APPENDIX - L

INTEGRATION OF TEACHING SKILLS

Unit - Three

Use of Visual Aids in Classrooms Teaching

Synopsis

1. Programme
2. Terminal Behaviours
3. Flow Chart
4. Instructional Material
5. Exercise 1 - Teaching with Graphic Aids/Models
6. Exercise 2 - Teaching through Experimentation

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1. Programme

1. Reading Instructional Material
2. Discussion
3. Exercises : Use of Charts

   Experimental Demonstration

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2. Terminal Behaviours :

1. Student teacher will be able to recall different types of graphical aids, and their differences.

2. Student teacher will be able to recall the steps involved in using visual aids.

3. Student teacher will be able to apply the steps involved in using visual aids, while teaching under simulated conditions.

4. Student teacher will be able to use effectively models in classroom teaching applying the systematic procedure.

5. Student teacher will recall the steps involved in experimental demonstration.

6. Student teacher will be able to apply the systematic steps of experimentation during teaching.

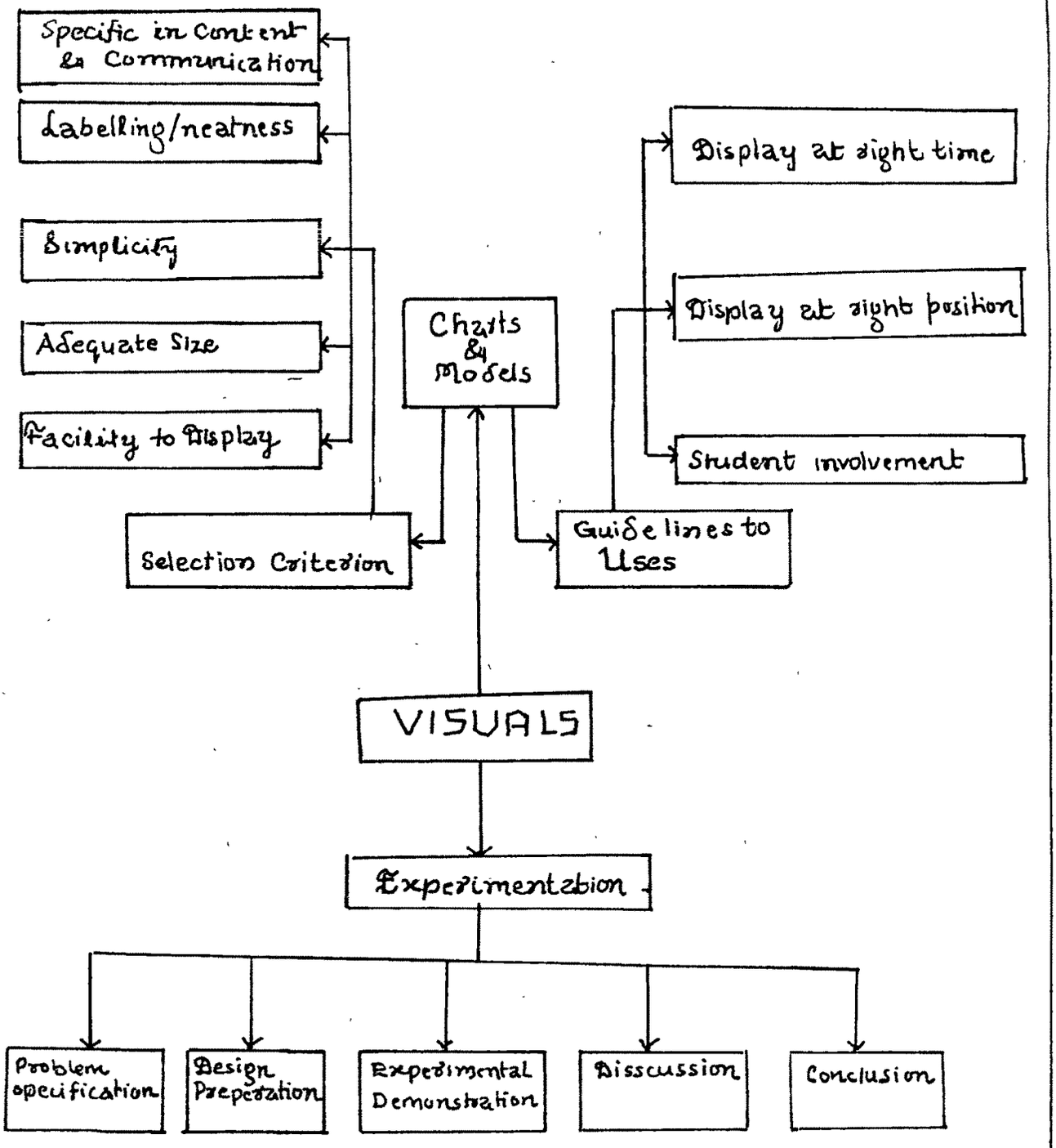
7. Student teacher will be able to recall the advantages of experimental demonstration in classroom teaching.

8. Student teacher will be able to recall the advantages of using graphical visual aids in classroom teaching.

FIG : A-3

FLOW CHART

USE OF VISUALS FOR CLASS ROOM INTERACTION



3. Flow Chart :

Unit : Use of Visual Aids in Classroom Teaching.

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Synopsis :

I. Introduction.

II. Types of Graphical Aids

III. Steps to use Visual Aids

(1) Preparation

(2) Exhibition

(3) Post-exhibitory discussion.

IV. Three Dimensional Visual Aids

V. Experimentation (Demonstrations)

(1) Pre-experimental Preparations.

(2) Experimental Readiness.

(3) Experimentation.

(4) Inquiry about Experimentation.

(5) Discussion about Experimentation.

I Introduction :

In the previous unit 'Use of Blackboard in Classroom teaching' you have practised the use of blackboard in classroom teaching, in question-answer, explanation session etc. Blackboard is a graphic aid which has become a part of any classroom. There are other types of graphical aids which are specifically useful in teaching certain type of content, more meaningfully and with greater ease. In case of blackboard, organisation of content and writing on blackboard are major aspects. Graphical-aids that are presented in this needs preparation or selection of proper aids, exhibiting in classroom skillfully and involvement of pupils in understanding the concept. In this unit emphasis is given to exhibiting the aid in classroom and involvement of pupils in such situations by the teacher.

II Types of Graphical Aids :

The visual aids used in classroom teaching can be classified into five types depending upon its nature and use as follows :

1. Graphical Aids : (a) Photos, Pictures, (b) Charts, (c) Graphs, (d) Maps, etc.
2. Display Boards : (a) Blackboard (b) Flannel board.
3. Three Dimensional Aids : (a) Models (b) Objects, (c) Specimen materials (d) Demonstrations with experimentation (d) Electrical & Budgets. Slides, Epidioscope, Overhead Projector.

The detailed nature, preparation, function of these materials are given in following pages.

Charts and Models : Charts are two dimensional pictures, photographs, diagrams presented on cloth bound papers, cardboards and drawing papers. Now a days slides are also available, which require to be projected in the semidark rooms. Models are three dimensional solid objects, which are usually replica of the original object to be studied. The selected charts shoubd have following essential characters for effective use.

1. The chart should have the diagrams, pictures, photographs that clarifies, supports and simplifies the concept to be taught. It should not be of vague relation. Many a time the teacher may be tempted to use a chart because of other reasons like, that it is prepared by him on some occasion, it is beautiful, it is easily available etc. Selection based on such aspects will negatively affect the effectiveness of teaching.
2. The chart should have only a few ideas represented. A chart covering too many aspects will be too complex and creates more confusion to students than to understand. Usually ready

made charts tend to load too many ideas in a single chart. This is done with a purpose to economise material and usability of chart for general purpose. Such charts will be poor aids for classroom teaching, specially when the learners are in large number. It is advisable to prepare a simple chart exactly suiting the classroom requirements if possible.

3. So far as the size of the visual is considered there is no rigid rule. The only condition being it should be big enough to be seen by all the learners. The last benchers of classroom should be able to see without any difficulty. At the same time it should not be too big creating problems to handle.

4. The picture should have all those aspects labelled which are involved in teaching the concept under study. There should not be too much labelling of parts, which are not necessary and are not covered during teaching. Some of the teachers may be interested to develop the name of parts through discussion, in such cases the diagram need not be labelled.

5. The diagram need not be always the exact replica of the object under learning. The three dimensional pictures may be converted to two dimensional form for simplification avoiding the depth if necessary. Similar use of cross section, cut sections, exploded diagrams, elevation diagrams can be drawn which will be of great use in understanding the structure of object. Some of the detailed aspects if necessary be eliminated, at the same time some of the important aspects may be exagerated.

6. The visual should have necessary arrangement to display in the classroom, so as to be seen by all students with ease. This can be done by making arrangements to hang or by providing cardboard support to lean on the classroom walls.

All the above referred characters are equally applicable to models also. The models can be still or operative. Operative models show some of the functions in simulated form. Apart from models, real objects themselves may be used.

III Steps to use Visual Aids :

These are all two-dimensional aids which are exhibited whenever necessary for a definite purpose. There are three common steps to follow such visual aids : (1) Preparation (2) Exhibition, and (3) Post-exhibitory discussion.

1. Preparation : Teaching aids can be used at any stage of teaching if it helps understanding more easily, meaningfully in the optimum time. For this, the teacher should plan teaching in terms of :

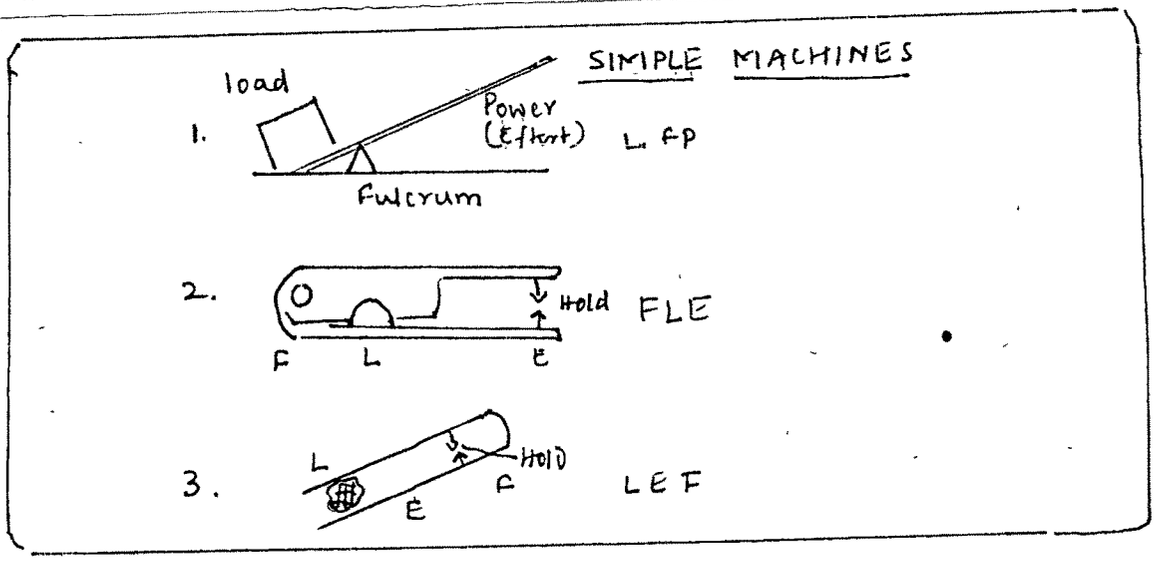
(a) Teaching points, that are difficult for students to understand and comprehend only with teacher behaviours and blackboard.

(b) The supplementary materials in the form of visual aids to make it easy to understand and comprehend.

(c) Selection of proper type of visual aids from the available set of aids.

After the selection of visual aids teacher should make clear : (i) Objectives of using a particular aid, (ii) Clarity of different parts in aid, that need emphasis while teaching, and (iii) Time, when it should be exposed.

Let us take the following chart as selected aid for teaching types of level for the Standard VI.



The objectives of using this chart will be :

1. To make them recognize the instruments and their functions.
2. To identify simple machine components in each of the example viz., fulcrum, effort and load.
3. The sequential order of the components in each examples.
4. To recognise these three examples as the representatives of three types of levels.

To attain these objectives, teacher has clearly presented the following aspects in the charts.

1. The three components of level viz., Fulcrum, effort and load in each of the examples.
2. The sequential linear order are clearly shown by selecting appropriate examples to avoid confusion.
3. The diagrams are simple, clear and unnecessary decoration is minimised.
4. To focus the different types of sequences in the example; they are represented at one side symbolically by letters F, E & L.
5. The diagram is labelled wherever necessary.

The teacher has decided to use this chart after he introduces the terms Fulcrum, Effort and Load. With examples which are not presented in the chart. After clarification of these parts, teacher exposes the chart. He will ask a few questions for identification of these three parts of a simple machine. With the help of chart he will clarify how the sequential arrangement of those components vary. Once the use of the chart is over he will remove the chart.

Exhibitory Phase : At the predecided time, the aid will be exhibited by the teacher. The aid is exposed from such a position that every student can see it easily. Teacher will place a few questions to help students to collect the information from the chart the aspects which students will not be able to observe can be explained (e.g. in case of a photograph of chromosomes pointing to certain aberration). In case of the example 'Simple Machine' the questions can be as follows.

What are the objects shown in picture ?

What are the functions of each object ?

Why do we call them as simple machines ?

Are all these of the same type ?

Can we see all the three parts of simple machine ?

What is the sequential order of three parts in different machines?

Can there be any other sequence than this ?

If we change the sequence, can the machine work for the said purpose ?

Can you give some other instrument wherein the same principles are used.

With these questions teachers will be able to communicate the chart. Finally, if necessary teacher can supplement with additional information or summarise the content and remove if not needed.

Post-exhibitory Phase : In this phase, teacher may further develop the concept taking varied types of examples. Students may be asked to raise questions if they have difficulties in understanding. In the said example, a list of simple machines can be listed and they can be further analysed in two or three types. In some cases, the concept will not be so simple as noted here. It may require longer discussions. When teacher is explaining about the formation of rain to a lower class, his post-exhibitory discussion may be to relate it with the environmental happenings, the monsoon winds, the rainy season, the areas of heavy rainfall etc...

While explaining and discussing the exposed-chart, teacher has to take care of the following with reference to his movements focussing and components of stimulus variation.

1. Take a plave in the classroom, in such a way as all students can see the aid clearly.
2. Whenever certain parts of the aid is focussed, wait until all of them focus their attention on it.

3. While focusing teacher can use a pointer or any suitable material which facilitates all the students to see the pointed part.
4. After every question or explanation a pause can be given to observe the chart.

While students are asked to read map, graph or labelling on the charts etc., teacher has to take care of following points :

1. Stand at a distance, so as to see the students involved in the activity and the rest of the observing students.
2. Give suitable directions, prompts and cues to perform the task.
3. Give enough time to complete the activity.
4. After the activity, reinforce the student with suitable verbal and non-verbal reinforcers.

Three Dimensional Visual Aids :

These are real objects, specimens, models etc. They have better appeal compared to the two dimensional aids. In these aids shape, depth, internal structure, location of different parts at different angles can be shown more clearly. This simplifies the amount of explanation that teacher has to use for communication. Teacher has to follow all the steps that are listed before in addition to the following :

1. Point out the different parts, colours, shapes and sizes by a pointer or any suitable instrument.
2. Expose the aid from all directions so as to give a complete picture of it.
3. If the aid is too small to show the whole group at a stretch, students can be divided into small group, if possible students can be asked to handle, touch and observe in close vicinity. If the specimen or the material is available in abundance, it can be distributed to each desk so as to facilitate observation during exhibitory phase.

Some of the examples of three dimensional aids are as follows :

1. Typical Flower : Larger number of flowers can be brought and distributed to each desk at exhibitory phase. Teacher should ask them to observe and record as per the details given in pre-exhibitory stage. Teacher can attend to the discipline of class while they are observing and recording. The specimens should be once again either collected or kept aside when post-exhibitory discussions are to be made. This cycle can continue until objectives are attained satisfactorily.

2. Biological specimens like fish, insect etc., can be shown to the students, in small groups and they can be asked to note their observations and queries. And collectively they can be discussed. Once again the cycle can be continued till the attainment of objectives.
3. Models like electric motor, barometer etc. can be exposed at a suitable place. On the demonstration table at a specified height from where they can see. They can observe and inquiry about the observation. He may operate, separate different parts change the direction of its placing, call students to observe at close vicinity if necessary.

V. Experimentation :

In experimentation the teaching process becomes more complex, compared to the graphical and three dimensional aids. With graphical aids and three dimensionals, teacher can involve students in question-answer sessions and explanation. He can focus on particular chart/object at any time, while discussing. This advantage will not be available when an experimentation has to be carried. Once the experimentation is started, e.g., determination of boiling point of a liquid, change in colours, and formation fumes, when a reaction takes place, determination of number of oscillations completed during unit time by a pendulum etc. teacher will have no time to either direct students to observe, question or explain. The experiment cannot be disturbed till it is completed. If teacher has to make such demonstrations successful he has to follow a series of steps well planned before hand. Following are the steps that can be followed to make such demonstrations effective.

1. Pre-experimented preparation.
2. Experimental Readiness
3. Experimentation
4. Inquiry about Experimentation
5. Discussion and conclusion about Experimentation.

1. Pre-experimental Preparation : Teacher will create a sound background before he demonstrates. The teacher will present the problems that are to be understood. Referring to the previous background of students teacher can involve students in discussions. This discussion should aim at developing a way to know the unknown things. At the end of discussion the group will be clear about the importance of conducting the experiment, the specific observations that are to be made and the procedure of the experimentation. Before demonstrating 'burning as oxide formation', teacher can ask certain questions like, What is burning ? What happens to the substance when burnt ? Can this process occur in vaccum ? What can be done to answer these questions ? etc. As answers to these questions, teacher will be able to develop a

couple of experiments. The experiments may be like burning a certain substance and analysing the compound formed, burning a substance in atmosphere gas and observing the changes in the gas etc.

2. Experimental Readiness : In the phase of preparation the group will know objectives and procedure to be followed for the experimentation. Considering objectives and procedures the group should think of possible observation that are to be recorded. This will provide a clear idea about recording procedure. If it is a physics experiment like finding out density of a given substance, the records will be of different weights. If it is a reaction as referred to in the first step, the records may be the change in the state of substance.

As mentioned before once the experiment is in operation, the teacher will have no time to guide students about their participation. Therefore teacher will make it clear before experimentation, about the tasks students are supposed to do namely, observing specific aspects, recording, and assisting to demonstrate. Some time it may be required to form some tables for recording the observation. These tables should be developed before starting the experimentation. The required material for experimentation, should be kept ready and at reachable distance as and when required. With these preparations, the class will be ready for experimentation.

3, Experimentation : During this phase the actual experimentation will be done. All the characters of demonstration mentioned for visual apply in this case also. The teacher should involve students to participate whenever possible. Setting the apparatus, placing it in such a way that, the demonstration is observable by all students, taking measures as to clarify ~~them~~ a those aspect which are to be noted, taking help of students in recording the observations are a few important tasks teacher will have in this stage.

4. Inquiry about Experimentation : During the experimentation stage, teacher will be involved in demonstrating the experiment, naturally he will have no much knowledge about the extent of students observations and recording. Also at that stage the observations are individualised. To form a group opinion regarding the events of occurances, the discussion would help. The teacher will enquire about students observations and recording. This discussion will help to dissolve the differential observations, incorrect recording and evolve a data that represents the recording from majority of the students. If majority of students have failed to record, then the experiment has to be repeated once again. The teacher can now tabulate the observations on blackboard with the help of students.

5. Discussion and Conclusion from Experimentation : The data gathered and tabulated should be related to the basic questions raised during the first phase. By discussing the nature of tabulation, the answers that are aroused can be taken as findings and relating these findings to the content in general will end the experimentation.

Teacher's Manual :

Discussion Session
Duration : Two sessions of 45 minutes each.

Guideline for Discussion on Instructional Material :

'Use of Visual Aids in Classroom Teaching'.

1. Different types of graphical aids and their characters, differences and merits/demerits of one over the other.
2. Steps in using visual aids, their importance, with a few examples.
3. Demonstration of using aid during classroom teaching.
4. Different types of three dimensional aids and merits/demerit with other visuals.
5. Precautions to be taken during use of three dimensional aids.
6. Difference between experimental demonstration and other visual expositions.
7. Procedure involved in experimentation and importance of each step.
8. Demonstration of 'experimental demonstration'.

Students Manual

Session : Two sessions of 150 minutes each

Exercise : 'Use of Charts/Pictures for Effective Classroom Teaching.'

Students,

In this session you will be practicing teaching concept as you did for developing blackboard work. The difference will be to use the chart, models or any other visuals. You will be visiting the audio-visual unit and select one of the charts, models or any other visual material which has content information of your interest. After studying the visual you will be preparing a plan to use the visual to achieve suitable objectives through simulated practice-teaching. Each student teacher will be given 8-10 minutes to compute the teaching. The details of technique to be applied is provided in the instructional material.

Teacher's Manual :

Exercise : 'Use of Charts / Pictures for Effective Classroom Teaching.'

Supervisor should help in getting visual aids from the college A.V. Centre. He can provide individual guidance to decide nor the appropriateness of the visual and the content outline to be used for teaching.

While teaching supervision should concentrate on student teachers ~~student~~ competency to expose chart at right time, her postures during use, pupil participation and effective use of visuals. During feedback these aspects are to be focussed.

Student's Manual :

Simulated Practice Teaching

Experimental Demonstration in Classroom Teaching.

Duration : Three Sessions of 150 Minutes each

Students,

In these session you will be practising for experimental demonstrations. You will be selecting small experiments which can be carried out in 4 - 5 minutes viz.preparing solution, testing acid, base and neutral solutions, solubility, osmosis etc. For this exercise you will be planning before hand with paper and pen. The plan can be shown to the supervisor before hand. The practicing procedure will be similar to that as followed in visual aid use.

Teacher's Manual :

Simulated Practice Teaching

Experimental Demonstration in Classroom Teaching

Following are a few guide lines to be followed during practice.

1. The group can be divided into two groups of 6 - 7 student-teachers. Both the groups will practice at the same time in two seperate classrooms.
2. The supervisor can supervise the first two lessons in each group and orient them to run the practice for rest of the students. Later he can alternatively switch to the two groups. If an additional supervisor is available then each sub-group can have a supervisor throughout the sessions.
3. It is advisable to provide individual guidance to all the student teachers before they practice.
4. The criteria provided in the instructional material namely following all the steps, clarity of demonstration should be given importance during feedback.
