

AUDIO VISUAL EDUCATION

SCRIPT BOOK

45 Minutes.

Module III: PROJECTED AIDSUnit - 10: Physical Facilities and Visuals for Projected
Aids.

1. Physical facilities and visuals for projected aids.
2. The ability to see, hear and react are basic needs for learning. The physical facilities in the school have a great deal to do with whether an instructor can even begin to reach his trainees on the most basic levels of communication.
3. Can the student see and hear what is going on? Are lighting, accoustics, ventilation, furnishings proper for the task? Are room colours pleasing.
4. Facilities can make or break the effectiveness of both the teacher and the taught, and the learning programme.
5. All these physical and environmental factors are common problems whether the 'teaching image' is in the human being (i.e. the teacher), in the room or is coming to the trainee via projection, tapes, television, workshop or laboratory equipment.
6. Open your WORKBOOK and read the objectives carefully.
STOP FOR 2 MINUTES AND RESTART.

7. We will now discuss these factors with reference to the aids we had been discussing so far. First we will review what we have said earlier.
8. In any viewing situation, what you see, how well and under what conditions seeing takes place, are the important considerations.
9. For the non-projected visuals we follow these minimum eligibility standards for minimum symbol or letter height.
10. The minimum line spacing recommended is $1\frac{1}{2}$ times the height of the letters. This is the height of the lower case symbol.
11. Let us now see how far we have progressed. Open your WORKBOOK and answer questions 1, 2, & 3.
STOP FOR TWO MINUTES AND RESTART.
12. Here is your answer to question 1 :
13. Answer to question 2:
In any viewing situation, the important consideration you should take care of are:
What you see, How well you see, and under what condition seeing takes place.
14. Answer to question: 3 - is $1\frac{1}{2}$ times the height of the lower case letters. When you make visuals, the size of the symbols or letters are important. They should be so spaced, that you can read with ease. So the spacing is to be taken care of. When you use both upper and lower case letters, spacing depends on lower case letters.

15. For most part of the common photograph, films, pictorial slides, transparencies, motion pictures, and material with bold elements can be viewed at greater distances than the screen width. If the screen width is W , the maximum viewing distance is $8 W$.
16. For a two metre screen width Kodak recommends a maximum distance of $8 M$. Some feel only six times the width of screen need be adopted. Our experience is, $6 W$ is workable. You may experience this for yourself.
17. You know the maximum viewing distance and minimum letter height. The other criterion is ratio of letter height to height of artwork. Normally, the best workable ratio from our experience is $1 : 50$. i.e. if you adopt a letter size of 5 mm for artwork height should be 250 mm .
18. That is to say, if your screen is 6 ft. wide, the last row of seats should be 36 ft. away from the screen. If the artwork you are making is $9" \times 6"$, then your letter height should be $6/50"$ or $1/8"$.
19. Television has a different standard than other projected aids. The minimum viewing distance is 4 times and maximum viewing distance 16 times the width of the television tube. These are only guidelines and not to be taken as Geetha statements. These also depend on normal eye level, maximum viewing angle, height of image, spacing of seats and line of vision.

20. The maximum ratio of the letter height to art work for slides, transparencies, motion picture was given as 1 : 50, and television as 1 : 25. If your visual is 6" high, then letter size will be $6/25$ " or $1/4$ ", for T.V. and $1/8$ " for others.
21. The maximum viewing distance for different tube size given here, depends on many other factors than simple legibility. They include height of image above eye level, height of image above floor level, the seating, seat spacing and horizontal viewing angle.
22. Each television has a viewing area. You cannot place one TV in a hall and put 200 students. Shapes and area of viewing areas of three ranges of TV sets are shown here. A 24" screen can be used for 325 sft, 21-24" for 260 sft, and 17-19" for 155 sft.
23. The seating conditions. Chairs can be spaced as close as 3'; chair with armtable or tablet arm chair requires more spacing generally 3' to 4'4"; and usual table with chair spacing will be 5' 2" to 5' 8".
24. Here are some guidelines. You have the chart. For 17" TV tube, with 3' chair spacing the number of viewers are about 33, while for the desk and chair spacing, the number is about 33 while using 24" TV tube. You can also see arrangements for 24" TV tube.

25. Here are three other types of arrangements. Note the shaded area which is viewing area and spacing of chairs. You might have noticed that centre spacing arrangements can have maximum viewers.
26. **Arrangements** for chairs with desks. You may make suitable spacing, with proper type of furniture for maximum utilisation.
27. Refer to workbook and answer questions 4, 5 and 6.
STOP FOR 3 MINUTES AND RESTART.
28. The viewing distance depends on many factors.
Important among them are;
- Types of furniture used
 - spacing of the seats
 - height of the image
 - normal eye level of the viewer
 - maximum viewing angle
- If your answer includes something in these lines, you have answered correctly, Question 4.
29. For question No. 5,
Maximum viewing distance for slides, OHP, motion picture is 6 to 8 times the width of the screen and for television 16 times the width.
30. For question 6,
Maximum ratio of the letter height to height of artwork for slides, transparencies and motion picture is 1 : 50 and for television it is 1 : 25
For a 6" x 9" artwork, the letter height for the former will be 1/8" and latter 1/4".

31. The 8W projected image and 16W television image are maximum distances commonly used in education.
32. This will also depend upon colour, style and other design factors of visuals.
33. You may notice, that for TV. screen, you do not lose front classroom space. As the screen size increases, front classroom space required is more. Space required for a 40" screen will be more than 24" TV and the space required in front for the large screen is 84".
34. Use additional TV screens, you can have more students. But this is not possible for other projected visuals. Why? Think the answer yourselves.
35. Among other important factors good hearing condition is important. Whether you use motion picture, sound slide presentation or television, your class-rooms should not pose accustic problems.
36. What are the basic characteristics of hearing problems in class-rooms?

The ear is an extremely adaptive organ, able to recognise different forms of sounds. In spite of roaring sound in the shop floor, you may converse with a person. But perhaps you may be exhausting most of your energy in doing so.

37. Some human energy is always spent in the process of hearing, the amount related to how good or bad hearing conditions are. In a classroom, where sound is not controlled, the student diverts his energy from the learning task to the task of hearing, which otherwise could have been easily used for better hearing. The teacher must put in extra effort to speak loudly and clearly to get the message across.
38. Sound is directional. It is created by rapid pulsations of air moving through space, with varying intensity, like ripples in a water tank when you drop a stone. If sound waves created by a teacher, are adequately intense and clearly defined, as they reach the ear of the student, sound is both audible and intelligible.
39. If varying unrelated sounds of different types and intensity all reach a student at the same instant, what he hears is noise rather than sound which he can't make out.
40. Because sound waves are dissipated on all sides, as they travel through space, they lose their original strength i.e. loudness by the time they reach the ear far away from the source. In this case the sound is inaudible and unintelligible.
41. When sound hits hard smooth surface-metal, glass, painted wall etc., it will bounce like a ball or reflect like light. The pressure of the sound waves striking such a surface may also literally set the material vibrate like a drum, consequently vibrating in the opposite direction, which also you hear like the echo. Thus sometimes you hear two times the same thing.

42. But sound absorbant materials will not reflect sound; it will also prevent transmission of sound to the next room. To achieve a good hearing environment within the classroom, one must deal with problems of sound from two angles:
- A : Control of sound that originates within the room;
- B : Exclusion of distracting sound that originates outside the room.
43. Taking note of what has been told to you so far, we can deal with these two aspects. One is ROOM SHAPE. It would be suitable for functional purposes and listening confortably by all students at the same time. A room should have comparatively even proportions of depth and width.
44. This recommendation is for sight and sound. Reflection and reverberation are not major sound problems in small rooms for 30 students. Reverberation and bouncing of sound does require special consideration when your group size and room size increases beyond 60 students. Problems of reflection are more, when walls and ceilings fit into regular parallel patterns. Rooms with surfaces set at even slightly irregular planes will have better accoustic qualities than standard box shapes.
45. Students also create sound inside a room. But they also absorb sound due to the clothing they wear and their own physical presence. Materials used such as draparies blinds, cork boards, floor converings are effective in softening room sounds, preventing harsh and brittle sound effects.

46. Accoustic tiles, panels, and accoustial finishes may be used with skill. Excessive accoustic absorption makes it unnecessarily difficult to make a voice heard across a room. Hard floor surfaces reflect sound.
47. A soft floor covering on the other hand, will muffle or eliminate disruptive sounds of dropping pencils, books, footsteps etc.
48. Carpetting also go a long way in controlling sound output.
49. Research in accoustic effects, says, that flexible material can provide adequate sound blocking and make it effective as an area divider in large halls.
50. Refer to WORKBOOK and answer questions 7 to 9.
STOP FOR TWO MINUTES AND THEN RESTART.
51. Answer to question 7 :
Smooth surface will bounce sound.
52. Answer to question 8 :
a. sound that originates within the room
b. sound that originates outside the room.
53. Answer to question 9 :
The sound effects can be controlled by
a. room shape;
b. irregular plane wall surfaces
c. Floor coverings.
d. flexible wall coverings.

54. LIGHTING. Lighting problems have no single answer. Lighting must be to the specific need. Quantity, quality and psychological effects all figure in better lighting systems. It is necessary to have lighting of proper intensities for different tasks or a good deal of your energy will be diverted to the task of seeing, with less effort left for learning.
55. Lighting of appropriate quality is to be planned for each type of learning area. Movable lighting fixtures and lamps as well as dimmer installations can allow great functional variety. Switch off unwanted light.
56. Quality of light is important. Glare-free are the key words. Brightness alone cannot insure that a student will see, if the material he is viewing is distorted by reflection or glare.
57. Glare can be controlled at two points,
1. The source of illumination.
2. Student's viewing angle, and glossiness of the surface.
58. Lighting like colour can inspire, call to attention and emphasise, according to the skill of the user.
59. Among the projected aids, overhead projection need no darkening of the room. Television does not require black out. You can keep adequate lighting for taking notes without impairing student's ability to see the screen.

60. While you use projectors like the motion picture, areas near to or adjacent to it, should have adequate lighting to do adjustments when necessary.
61. Dimmers in the wiring system could provide room brightness control; and helps you to adjust the brightness according to the need.
62. Refer to your WORKBOOK and answer questions 10 and 11.
63. Answer to question - 10.
Lighting could be controlled by
 - a. movable lighting fixtures
 - b. switching unwanted lights
 - c. dimmerstats to control.
64. Answer to question - 11.
Lighting like colour can
 - inspire the student
 - Catch attention and
 - emphasise points.
65. VENTILATION. In our country air conditioning is considered a luxury, though it is effective for many audio visual presentations. In terms of more learning for the students, better teaching by the staff and higher morale for all, the return is substantial, but the educational output cannot be measured to one's satisfaction, like measuring temperature with a thermometer.
66. Ventilation, keeping in view blackening of rooms easily is an essential requirement.

67. There is no hard and fast rule except the building requirements for the ventilation. You should be able to make necessary facilities to control lighting whenever required. Ventilation go side by side with lighting. We in India cannot afford to aircondition class-rooms or school buildings. You may be called over-ambitious, if you talk in terms of airconditioning. Sophisticated equipment like electronic programmers, closed circuit television, and film storage require airconditioning, if they are to function properly.
68. Whatever be the physical condition, instructional techniques when employed effectively by the teacher to assist student application and assimilation, combining different skills and aids will create an unbeatable learning situation. Your feedback techniques will improve, refine, and perfect, instruction at many levels.
69. For better results and success you must have brevity, simplicity, follow logical sequence and have psychological appeal.
70. Always remember and emphasise on PREPARATION, PRESENTATION, APPLICATION, ASSIMILATION, TESTS AND EXAMINATION AND SUMMARIES.
71. Take the self test given at the end of this unit. Evaluate your answers with the key. Obtain the key from your Training Officer, if you haven't received the same. If you have difficulties, come for the discussion session.

72. You will take module test as usual now and hand over response sheets to your Training Officer. Practical Exercises are very important.
73. Good Luck.
We will now come to the end of module 3.
In module 4 we will take up duplicating processes.

M III/10 - 13/SB

AUDIO VISUAL EDUCATION

Module III

Projected Aids

Unit 10

Physical facilities & Visuals
for projected aids.
-----Instructional Objectives:

1. Determine the minimum letter size for visuals, for different viewing distance for projected aids.
2. Indicate the spacing to be given between letters when writing projectuals.
3. Determine the correct viewing distance based on the screen size for the following
 - a) slides
 - b) overhead projector
 - c) motion picture
 - d) television
4. State the five important considerations for deciding on the viewing distance for projected image.
5. Discriminate letter height of artwork for slides, transparencies and motion picture.
6. Name three surfaces which are accoustically good.
7. State four aspects which can control the sound effects within a class room.
8. State three methods which can help to effectively control light.
9. State three instructional advantages of lighting.

AUDIO VISUAL EDUCATION

WORK BOOK

Module III

Projected Aids

Unit 10

Physical facilities for
Projected Aids.

1. What minimum letter size will you use for the following anticipated maximum viewing distance for non projected visual aids ?
- a. 2.5 M _____ mm
- b. 5.0 M _____ mm
- c. 10.0 M _____ mm
2. State three important considerations you should take care of in any viewing situations.
- 1.
 - 2.
 - 3.
3. The spacing of the letters (symbols) while writing is:
- _____ a. $\frac{1}{2}$ the height of the letters.
- _____ b. $1\frac{1}{2}$ times the height of the letters.
- _____ c. same size as the letter.
- _____ d. double the size of the letters.
4. State five important considerations for deciding on the viewing distance for a projected image.
- 1.
 - 2.
 - 3.
 - 4.
 - 5.

5. Which of the following pairs is the maximum distance for slides, Overhead transparencies and motion pictures; and for television?
- ☐ a. 6-8 times the width of the screen and 16 times the width of TV tube.
 - ☐ b. 16-18 times the width of the screen and 16 times the width of TV tube.
 - ☐ c. 8-12 times the width of the screen and 12 times the width of TV tube.
 - ☐ d. 6-8 times the width of the screen for both cases.
6. The ratio of the letter height of artwork for slides, transparencies, and motion picture will be _____ (1:5, 1:50, 1:25, 1:100) the same for television is _____ (1:5, 1:25, 1:50, 1:100).
7. Which one of the following surfaces will bounce sound and are not acoustically good?
- ☐ a. smooth surface.
 - ☐ b. Uneven surface
 - ☐ c. draperies
 - ☐ d. venetian blinds.
8. To avoid difficulties of hearing within the classroom we should solve problems of sound from two angles. What are they?
9. Three of the following statements control sound effects in a class room which one of the following is not effective in controlling unwanted sound effects.
- ☐ a. irregular wall surface.
 - ☐ b. draperies
 - ☐ c. hard floor surface.
 - ☐ d. shape of room.

10. Which one of the following is not an effective means of controlling lighting of appropriate quality.

- ☐ a. movable lighting fixtures.
- ☐ b. switching unwanted lights.
- ☐ c. dimmerstats to control the intensity of light.
- ☐ d. not using powerful lights.

11. Which of the following is not an instructional feature of lighting ?

- ☐ a. lighting can inspire.
- ☐ b. lighting can call to attention of the audience.
- ☐ c. lighting can emphasise things.
- ☐ d. lighting can give good illumination.

AUDIO VISUAL EDUCATION

CRITERION TEST

Module III

Projected Aids

Unit 10

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Projected Aids.

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 - 2.
 - 3.
 - 4.
 - 5.

5. Which of the following pair is the maximum distance for slides, Overhead transparencies and motion pictures, and for television ?
- ☐ a. 6-8 times the width of the screen and 16 times the width of TV tube.
 - ☐ b. 16-18 times the width of the screen and 16 times the width of TV tube.
 - ☐ c. 8-12 times the width of the screen and 12 times the width of TV tube.
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7. Which one of the following surfaces will bounce sound and are not acoustically good ?
- ☐ a. smooth surface.
 - ☐ b. uneven surface.
 - ☐ c. draperies.
 - ☐ d. venetian blinds.
8. To avoid difficulties of hearing within the class room we should solve problems of sound from two angles. What are they ?
9. Three of the following statements control sound effects in a class room which one of the following is not effective in controlling unwanted sound effects.
- ☐ a. irregular wall surface
 - ☐ b. draperies
 - ☐ c. hard floor surface
 - ☐ d. shape of room.

10. Which one of the following is not an effective means of controlling lighting of appropriate quality.
- ☐ a. movable lighting fixtures.
 - ☐ b. switching unwanted lights.
 - ☐ c. dimmerstats to control the intensity of light.
 - ☐ d. not using powerful lights.
11. Which of the following is not an instructional feature of lighting ?
- ☐ a. lighting can inspire.
 - ☐ b. lighting can call to attention of the audience.
 - ☐ c. lighting can emphasise things.
 - ☐ d. lighting can give good illumination.

AUDIO VISUAL EDUCATION

KEY TO
CRITERION TEST-----
Module III

Projected Aids.

Unit 10

Physical facilities for
Projected Aids.

1. What minimum letter size will you use for the following anticipated maximum viewing distance for non projected visual aids ?

a. 2.5 M	<u>6</u> mm
b. 5.0 M	<u>12</u> mm
c. 10.0 M	<u>25</u> mm

2. State three important considerations you should take care of in any viewing situation.

What you see,

How well you see,

Under which conditions seeing takes place.

3. The spacing of the letters(symbols) while writing is:

<u> </u>	a. $\frac{1}{2}$ the height of the letters.
<u>**</u>	b. $1\frac{1}{2}$ times the height of letters.
<u> </u>	c. same size as the letter.
<u> </u>	d. double the size of the letters.

4. State five important considerations for deciding on the viewing distance for a projected image.
 - a. spacing of seats.
 - b. maximum viewing angle.
 - c. normal eye level of the viewer.
 - d. height of the image.
 - e. type of furniture.

5. Which of the following pairs is the maximum distance for slides, overhead transparencies and motion pictures, and for television ?
- ☐ ** a. 6-8 times the width of the screen and 16 times the width of the TV tube
 - ☐ b. 16-18 times the width of the screen and 16 times the width of the TV tube.
 - ☐ c. 8-12 times the width of the screen and 12 times the width of TV tube.
 - ☐ d. 6-8 times the width of the screen for both cases.
6. The ratio of the letter height of artwork for slides, transparencies, and motion picture will be 1:50 (1:5, 1:50, 1:25, 1:100) the same for television is 1:25 (1:5, 1:25, 1:50, 1:100).
7. Which one of the following surfaces will bounce sound and are not acoustically good ?
- ☐ ** a. smooth surface.
 - ☐ b. uneven surface.
 - ☐ c. draperies
 - ☐ d. venetian blinds.
8. To avoid difficulties of hearing within the classroom we should solve problems of sound from two angles. What are they ?
- a. Control of sound that originates within the room.
 - b. Exclusion of distracting sound that originates outside the room.
9. Three of the following statements control sound effects in a class room. Which one of the following is not effective in controlling unwanted sound effects.
- ☐ a. irregular wall surface.
 - ☐ b. draperies.
 - ☐ ** c. hard floor surface.
 - ☐ d. shape of room.

10. Which one of the following is not an effective means controlling lighting of appropriate quality ?
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