

AUDIO VISUAL EDUCATION

Module I	Introduction to Instructional Design
Unit 4	Learning and communication
Unit 5	Learning and Visual Aids

Instructional Objectives:

1. List the seven components of Berlo's model of communication.
2. Explain how you determine whether learning has taken place.
3. Differentiate between stimuli and response and classify them.
4. State the two categories of learning theories.
5. List the kinds of learning domains categorised by Bloom.
6. List three human behaviours under each of the following -
cognitive domain, affective domain, and psychomotor domain.
7. Discriminate different levels of activity under
 - a) Cognitive domain
 - b) Affective domain
 - c) Psychomotor domain
8. Compare and relate the three major modes of learning
(enactive, iconic & symbolic) with the three kinds of
experiences (direct, pictorial and abstract).
9. Write in order the eleven divisions of the Dale's Cone of
Experience and classify learning experiences, with Bruner's
three modes of learning.
10. List the five senses through which we learn.

A COURSE ON AUDIO VISUAL INSTRUCTION

MODULE I: INTRODUCTION TO INSTRUCTIONAL DESIGN

UNIT IV: LEARNING THEORY
&
COMMUNICATION

A PROGRAMMED TEXT

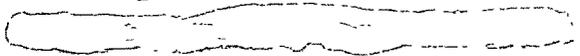
INSTRUCTION TO INSTRUCTIONAL DESIGN

Learning Theory and Communication.

Module - I

Unit - 4

For units 4 & 5 of Module I: We are adopting a different approach for preparation of our stimulus to you. The visual presentation and audio communication through the tape is stopped for the time being. This format which we have prepared for you for this unit, is known as programmed text. Though the previous three units, were also programmed, the strategy adopted was different, as you have noticed. You are going to experience the difference, when you have completed this unit.

Instruction, in this unit, is provided in small paragraphs, each one called a frame. At the end of most of the frames, you will be asked to provide responses to the stimuli presented there or earlier. This may be a straight answer to a question, filling up of gaps, finding missing word(s), tick correct answers, or matching two columns containing related information. Answer each and every question, either in the space provided below each frame, or in separate sheets of paper. The correct answers are given in the confirmation booklet, provided at the end of the programme. In some of the programmes made earlier this was given below or aside each frame, and you may exchange them with new copies, if you have received old copies. You are advised, not to look at the answers given in the confirmation booklet, before answering to the questions in each frame yourself. The reference numbers given in the confirmation booklet, coincides with the corresponding numbers in the programmed text, frame by frame. 

1. We have covered a number of topics so far. Systems approach to Instructional design, Basic Concepts on Instructional Technology, Media and Audio Visual Aids. You have been told about fundamentals of instructional design, meaning of visual aids and the difference between audio visual aids and media. We will now proceed with learning theory and communication. Perception is the process whereby an individual becomes aware of the world around him. We perceive through our _____ i.e. eyes, ears, fingers, nose and tongue. (seeing, hearing, touching, smelling and tasting)
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2. Perception leads to communication. In all communication, there is a general pattern. Refer to the Berlo's model of communication given, at panel sheet No.1 at the end of this unit. This is a modification of the communication model of Shannon and Weaver. The information or message has a source, the sender at the source encodes the message (Brain). It is converted into transmittable form (words, sound waves) and passes through a channel (Air, wire, paper, light) and message is received (through his senses, eyes, ears etc.) and decoded at the destination (by the nervous system). The five components considered so far are source, encoder, channel, decoder, destination. To be objective, all components must work. The receiver must be active. The sender must have a return response from the receiver. It is termed feed back. Now mark the feed back arrow on the panel. Feed back is the sixth component of this model.
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-

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3. Feed-back enables the originator to correct omissions or errors in the transmitted message. It can improve the process of encoding. To communicate effectively the sender must get There is one more factor that affects the system. What are the other components of the Berlo's model?
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4. Transmission of message can be disturbed by noise. Success or failure of communication depends on the transmission channel also. Any distraction can be noise. Ambiguous or misleading information can also be deemed to be noise. Lack of attention on the part of the receiver can also upset satisfactory communication. Hence for effective communication sender and receiver must be alert. We must avoid
-

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5. Noise is the seventh component.

At times noise cannot be avoided in the transmission of message. To overcome effect of anticipated noise, redundancy is often used. Redundancy is repetition of transmission of

The seven components of Berlo's communication model are

- | | |
|----------|----------|
| 1) | 2) |
| 3) | 4) |
| 5) | 6) |
| 7) | |
-
-

6. Repetition of transmission of message is possibly to overcome the distraction of noise. Some examples of redundancy are explaining an activity or performance showing visual distribution of hand-outs after a lecture, using a different mode for the same topic again, and providing multiple applications of a principle in different contexts. This factor of _____ is often used to overcome the effect of evident or anticipated noise. Redundancy refers to repeated transmission of the same _____.
-
-
7. The process of learning is an individual experience for each person. It modifies his behaviour in terms of knowledge, skill and attitudes. Learning takes place wherever an individual's behaviour is _____ i.e. when he thinks or acts differently - when he has acquired new _____ or a new _____. A major purpose for preparing audio visual aids is to help effect changes in behaviours that serve instructional _____. It is, therefore, necessary to relate planning effective audio visual aids to psychology of learning, and objectives.
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8. Learning theories fall into two major categories. One is behaviourist or connectionist group. This group interprets man's behaviour as connections between _____ and response.
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-

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9. This pattern is known as stimulus-response (SR) pattern and is an exact response to a specific sensation or stimulus. Some stimuli are more effective than others. Spoken or written words, pictures, and all audio visual materials are examples of _____
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10. Most instruction is of stimulus response type. This concept was used by B.F. Skinner in his 'Programmed instruction' approach. The emphasis here is on the learner and his responses. In programmed instruction (P.I.) each sequence of learning is broken into small steps, requiring an appropriate response to each item followed by immediate knowledge of results. If response is correct, the knowledge is a re-inforcement, a rewarding recognition of each correct response. The _____ given helps the learner.
-
11. The second group of theories is known as Gestalt or Cognitive theories. These theories assume that cognitive processes - insight, intelligence and organisational abilities - are the fundamental characteristics of human behaviour. Concern is more on how of learning rather than for what. The second group of theories assumes that _____ and are the fundamental characteristics of human behaviour.
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12. Edgar Dale, an American Educator focussed attention on the preparation of audio visual aids in terms of learning. The clearer, the nearer, the more realistic and relevant, the statement of desired outcome; the more effective will be the learning. The learner must know, what is expected of him. It is necessary to specify first _____ of learning for effective learning.
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13. Old learning does not automatically transfer to new learning. Students need guided practice in learning to reconstruct habitual ways of doing things. New experience and attitudes favourable to learning helps _____. Transfer of skills is very important factor to you.
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14. Learning is increased by knowledge of results. Feedback to students about good performance, mistakes and knowledge of successful results aid _____
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15. The relevant statement of desired outcomes must be communicated to the learner in the beginning clearly to enable him know his target. Benjamin Bloom has standardised terminology used to appraise kinds of learning. He has classified learning in three areas or domains - COGNITIVE, AFFECTIVE and PSYCHOMOTOR. The three major areas of learning classified by Bloom, known generally as Bloom's taxonomy are 1) _____, 2) _____, and 3) _____
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16. Cognitive domain learning are knowledge, information and intellectual skills, affective domain categories include attitudes, values appreciations etc, and Psychomotor domain deals with skill areas - skeletal muscle use and co-ordination.

MATCH THE FOLLOWING BY WRITING APPROPRIATE ALPHABETS OF ITEMS IN COL. I IN THE SPACE PROVIDED IN COL. II

COLUMN - I.

COLUMN - II

- | | |
|----------------|--|
| A. Cognitive | 1. Attitude, values appreciation |
| B. Psychomotor | 2. Knowledge, information and intellectual skills. |
| C. Affective | 3. Skills, skeletal muscle use and co-ordination. |

17. Benjamin Bloom has identified six levels of intellectual activity in the cognitive domain. They are:-

- | | |
|------------------|---|
| 1. Knowledge | - recalling information |
| 2. Comprehension | - interpreting information |
| 3. Application | - Applying information |
| 4. Analysis | - Breaking information into parts |
| 5. Synthesis | - bringing information elements together |
| 6. Evaluation | - making judgments against specified criteria |

Knowledge, Comprehension, Application, Analysis, Synthesis and Evaluation are the six levels of activities in the cognitive domain according to BLOOM. All the six levels are required for instructional design, preparing or selecting audio visual aids and use them in teaching - learning situations. The six levels of activity in the cognitive domain are:-

- | | |
|----------|----------|
| 1) | 2) |
| 3) | 4) |
| 5) | 6) |

18. These levels serve in planning and developing audio visual aids. The objectives to be served form the basis, for organising the aids. The affective domain is the difficult area to be served by audio visual aids. Therefore, it is necessary to plan this area carefully. This domain includes the following five levels of attitudes, interests and involvements.

- | | | |
|--|---|---|
| 1. Receiving | : | attracting learners' attention |
| 2. Responding | : | learner willing to reply or take action |
| 3. Valuing | : | committing oneself to an attitudinal position |
| 4. Organisation | : | making adjustments |
| 5. Characterisation of a value complex | : | Integrating one's ideas, beliefs and attitudes into a total philosophy. |

The five levels of affective domain include:

- | | |
|--------------|----------|
| 1) Receiving | 2) |
| 3) | 4) |
| 5) | |

19. In the Psychomotor domain, the activities can be grouped as follows:-

- | | | |
|---------------------------------|---|--|
| 1. Gross bodily movements | - | arms, shoulders, feet and legs |
| 2. Finely coordinated movements | - | hand and fingers, hand and eyes, hand and ears, hand, eye and foot, all. |
| 3. Non-verbal communication | - | facial expression, gestures, bodily movements. |
| 4. Speech behaviours | - | production of sound, sound gesture coordination. |

These serve the areas of skill training with which you are concerned. The four levels of activities in the psychomotor domain could be:

- | | |
|----------|----------|
| 1) | 2) |
| 3) | 4) |

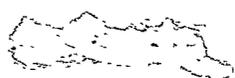
20. Dave, an Indian Professor has classified the Psychomotor Domain and his classification has been accepted all over the world. According to Dave, the levels of activities under motor skills are IMITATION, MANIPULATION, PRECISION, ARTICULATION AND NATURALISATION. The first three are simple and clear. Articulation emphasises a series of acts in terms of time and speed. The last one refers to the highest proficiency, achieved after you have passed through the other four stages.
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21. While designing audio visual aids, to fit into the instruction, it is essential for one to keep in mind the statement of objectives and categorise them in different areas under each domain - human behaviour - as our intention is to change the
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22. According to Jerome S. Bruner, three kinds of experiences have been found to have a place in the process of communication. These three modes are direct experiences (called enactive), pictorial experiences. According to Mr. Bruner the Process of Communication require three forms of experiences. They are 1. _____
2. _____ 3. _____
-
23. At the first level i.e. direct experience, the student actually does work - enactive learns by doing, at the second level - pictorial: iconic - he looks at a picture and learns how to do a job that he has never done before and at the third level - highly abstract experiences: Symbolic level - the student hears or reads about how to do a job and matches words to his mental image of the job and does the job. Thus the three experiences classified by Bloom are: 1. Enactive 2. _____
3. _____

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24. Often we learn from concrete experiences to abstractness.

Difficulties arise when abstractness have inadequate foundations. If a learner has too little enactive or iconic experience in acquiring an idea, a word or a formula will probably have no real meaning for him. If a symbol is to stand for something, it must stand on something i.e. a firm foundation. Without proper foundation you can not construct a building. Thus when we arrange learning experiences we must go to abstraction from _____ experiences.

25. Dale's cone of experience illustrates these important ideas by indicating direct experiences (enactive) at the base and verbal symbols (symbolic) at the apex. Refer to panel sheet No. 2 at the end of this unit for the cone. This cone is a model representing a range of experiences from first-hand action - direct purposeful experiences i.e. enaction - to observation - pictures i.e. iconic - on to symbolic communication. This may start with your recognising salt by taste to recognizing it by hearing the word. Or an apple recognised by hearing the word, or by seeing or by tasting. Over one's life time this understanding moves through different levels. Let us now go ahead with the Dale Cone.
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NO RESPONSE REQUIRED, STUDY PANEL TWO CAREFULLY.

26. The base of the cone represents concrete, direct first hand experiences that make up the foundation for our learning. Through seeing, hearing, tasting, feeling and smelling, we build our wealth of meaningful ideas and information.
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26.Contd.

Our experiences, when they are of educational or training value, lead us purposefully to a goal, an objective. Without actually seeing or working with an engine or turbine, we develop out of words, concepts. This experience causes learning. There are millions in our country who have not seen sea or mountains or an elephant, yet they relate the words, to something they imagine from abstraction. The foundation for any learning according to Dale's cone is _____.

27. Consider a steel plant. The huge towers, noise and vastness are too much for the eyes, ears and the mind to take everything at the same time. But a simplified model of the steel plant showing few things may be easy to understand. The student can trace the key points of the structure and note the points at which critical manufacturing operations occur. When we construe an experience we deal with a representation that differs from the original reality in size, complexity or both.

NO RESPONSE REQUIRED. GO AHEAD

28. We simplify experience by a representative model to make real life accessible to students' perceptions and understanding. Through the use of mock-up, we can contrive an event that may or may not have occurred. Such a device is often referred to as a simulator. Simulator reproduce under test conditions in a workshop or laboratory, phenomena likely to occur in actual performance. When students engaged in contrived experiences, they can take part in actions that they have never dealt with before. In your own area, you may be able to consider arrangement of _____ with a choice between an original

28.Contd.

object that may be difficult to grasp and providing a version that is easier to understand. Contrived experiences enable us to overcome our limitations in space dimensions i.e. physical objects.

29. We are also limited in the discussion of time and thought or ideas. We cannot have direct, purposeful experience of something before we were born and cannot feel or hear certain ideas that are too abstract or symbolic to be conveyed by a contrived experience. Refer to same panel for the third experience on the cone. Dramatic participation can help us, experience certain ideas or events. Creative power of students can be meaningfully involved, by students participating directly in an indirect representation. A dramatisation can leave unnecessary and unimportant elements to sharpen and stress significant ideas. We can arrange this to suit exactly our stated objectives. Sometimes, a direct participation in a dramatisation results in more efficient learning than the first hand experiences they stand for. Thus, the first three experiences from the base in Dale's Cone are

- 1) _____ 2) _____
3) _____

30. The first three experiences forming component of direct experiences come under the category _____. Here you learn by doing. Refer to panel sheet 2 again at the end of this unit. The next six divisions according to Edgar Dale falls in category II, viz, ICONIC and here you learn by seeing some pictures and learns. At the third level you learn by hearing (reading) and through observation provide _____ experiences.

31. In the previous frames we have noticed an increase in observation experience with a consequent decrease in direct experience i.e. immediate participation. The student moves from direct experience to abstraction when we move from base of cone to apex. When we move from 4th to 9th divisions of the cone from demonstration to Recordings, Radio and Still pictures, there is an increase of observation with corresponding decrease in direct physical involvement for the student. The student's involvement when we go up the cone, may lead him to increasingly imaginative aspects. The success of any instructional representation through iconic participation therefore depends to a large degree on _____ involvement. When we do a demonstration or show a movie, we should remember that students do not learn by merely looking. They learn by getting creatively involved. How can we involve them while they learn through observation, to make learning effective?

1.

2.

32. The fourth step on the cone, and the first division in iconic experiences is demonstration. In craftsman and vocational courses, we have the demonstrations for transfer of skills. The demonstrator shows how certain things are done. If demonstrations are to be effective, the student must be involved - creatively and imaginately. If demonstration is followed by 'tryout' or 'doing' the same topic, we end in direct experience, which falls within enactive experience. In some of the demonstrations - accurate, perceptive observation is all that may be required from the student. Thus demonstrations are primarily ICONIC or observing experiences, yet they may result in enactive occurrences of immediate try-out or doing. Hence demonstrations if properly followed by application (try out) will provide experience by _____ and _____

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33. Refer to panel sheet 2. Study or field trips. The interdependence of different learning experience have already been explained. It is not always necessary for students to carry out all the actions they observe. Observation can lead to imaginative involvement, though students have no direct control over them. Study trips to television studios of students combined with interview and discussions brings added meaning. Study trips may bring direct experience due to combined activities, but they are undertaken primarily to observe events that are not _____ in a class-room.
-
34. Exhibits consist of models or working models arranged in meaningful display. It may be number of photographs alone or arranged along with models, charts and posters. All these are for observation. Usually spectators do not manipulate exhibits. You are not allowed to touch the exhibits. By seeing an exhibition you gain enrichment. Experience gained can be blended with 'doing'. So far, under iconic experiences we have covered (1) _____ (2) _____ and (3) exhibits.
-
35. The fourth and fifth in the series of iconic experiences, as per the Dales Cone shown at panel 2 are Television and motion pictures. Both television and motion pictures are viewing experience combined with learning, mostly involving movement or motion. Though they are not directly involved with other senses - touching, tasting, handling, they are watching an event, about which they can later become involved in an imaginative way. Both use a planned order. Normally we do anything from start to end. The order can be

5. Contd.

changed and adopted in both TV & Film to give the desired experience (flash back). Between the two TV can supply a dimension of immediacy. Real live telecasts bring reality into class-room. It is possible to bring in more reality and comprehension than an actual presence at the place of occurrence, as we can magnify and show what we really want to give. Live TV's outcome is uncertain (because you are not sure of what is going to be shown) compared to Film and hence this gives an unique experience. In the film preview notes and guides are available. The five divisions of iconic experiences and three divisions of enactive experiences according to Dales Cone of Experiences are:-

	8)	MOTION PICTURES
ICONIC	7)	
	6)	
	5)	
	4)	
Enactive	3)	
	2)	
	1)	DIRECT PURPOSEFUL EXPERIENCES.

36. Refer to panel sheet 2, at the end of the work-book for the next division under iconic experiences of the Dales Cone. Still pictures, Recordings, and Radio. This has one advantage. Even if you can't read, it can convey intended message. The auditory devices are suitable for both groups and individuals in the class, whereas photographs unless they are large cannot suit a whole class. We use film strip projectors O.H. projectors, record players, tape recordings and for larger groups public address systems. These give a lesser direct experience than the earlier ones. All still pictures lack motion and sound. Photographs cannot

36. Contd.

at times avoid irrelevant communication and too many ideas, unless specially adapted by better means. But our imaginative participation is broadened as we go up the cone. We should be careful not to overuse the media or use it for wrong objectives or where single explanations will do and easy direct participations can be arranged. It is possible to make series of photographs with captions or explanatory messages, which will enlarge the scope of their use. In actual practice, unless you are sure you have established your objectives for the specific audience, and organised your contents to fit the above, we cannot either select or make audio visual aids or give other required experiences.

NO RESPONSE REQUIRED. GO TO NEXT FRAME

37. The last group of the experiences shown by Dale in his cone is for learning through abstractions or symbolic experiences, which definitely is of a higher order. This will be the kind of experience where very little immediate physical action is required. Thus, in learning to deal with symbols, we increase the degree of the imaginative involvement and depend on our capacity to become creatively involved and our understanding. The three categories of experiences viz, enactive, iconic and symbolic stand for a) _____
 b) _____ c) _____

38. The first division under symbolic experience according to Dale's Cone is visual symbols and second division verbal symbols. Refer to panel sheet No. 2. Here in visual symbols one important aspect to be remembered is that visual symbols must represent concrete experience unlike iconic, i.e. it does represent something what directly reminds him of something he has experienced

38. Contd.

before. Once students understand, they see an idea, an event, a process. Charts, maps, graphs, posters when properly prepared can manage a great deal of conceptualised experience through the abstract language of visual symbols. Visual symbols are _____ that compress rich meaning.

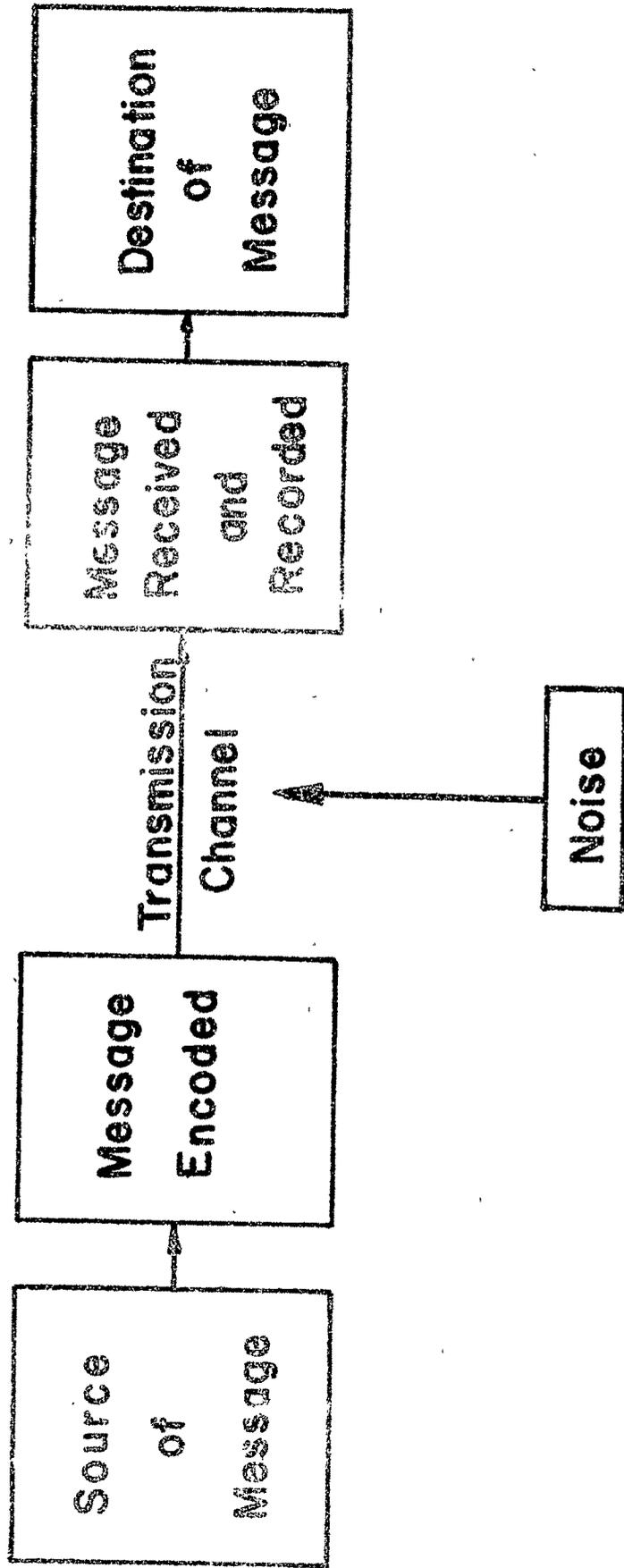
39. Verbal symbols, the apex of the cone, do not look like objects or ideas for which they stand. They neither contain any visual cues. The word audio does not look like any word or aural message you hear, or the word lathe does not look like a lathe, unless this conveys you the meaning from your prior experience. Usually you agree for the meaning of a term if you already know what it stands for, if not, there are difficulties. Experts feel that spoken words are nearer to concrete than written words. Therefore spoken words will be _____ on the cone than written words. However our teachers are gifted with the experience of providing concrete experiences with spoken words and speaking is an essential procedure in dealing with written verbal symbols.

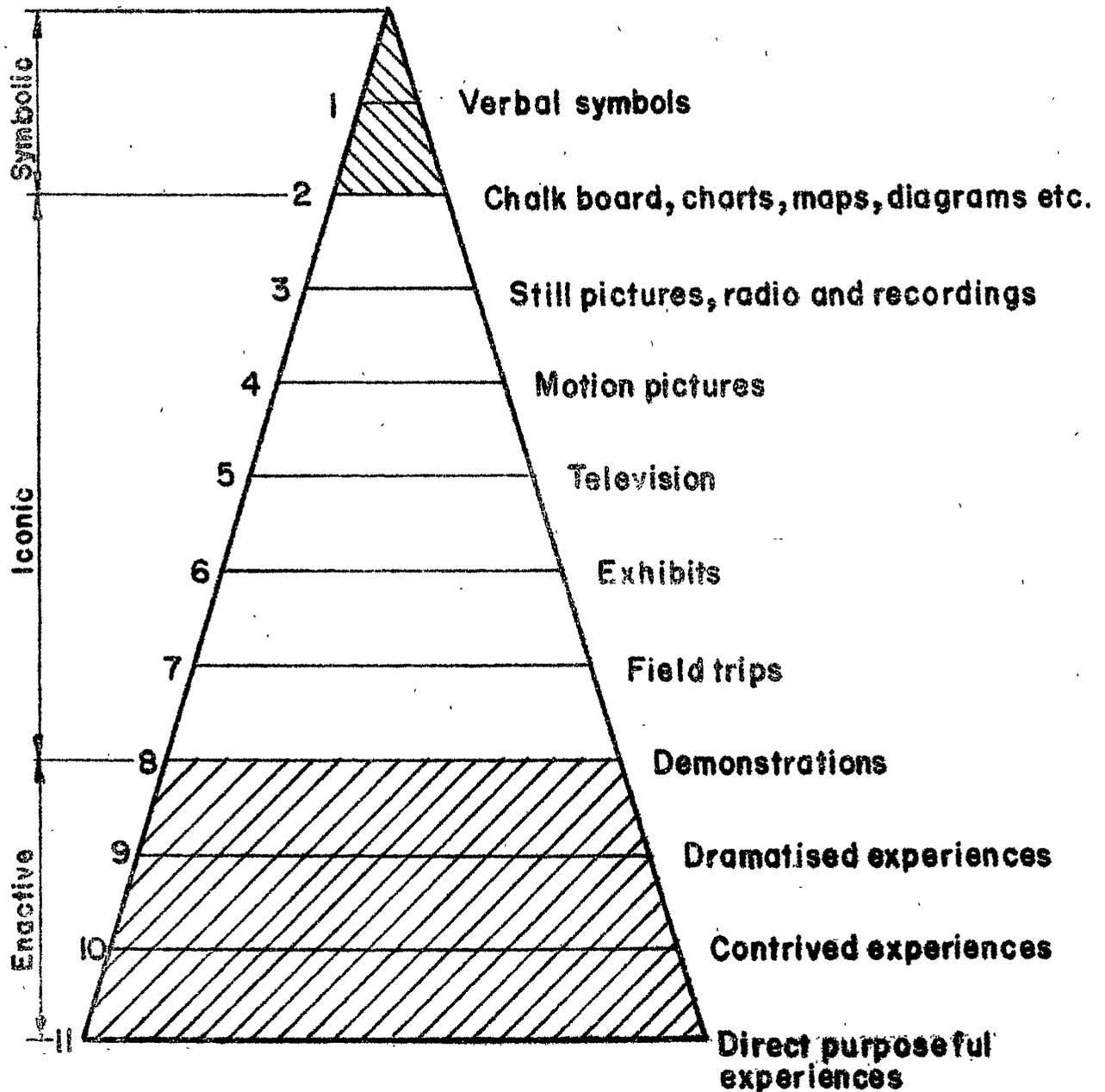
40. But we do not always start with direct experiences in our teaching. we begin with the kind of experience that is appropriate to the needs and abilities of particular learners in particular learning situations. Then we may give a variety of learning experience to give meaningful concept. Rootless experiences have no power and will not enable the learner to deal with new situations. We design our learning strategy based on the _____ and _____ of learners.

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41. In case you are unable to answer all the questions, you are advised to take unit 5 before answering the unit test. You will have to take the post test for Module I after you complete unit test and before you take the next Module.
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GOOD LUCK

PANEL - I



DALES CONE OF EXPERIENCE

1 2 - Highly abstract experiences

3 to 8 - Pictorial experiences

9 to 11 - Direct experiences

Module I Introduction to Instructional Design
Unit 4 Learning and communication.

-
1. Senses

 2. Arrow from destination to source

 3. Feedback

 4. Noise

 5. Message: 1. source 2. encoder 3. channel 4. decoder
5. destination 6. feedback and 7. noise

 6. Redudancy, message

 7. Modified, knowledge - skill - objectives

 8. Stimulus

 9. Stimuli

 10. reinforcements

 11. cognitive processes

 12. desired outcomes

 13. Transfer

 14. Learning

 15. Cognitive, affective, psychomotor

 16. C-1, A-2, B-3.

 17. 1. Knowledge 2. Comprehension 3. application
4. analysis 5. synthesis and 6. evaluation

18. responding, valuing, organisation and characterisation

19. Gross bodily movements; finely co-ordinated movements;
non-verbal communications and speech behaviours.

20. NO RESPONSE REQUIRED. GO AHEAD.

21. Human behaviour

22. direct experiences, pictorial experiences, highly
abstract experiences.

23. enactive, iconic and symbolic

24. Concrete

25. NO RESPONSE REQUIRED. SEE PANEL 2 CAREFULLY.

26. direct purposeful experiences.

27. NO RESPONSE REQUIRED. GO AHEAD.

28. contrived experiences.

29. 1. Direct purposeful experiences 2. contrived
experiences and 3. Dramatic experiences.

30. enactive, iconic

31. imaginative

32. observing, doing.

33. available

34. demonstration, study trips

35. Television, exhibits, study trips, dramatic experiences
and contrived experiences.

36. NO RESPONSE REQUIRED. GO TO NEXT FRAME

37. a) Learning by doing b) learning by observation and
c) observation and learning through abstractions.

38. abstractions

39. lower

40. needs and abilities

41. Good luck
