whilst others are more applicable to groups of 100 or more. The size of group is a matter of individual choice and is likely to be dictated by the constraints of a particular education system. The author has chosen four groups, ie.

a) 1

b) 2-20

c) 21 - 40

d) > 40

The classification of methods within these groups then becomes :

Group (Class) Size Applied Methods

a) N = 1 Programmed Instruction (This can be administered to any number of students). Tutorials

b) N = 2 - 20 Tutorials Demonstration Case Study Discussion

Laboratory TeachingAVorkshop

c) N = 21 - 40 Demonstration)

Lecture) Classroom Teaching

1

d) N > 40

CHOICE OF TEACHING METHOD DUE TO TYPE OF STUDENT

It is wrong to restrict the choice of method because a class is, say, of first year students and was thought that they would not benefit from exposure to a particular method. For instance, discussion is often not used as a teaching method with first year students because'it is thought that they would not be sufficiently mature to be able to benefit. However, it may well be that the emphasis or particular methods might be more appropriate for first year than for final year.

In general, students leaving secondary education are familiar with teacher centred methods but unfamiliar with student centred methods. In this case they need gradual introducing to the new and unfamiliar methods that are thought to be appropriate to the aims of the technician course. If there were to be a preponderance of new methods in the first year of the course like, for

example, student centred methods of programmed learning and project work, there is a likelihood that the students would not gain the maximum benefit. If however, they are minimally introduced in the first year of the course and are used with increasing regularity throughout subsequent years they will learn how to use the methods, gain benefit from them and more of the aims of the course are likely to be covered.

For these reasons it might be advantageous to have an emphasis on familiar methods with a small amount of new methods for first year students, then gradually increase the range of methods throughout the period of the programme.

CHOICE OF TEACHING METHODS

Unit 4 has highlighted four criteria which can be used for the choice of methods to be used for the teaching of a particular subject. These criteria are:

a) variety of both teacher and student activity

b) type of objective

c) size of class

d) type of student

Criteria

Lecture

Programme Learning

Self-Study Tutorial

Group Project Work

When choosing methods for a particular subject, all of the above criteria will have to be considered at the same time. For instance, let us assume that we are to choose a range of methods for teaching mathematics to a class of 24 first year technician students. Our thoughts might run:

Possible Method(s)

The subject content is mainly cognitive with the majority of objectives at the understanding level.

The subject of mathematics requires plenty of practice.

For variety of activity there is a possibility for some group work.

The students are in their first year of technician education.

Emphasis on familiar and teacher-centred methods, ie. lecture followed by individual assignment

These are only suggestive and not prescriptive.

In this manner, the choice of methods has taken into consideration the criteria that have been discussed in

DEMONSTRATION METHOD

Definition

Demonstration can be defined as a combination of verbal explanation coupled with a live display using apparatus for presenting important facts, ideas, or processes. It can be considered to be an audio-visual explanation.

There are two main types of demonstration, those for demonstrating skills and those demonstrating concepts or principles. Demonstrations may be given to a whole class, a small group or to an individual student.

DEMONSTRATING SKILLS

Definition

A skill may be defined as knowledge of the methods of accomplishing a manual task and the ability to use that knowledge effectively in performing it with the desired speed and accuracy.

There are basic steps:

1. Preparation: Preparing students for the lesson and motivating them to watch, look and learn.

2. Presentation: Showing students the sequence of steps and exploring the key points that make the operation a success.

3. Initial Practice: Students practise skills under supervision.

4. Follow-up: Further practice and evaluation.

Preparing for Demonstration

1. Check objectives for lesson to ensure that there is a skill to be learned.

2. Decide exactly what is to be demonstrated.

3. Decide what information is needed by students before the demonstration starts

4. Break down a skill into steps which can be easily demonstrated.

5. Prepare lesson plan showing each step in sequence. Note key points (which are things to remember to do or say) and formulate questions.

6. Arrange tools, materials and other supplies. Partially completed items may reduce demonstration time.

7. Arrange physical setting. Each student must be able to see and hear. Position group to see from operator's point-of view as far as possible. Consider students' safety (safety glasses?) and comfort. Arrange seating if possible. Extra lighting or a fan may help.

8. Perform skill to check equipment. Presentation

1. Create interest. Show relevance of skill to students' progress.

2. Using the same equipment that student will use, demonstrate complete skill at normal speed.

3. Repeat demonstration slowly. Stress key points before each is performed. Use as few words as possible to give precise instructions for instance, sequence and safety measures that must be known.

4. Do not show several methods. Do not show how not to do it.

5. Question students to ensure their understanding and get them to think through each step.

6. Summarise main points.

7. Have a student repeat operation while you tell what is occuiring

8. Another student may then repeat operation telling what is occurring. This provides immediate feedback on the effectiveness of the demonstration.

Initial Practice

1. Students should then be allowed to practise skills on their own, and then with you checking to see they are doing it the way you demonstrated.

Follow-up

1. Further practice may be needed to increase students' competence.

2. Evaluate students' work.

DEMONSTRATION OF A CONCEPT OR PRINCIPLE

Definition

Concept

Concrete Concepts

HANDOUT

Vertical Integration course for Trainers

Abstract Concepts

Principles (or Laws)

We have previously seen how students learn concepts and principles when teachers provide the required learning experiences. One of these learning experiences is the demonstration.

A concept is an idea existing only in one's mind, but associated with an experience. Every concept has something to which it refers, called the referent (eg. the concept of a chair is the set of general features, such as a seat, back and legs, which defines all chairs. The referent is a particular chair).

Concepts of tangible objectives (objects which can be touched).

Concepts which refer to processes, qualities and relationships (eg. work, viscosity, stress).

A relationship between two or more concepts which can be used to make predictions (eg. Boyle's Law).

There are various ways of teaching concepts and principles. The demonstration method is one such technique which can be effectively used.

planning the Demonstration

1 Summarise the concept or principle in a few words.

2 Decide on a specific example of the concept which can be demonstrated. Every concept has a referent, {if you cannot think of one, perhaps a demonstration is not the way to teach the concept).

3. List the steps to be followed during the demonstration, in their correct order.

4. List key points to be emphasised.

5. List material and equipment needed.

6. List review questions. Preparation for Demonstration

HANDOUT

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1. Set up visual aids, equipment and materials listed on plan.

2. Ensure students can see and hear all aspects of the demonstration.

Presentation

1. Relate concept or principfe to students' previous knowledge or experience.

2. Arouse curiosity.

3. Give background information.

4. Define new terms.

5. Perform demonstration in steps, explaining each step. Students may sometimes assist in taking meter readings, recording results.

6. Summarise demonstration or have students summarise it.

7. Review key points.

8. Question students

9. Repeat demonstration if necessary.

Follow-up

1. Have students apply concept or principled new situation so they can internalise their learning.

2. Assess learning.

Chapter – 5

Producing a subject-related lesson plan

5.1 Recognize appropriate learning outcome for a lesson

Purpose of a Lesson Plan for a Skill Lesson A lesson plan has two purposes:

1. A strategy or plan of campaign for "teaching".

2. A series of CUES (or Signals) to be used during the lesson.

It is not to be confused with lesson notes which are details of the actual subject matter content of the lesson. A lesson plan attempts to relate the basic principles of learning (ie. the effects of contiguity, feedback and practice) to the preparation, presenting and illustrating of the teaching material.

The lesson plan is intended to help the teacher to proceed logically without being bound to his notes, but, even with detailed planning, every eventuality cannot be provided for, so the lesson plan is essentially tentative and flexible. A lesson plan should not limit the teacher in his approach and should be sufficiently flexible to cater for eventualities as they arise in the workshop situation.

Components of a Lesson Plan

The heading of the plan should contain:

1. The title of the lesson

2. Details of the class

3. The expected entry behaviour of the class (expressed in performance terms), although this may be evident from 2 above.

4. The length of time available

5. Objectives

6. Resources required

Once these essential preliminaries have been completed the task of planning the strategy takes place. The layout of the plan is a matter of personal choice. Whatever system is used the lesson should be planned in the three distinct phases discussed in the previous section:

1. Introduction

2. Development — demonstration, explanation, practice and feedback

3. Conclusion (perhaps including assessment)

1.content – this should be restricted to key points in the skills to be taught
2.student activity/method – this should specify the methods which are intended to be used during lesson.if a question and answers technique is to be used the KEY QUESTIONS must be started.

3.AIDS – any audio – visual aid material shoukd be specified.

4.assesment - This may take place during the lesson on the processes used by students and/or during the conclusion on the work produced by them.

5.2 Recognize factors to be considerd when planning a lesson

a lesson plan has two functions:

1. A strategy or plan of action for "teaching".

2. A series of CUES to be used during the lesson.

It is not to be confused with lesson notes which are details of the actual subject matter content of the lesson. A lesson plan attempts to relate the basic

principles of learning (ie. the effects of contiguity, feedback and practice) to be preparation, presenting and illustrating of the teaching material.

The lesson plan is intended to help the teacher to proceed logically without being bound to his notes, but, even with detailed planning, every eventuality cannot be provided for, so the lesson plan is essentially tentative and flexible. A lesson plan should not limit the teacher in his approach and should be sufficiently flexible to cater for eventualities as they arise in the classroom situation.

The plan should follow the components of the structure of a lesson as they have been detailed in the previous unit.

Components of a Lesson Plan

The initial information should contain:

1. The title of the lesson.

2. Details of the class (size, etc.).

3. The length of time available.

4. The expected entry behaviour of the class (expressed in performance terms).

5. Objectives

Once these essential preliminaries have been completed the task of planning the strategy takes place. Planning should conform to the principles laid down in Unit 12. The layout of the plan is a matter of personal choice. Whatever system is used the lesson should be planned in the three distinct phases discussed int he previous umt:-

1. Introduction

2. Development

3. Conclusion

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1. Content

2. Student Activity/ Method

3. Aids

4. Evaluation —

The expansion of these phases is a matter of individual choice but the headings that MUST be used are:

This should be restricted to brief CUES or key words which stand out clearly.

This should specify the methods which are intended to be used during the lesson. If a question and answer technique is to be used then KEY QUESTIONS must be stated. The part played by the students in the lesson should be clearly stated and in a long lesson (more than one hour) it is essential to structure a variety of student activity.

All audio-visual aid material should be specified together with any hardware/software required. Textbooks and other resource materials should be stated.

This may take place during the lesson and/or during the conclusion. The method of evaluation must be stated together with homework if it is to be used.

The following tabular form is to clarify the relation between three distinct phases and four headings above, and suggests a possible format for them.

Chapter-6

Evaluation teaching and learning

6.1 Understand the purpose of evaluation

. Evaluation of a Learning System

At the end of the course the participants will be able to:

Unit 5A Trainee assessment

. 1 explain the various uses of assessments

.2 describe ways of making assessments as good as possible

.3 explain what is meant by objective assessment

.4 explain what is meant by subjective assessment

.5 state the types of objective and subjective assessment

.6 Write objective and subjective questions

.7 discuss the policy of trainees being given

- access to information (books , data etc.)
- indication of the marks available for each part of assessment questions,

.8 explain the use of weighting in assessments

.9 discuss the issue and organization required for:

- referrals
- appeal

.10 construct an assessment for a given subject

Unit 5 Course evaluation

. 1 explain the purpose of course evaluation

.2 describe the various levels of course evaluation

.3 state that evaluation can be cyclic and progressive

.4 discuss how and when evaluation should take place

.5 discuss the reliability and credibility of evaluation

.6 perform an evaluation of a given course

objecive Of Module

Constructing Test Instruments for Student Evaluation

In Service Training of Technician Teachers

An abridged version of MODULE 4 Produced by the Colombo Plan Staff College for Technician Education, Singapore. (1981)

The purpose of any technician education programme is to encourage and help students acquire certain knowledge, skills and attitudes. The particular knowledge, skills and attitudes students are expected to acquire are specified in the syllabus.

As a teacher of technician students, you need to assess the extent to which your students have acquired the knowledge, skills and attitudes as indicated by the objec-tives of your course. You will have noticed that there are many different objectives for your course. To determine how well these different objectives have been met you will have to use a variety of methods to evaluate your students.

This module has been designed to help you choose and construct test instruments which match the objectives of your course.

By the end of this module, you will be able to:

1. select the types of test items to be used in given situations,

2. identify the types of non-test instruments to use in given situations,

3. construct different types of test items for the subject you are teaching, and

4. set a test paper.

Content of module

This Module has been devided into 9 of these units are as follows:

UNIT 1 PURPOSE OF STUDENT EVALUATION

UNIT 2 METHODS OF STUDENT EVALUATION

UNIT 3 DESIRABLE CHARACTERISTIC OF A TEST

UNIT 4 DIFFERENT TYPES OF TEST ITEMS/QUESTIONS

UNIT 5 WRITING/ALTERNATE-CHOICE AND MATCHING ITEMS

UNIT 6 WRITING/MULTIPLE-CHOICE ITEMS

UNIT 7 WRITING/SUPPLY TYPE QUESTIONS

UNIT 8 SETTING A TEST PAPER

UNIT 9 NON-TEST METHODS

PROCESS OF EVALUATION

Teachers must make many decisions in their job. Some familiar decisions are:

— which students are to be declared successful,

— which book is to be recommended for further read¬ing,

— which method of teaching is to be used in a given situation,

— which students are to be given additional instruc¬tion, etc.

Teachers usually collect information to form judgements to make these decisions.

The quality of the decisions you make will depend upon the accuracy, relevance and completeness of the information you collect. Therefore, systematic methods for collecting information must be used. This process of collecting information is called evaluation.

According to one author (TenBrink, 1974), evaluation can be defined as follows:

Evaluation is the process of obtaining information and using it to form judgements which in turn are to be used in decision making.

INFORMATION: Facts about people, materials, resources, processes, programmes etc. which teachers must have to help them make judgements and decisions.

JUDGEMENTS: Interpreting the facts or information to help determine present condi-tions or predict future performance.

DECISIONS: Deciding on one course of action from among several alternatives.

Here are two examples which illustrate the differences between information, judge-

ments and decisions.

Example 1:

If you wished to recommend a textbook to your students, you would want to evaluate the book, before recommending it. Your action in recommending one particular book in preference to others is your decision.

Before you make such a decision, however, you must make sure that the book is suitable for your students. Suitability of the book for your students is your judgement.

For making this judgement about the suitability of the book, you will need some information such as cost, language, illustrations etc.

Example 2:

A technician teacher gave instructions to his students on "safety in the workshop". After .giving the instructions, he observed the attitudes of his students towards safety during the workshop sessions. On the basis of his observations, he concluded that five students in his class continued to ignore the safety regulations. He decided to show a film on "safety in the workshop" to those five students.

In this example, the observations of the teacher gave him information. The conclusion that he drew on the basis of this information (that five students continued to ignore safety regulations) was his judgement. His action in choosing to screen a film on safety in the workshop to these five students was his decision.

1TYPES OF INFORMATION

Suppose you wish to recommend a particular book to your students. You know, however, that the book will not be suitable if it has too difficult words in it. To determine the suitability of the book on this basis, you could select a few pages of the book at random and count the number of difficult words occuring in these pages. In other words, you could obtain information about the suitability of the book in quantitative (numerical) form for your judgement.

However, for judging the general suitability of the book for your students, you will have to check many other aspects of the book such as accuracy of information, relevance, illustrations and layout. These things are difficult to express in quantitative (numerical) form, but this type of qualitative information about the book is very important for your evaluation of the book.

Evaluation therefore requires both quantitative and qualitative information.

SUMMARY

To summarise the main points so far, we can say that: 1, Evaluation is a systematic process.

The ultimate aim of evaluation is to make decisions and judgements on the basis of information or evaluation data.

For making better decisions and judgements you must collect accurate, relevant and complete information.

The information you collect for evaluation can be both qualitative and quantita¬tive.

PURPOSE OF STUDENT EVALUATION

Many people at different levels both within and outside education systems use the results of evaluation to help them arrive at decisions.

To help these people make the correct decisions, they must have information which is adequate and correct for their purposes.

Student evaluation is used for many purposes. This section will look at the way student evaluation is used:

— for making instructional (teaching/learning) decisions,

— for many other decisions.

For making instructional decisions

As a teacher, you should try to make your teaching and your students' learning as effective as possible. To do this you must have information about your students.

Gronlund (1976) defines evaluation from an instructional (teaching/learning) point of view as:

a systematic process of determining

the extent to which instructional objectives are achieved by students.

You have probably noticed that this definition is different from the definition given on page 2. The first definition refers to the evaluation of people, materials, programmes or processes. The second definition, however, refers to how well the instructional object-ives have been achieved by students.

Evaluation of your students while they are learning is necessary for helping you make many instructional decisions. Evaluation information can be used by you for:

— identifying students' learning difficulties,

— planning remedial instruction for students,

— ascertaining students' readiness for learning new topics,

— improving instructional processes or materials,

— planning activity-wise grouping of students,

— grading students, etc.

These decisions are called instructional decisions. These decisions should be made by you for:

— improving your methods of instruction, and

— ensuring that student learning is effective.

For many other decisions

There are many people at various levels and in a variety of occupations in the commu¬nity who make educational decisions based on evaluation information:

— Employers may use the information for job selection,

— Administrators may use the information to decide about how much finance will be given for a particular project,

— Curriculum developers may use the information for curriculum re¬view,

— Examining bodies may use the information for awarding grades and diplomas,

— Students and parents may use the information for selecting courses for higher studies.

These people may use the results of student evaluation in conjunction with other information they may have to help them make certain decisions.

6.2 Established a learning assessment

It is essential that the methods used for evaluation depend upon the type of decisions which are to be made. In other words, the process of evaluation should be appropriate for the intended purpose for which the results are to be used.

1. State the need for a variety of methods in student evaluation.
2. List the methods used in student evalua-tion.
3. Select appropriate methods to be used in student evaluation.

Consider a factory producing gear wheels of different types. There is always an inspec¬tion department, the function of which is to inspect the product and certify whether or not it satisfies the prescribed standards. In doing this job, there are different dimen¬sions of the wheel to be measured, which requires different measuring instruments. There are different properties like hardness

to be determined, which requires different types of testing equipment. Also, the inspection has to be done progressively at differ¬ent stages of manufacture. Such inspection, in addition to ensuring a guarantee of quality, also enables identification of possible errors in the production processes which require improvement. You will notice that a variety of tools and techniques are to be used in this process.

In the same way, student evaluation also requires a variety of methods to be used. There are many different types of student behaviour you will have to evaluate. Stu¬dents also have many different abilities which you will have to test. The purpose of evaluation is also varied. Hence a need for a variety of methods.

Information for student evaluation may be obtained by presenting a student with a given set of tasks to perform, by asking him to report about himself, or by asking other persons to observe and judge his behaviour.

These general methods could be broadly categorised as:

1. Test procedures
2. Non-Test procedures

Testing usually involves the use of some specific instruments to assess a certain quality or a trait in students. Tests are instruments commonly used by teachers for collecting information for evaluation.

A test can be given as

— a written test,

— an oral test, or

— a practical test

When you give a test, you present a student with a set of tasks to complete. The res-ponses of each student can then be scored and quantitative data about their perfor-mance obtained. Because tests are used to measure the performance of students, they are called measuring instruments. These instruments can perform many functions for teachers. In your teaching you can use test results for:

— grading or ranking students,

— identifying learning difficulties among students,

— planning remedial instruction for students,

— deciding how ready your students are for learning a new topic, etc.

Remember that the type of test you use to evaluate your students will depend on what you wish to use the results of the evaluation for. It is your job, therefore, to decide in advance what you intend doing with the results. When you have decided this, you will be able to select an appropriate test.

2.3 NON-TESTS

There are many objectives in education for which tests are not appropriate. For these objectives, non-test methods must be used. Some of the techniques used in non-test methods are listed below.

2-4 SELF-REPORT TECHNIQUES

These are techniques where the students provide information about themselves. The in-formation provided by students about themselves can be useful for identifying their attitudes and interests. The interview and the questionnaire are tools employed for gathering such information.

2.5 OBSERVATIONAL TECHNIQUES

These techniques are used when an 'outsider' records information about students. This information is collected by observing a student's behaviour in certain situations.

Anecdotal records about the way your students behave in certain situations can be made by you. Such records would be useful for helping your students adjust to new situations at both personal and social levels.

Checklists and rating scales are a more objective way of recording students behaviour.

Checklists are made up of a list of desirable student characteristics or actions. You can use'a checklist to help you determine whether your students are demonstrating all the correct types of behaviour. Rating scales, on the other hand, help you judge the quality of your students characteristics or actions.

Because the variety of evaluation procedures (tests and non-tests) have different func¬tions, you must make sure that you use an appropriate combination of evaluation methods. The methods of evaluation you use must match:

— the purpose of evaluation, and

— the instructional objectives to be achieved.

6.3 Use assessment results

Directions: Pleace a tick (-J) next to the activities you feel the student enjoys doing while learning about student evaluation.

1. Computing statistics such as mean and deviation.

2. Constructing test items and questions.

3. Discussing professional ethics in evaluation.

4. Studying how standardised tests are used.

5. Writing behavioural objectives.

6. Interpreting case studies using results of testing.

7. Evaluating reliability of standardised tests.

8. Studying the theory of validity and reliability.

9. Discussing the reaction of students to reforms in examination.

10. Learning about the history of testing.

RATING SCALE

A checklist is used for determining the presence or absence of a particular characteris-tic. A rating scale on the other hand judges the quality of a characteristic on a conti-nuum.

When a characteristic is to be judged qualitatively between two extremes, a rating scale is used. A rating scale for each characteristic is usually divided into a number of sections or points, ranging from a minimum to a maximum, or vice versa.

ANECDOTAL RECORDS

Anecdotal records provide the least structured method of recording behavioural observations by the teacher. The teacher would record the student's behaviour which appeared to be significant in particular bituations. Such a record would be helpful in evaluating behaviour relating to the areas of personal and social adjustment.

Example:

John volunteered to organise help for those hit by the cyclone. He not only collect¬ed funds for the relief fund, but also organised a group of students to help in dis¬tributing food packages to those affected during the evenings.

This anecdote records the positive points of John's behaviour showing his concern for fellow beings and aptitude for social service. This record will be quite useful for the teacher, institution and his future employer for utilising his services to the best ad¬vantage of the organisation.

SELF REPORTS

Yes/No

Once/Twice/ More than twice

The information provided by a student about himself could prove to be of great utility in identifying his attitudes and interests. The interview and the questionnaire are tools employed for gathering such information. Rating scales could be adopted in combination with questionnaires to facilitate interpretation of the information furnish¬ed.

Example:

Use of the library: Please circle the responses which best describe your use of the library.

1. Do you use the library?

2. How often do you go to the library in a week?

3. What do you read in the library?

Newspapers/Magazines/ Storybooks/Text Books

Chapter-7

Course Design

7.1 Recognize factors to be considered when designing a learning programme

First, there are two basic issues which need consideration: they are

- the effect of learning on performance

— the main areas in which training can operate-

On the basis of understanding these issues, the principles of course design could be approached.

3.1 Learning and performance

First, it is important to distinguish "education" from "training". Education usually means the preparation for careers and for life in general, which involves the learning concepts, principles, problem-solving methods etc., whereas training rather means the preparation for a specific job or set of tasks. The content of a training course is therefore more specialized than an educational programme. Some training courses contain supportive elements which many would describe as educational. This often applies to long courses.

The basic premise is that training involves LEARNING which is designed to change the PERFORMANCE of PEOPLE doing JOBS.

Sounds simple? Maybe, but the four capitalized words in the definition - learning, performance, people, jobs - embraces quite a lot about training. The relationship between the terms becomes even more involved.

Training courses are often said to be aimed at skill development implying that they are not knowledge-based, however training often requires the learning of knowledge.

It is worthwhile to take each component of the definition of training and examine it more thoroughly, beginning with the last word in the definition - JOBS. By doing this it is possible to emphasize the importance of the jobs to the design of learning. Further, as will be seen later, the trainer should begin the process of planning a training programme with some ideas and information about the work which has to be done.

Jobs

Jobs are made up of a number of specific tasks that people do. The number of tasks, their complexity and difficulty, and the relationship between them vary widely from job to job. The knowledge, skills and attitudes required for job performance also vary. Also there is often a range of acceptable differences in the way individuals do the same job. Nevertheless, there is usually a core of tasks and skills which are the same for a given- "

type of job. If training is to improve job performance, the job itself must be fully understood.

People

When dealing with adults^doing jobs, one must take account of the fact that the trainee brings to the training situation existing knowledge, skills and attitudes regarding that job, as well as ways of learning. This necessitates paying attention not only to the aims of training, but also to the aims - and existing skills, knowledge and attitudes of the LEARNER.

Performance

HANDOUT

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The performance of people doing jobs means how well they carry out the tasks that make up their job.

When job performance is judged and found to be below standard, training may change job performance. This approach to training is based on the need to change job performance, not on the other often used reasons for training, such as informing, motivating or rewarding.

Generally, there is a need to change job performance when:

the employee does not know how to do all or part of his/her current job

the employee is given new tasks requiring new knowledge, skills or attitudes

- the employee is given an entirely new job requiring new knowledge, skilis or attitudes.

Each of these may require a different training policy or strategy, or they may require no training at all, as we will see in later sessions.

Generally, training is needed when discrepancies exist between what an employee is expected to do and what he/she actually does, and only then if these discrepancies can be reduced through learning, it is important to recognize the difference between the symptoms, e.g. ponr performance and the causes. Figure 3.1 illustrates this.

Learning

The world "learning" generally refers to a change of some kind in the learner. Such changes are often classified as:

psycho-motor. Physical and manipulative skills such as those required to operate equipment, a machine or an instrument.

cognitive. The ability to recall learned materials, and the development of thinking skills.

affective. Attitudes, values and interests.

POSSIBLE CAUSES OF POOR PERFORMANCE AND POSSIBLE SOLUTIONS

These three classes can be further subdivided as will be seen later.

Learning in all of these areas can be important to the successful performance of jobs. In fact, one of the most important tasks of the trainer is to define which learning objectives are important to improve performance.

When learning is measured one may often observe changes in the trainees' performance or behaviour. This may be through such things as written tests, the demonstration of skills, the use of knowledge to complete a task, or the change of attitudes.

In summary, the goal of training should be to A

have the training input transferred to the performance output of the individual traine(

Whenever a training programme is being considered there is a systematic process necessary to determine whether training is appropriate. This is shown in figure 3.3.

Learning has been described as a relatively permanent change in behaviour that occurs as a result of insight, practice or experience. Learning may be simply an addition (new information); it may be a subtraction (unlearning a bad habit); or it may be a modification (adjusting by adding new knowledge to old). Learning as change may be for the better or for the worse; we learn good habits as well as bad ones. Learning may be conscious or unconscious: we take courses in languages but we unconsciously acquire styles of speech and gesture from family and friends.

Learning is such a complicated process that no one can really claim to know how it occurs. We do know that learning takes place more readily in some circumstances than in others, and that it can to a great extent be influenced. To facilitate learning, a trainer needs to understand the various factors which bear upon the learning process.

Learning is a life-long activity; we are never too old to learn, but we are often resistant to change. People often talk about problems as if they safeguarded their position, e.g. There are so many problems that change is impossible". What they mean is, do not remove the problems or I might have to change. Learning is change.

7.2 Develop a new course

Basic Inputs to course design

3.2 What are the main areas in which training can be effective?

There are really only five:

We can teach knowledge. The trainee is being helped to learn, to understand and to remember facts, information and principles.

A skill is often a physical act or action. Examples are shorthand writing, operating an adding machine, playing a trumpet. Skills may be trained but often a skill cannot be learnt until further knowledge has been gained.

A technique usually involves the application of both knowledge and skill. It is a way Of behaviour or thinking. Driving a car and manoeuvring a vessel are examples of techniques. Application of techniques may be trained.

Knowledge

Skills

Techniques

Attitudes

Experience

"Undesirable" attitudes based upon ignorance may be changed by training. In the case of attitudes based upon other elements (superstition, fear), the situation is much more complex.

Clearly this differs from the four previous items in that it cannot be taught in a classroom. It is the result of practising the use of knowledge, skills and techniques over a period of time and often in a number of different situations. The experience of others can be taught which although not so effective as first hand experience does save a lot of time and ensures that beneficial results are passed on. Practical exercises during training courses will contribute to participants' personal experience.

A systematic approach to training and course design

There are several models which provide frameworks for developing training courses.

A traditional training model is likely to involve the following main stages:

Traditional model of a training course

STAGE

ACTION

Identifying training needs

When there is a gap between required and actual performance, there is a problem. Depending on its cause, there may be a

training need. Can we satisfy the need?

Assess

(a) The job - required knowledge, skills, attitudes

(b) The person - actual knowledge, skills, attitudes

(c) The gap - does one exist? Is it a training gap?

Define clearly

(a) What must the trainee know and/or do?

Setting training objectives

(b) How well and to what standard?

What must be learned - how, when, how long will it take?

Who will train, where and with what resources?

Course design

Determine

(a)

(b) (c)

Plan htwthe training wlH go

What training methods should be used?

Plan and prepare materials

- lessons, exercises, lectures
- teaching aids, hand-outs, support literature

This is where "training" normally starts and finishes. It can be easy if the first four stages have been done well.

Find out

Course preparation

Implementation to do Evaluation

How much learning has taken place? Were the objectives achieved? What improvements can take place?

Another way of conceiving the training model is to view it as a dynamic process in which all six stages form subprocesses which are highly interrelated and inter¬dependent. This is more realistic than the first model.

In this approach to the design of training programmes we are dealing with a dynamic, cyclical process in which each phase has many relationships to, and is

therefore integrated with, every other phase. It is, however, advisable to use the first model in order to preserve some structure, at the same time recognizing that the dynamic model is certain to have some influence on events. Figure 3.5 Dynamic processes model

Setting the aim

Generally speaking, the main purpose of organized instruction is to direct trainees' learning in a certain direction; this learning may be intellectual, emotional or physical. The required direction of learning is (he "learning objective"; the change in direction is brought about by the planned learning activities. The first step in teaching then is determining the learning outcome to be expected from the classroom/laboratory situation. In other words, what kind of learning product is being sought? It must be known what skills and motivations the students have before the learning experience and what it is desired that they should possess afterwards, i.e. what changes in thinking, feelings and skills should take place.

Needs- assessment process

Evaluation process

Objective setting process

Implementation process /

Design + preparation process

Only if instructional objectives are identified and stated clearly can a true teaching process and a worthwhile evaluation be made.

3.4 Course Development

When a training need has been identified the next task is to write the learning objectives

and an outline.of possible learning activities, course material and evaluation.

A common procedure is to appoint a group of teachers each with expertise in a particular

subject area. It is suggested the development should proceed as follows:

(1) Define desired outcomes or specific objectives in behavioral terms - objectives must be stated in definite trainee behaviours; they are not to describe what the teacher is going to do; each statement must describe something that the trainee will be able to do after the learning experience.

(2) Identify suggested activities - the teachers' group should list a brief description of learning activities which is a suggestive list only; teachers will employ their own personal techniques, using those which are thought to be the most effective.

(3) Develop a list of suggested materials - text books, audio and visual aids and any other helpful materials. NOTE: It is no good having objectives written in terms of using particular equipment if students are not to have access to this.

(4) Suggest evaluation procedures - these suggestions must naturally be related to the objectives developed in (1) i.e. the method of evaluation procedure must indicate the extent to which the trainee can fulfil the objectives. There are wide varieties in evaluation procedures, these are covered in subject area 5.

3.5.4 Three stages In formulating an objective In behavioural terms

First identify the terminal behaviour by name; you can specify the kind of behaviour that will bo accepted as evidence that the learner has achieved the objective - the learning performance or verb — this will be associated with the thing that to be leamt - the object.

Second try to identify the desired behaviour further by describing the important conditions or constraints under which the behaviour will be expected to occur and, if necessary, —

Third specify the criteria of acceptable performance, by describing how well the learner must perform to be considered acceptable.

From this you will see that a learning objective will contain up to four parts, the:

1. learning performance or verb - it is what the trainee has to be able to do
2. object being learnt
3. conditions or constraints
4. criteria of performance.

The first two parts are always required, the remaining parts are used as required.

Examples:

1 2 3

1. j Defines | stress j as | force divided by cross-sectoral area

The learning objective could have been written as:

2. Defines stress - this leaves the objective open to interpretation.
3. | Identifies j standard symbols | in a diagram/chart/drawing

5. Makes

4. Calculates resistance |usingV = I.R.

5.soldered points between copper conductors using

an electric soldering iron

6. | Defines [work j as the product of force and distance
7. j Calculate j lowest common j for numerical fractions

denominator

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Vertical Integration course for Trainers

Learning objectives can be written for all levels of learning, for example:

- Expresses draught and displacement as a graph.
- Compares heat losses given, laboratory results.
- Derives a given equation from first principles.
- Applies the concept of electro-magnetic induction to an explanation of how a simp!e a_c. generator works.
- Designs a prescribed system to a given specification.
- Chooses a safe procedure to perform a specific function.
- Prepares an agenda for a specified meeting.

Try to answer these questions:

1 An objective stated In behavioural terms would say what the learner would do to demonstrate that the objective had been achieved.

Tick those of the following lesson-objectives which are stated in terms of student- behaviour:

(a) To teach the students the rule of the road.

(b) To solve three equations using factors.

(c) To be able to recall the recipe for a cake.

(d) To be able to list and name the parts of a lathe.

(e) To really understand the theorem of Pythagoras.

2 Many lessons involve the communication and acquisition of information followed by its application in ctasswork or practical work. Objectives should then state the behaviour required to show 'ability to apply' as well as 'to recall' the information.

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Vertical Integration course for Trainers

Tick the statements which would show achievement of both recall and application:

(a) To know the method of long division and to solve three exercises.

(b) To be able to develop a formula relating distance travelled and time taken and to solve three problems using the formula.

(c) To demonstrate Pythagoras' theorem using an aid and to follow up with classwork.

(d) To really understand how to weigh objects to 0.1 g.

Some words do not defi.ie objectives clearly and are open to widely differing interpretations. From the following tick those that should be avoided in formulating behavioural objectives:

to list

to recall

to know

to apply

to appreciate

to identify

to solve

to construct

to demonstrate to comprehend

The following summarizes why learning objectives are needed. Learning objectives provide the necessary foundation for:

- planning the structure of courses, determining the objectives of course sessions

- deciding on teaching materials and techniques

- enabling instructors to work together and support each other even while teaching separately

- motivating trainees by enabling them to understand the reasons for their training

- establishing criteria for assessment and evaluation

- looking for the relevant information needed to evaluate the effectiveness of training.

Assessment is normally based on the specific learning objectives. It follows that if the student can satisfy the specific objectives, then the aim of the training must have been achieved.

Specific learning objectives describe in precise terms what the trainee must be able to do at the end of the training to show that the desired knowledge, skill, attitude or approach has been learnt.

to compare

The objectives for a session must be clear and reasonable, that is, attainable. They should be written down - and be communicated to potential trainees and their organizations. They must be realistic.

Some examples for training/learning objectives in various areas of maritime transport training are given overieaf.

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STUDENTS NOTES