Meaning of Teaching Aids

As we all know that today's age is the age of science and technology. The teaching learning programmes have also been affected by it. The process of teaching - learning depends upon the different type of equipment available in the classroom.

on the other hand Classroom boredom often preys on students in science classes due to the fact that students have to learn science in the most illogical way: repeating what written in science book to memorize it without actual understanding of the subject. Nevertheless, you can still be the teacher of the year if you know what it takes to ignite hearts for science: teaching aids for science.

Need of Teaching Aids:

1) Every individual has the tendency to forget. Proper use of teaching aids helps to retain more concept permanently.

2) Students can learn better when they are motivated properly through different teaching aids.

3) Teaching aids develop the proper image when the students see, hear taste and smell properly.

4) Teaching aids provide complete example for conceptual thinking.

5) The teaching aids create the environment of interest for the students.

6) Teaching aids helps to increase the vocabulary of the students.

7) Teaching aids helps the teacher to get sometime and make learning permanent.

8) Teaching aids provide direct experience to the students.

Types of Teaching Aids

There are many aids available these days. We may classify these aids as follows-

. Visual Aids
. Audio Aids
. Audio - Visual Aids

1) **Visual Aids**
The aids which use sense of vision are called Visual aids. For example :- actual objects, models, pictures, charts, maps, flash cards, flannel board, bulletin board, chalkboard, overhead projector, slides etc. Out of these black board and chalk are the commonest ones.

2) **Audio Aids**
The aids that involve the sense of hearing are called Audio aids. For example :- radio, tape recorder, gramophone etc.

3) **Audio - Visual Aids**
The aids which involve the sense of vision as well as hearing are called Audio- Visual aids. For example :- television, film projector, film strips etc.

The importance of teaching aids for science :

Teaching aids play an very important role in Teaching- Learning process. Importance of Teaching aids are as follows :-

1) Motivation
Teaching aids motivate the students so that they can learn better.

2) Clarification
Through teaching aids , the teacher clarify the subject matter more easily.

3) Discouragement of Cramming
Teaching aids can facilitate the proper understanding to the students which discourage the act of cramming.

4) Increase the Vocabulary
Teaching aids helps to increase the vocabulary of the students more effectively.

5) Saves Time and Money

6) Classroom Live and active
Teaching aids make the classroom live and active.

7) Avoids Dullness

8) Direct Experience
Teaching aids provide direct experience to the students

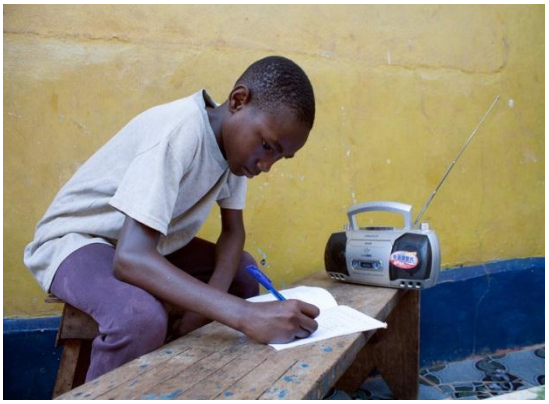
Approaches to Teaching Aids for Science

These teaching aids for science we introduce in this article are largely based on Dale's Cone of Experience.

Dale's Cone of Experience, created by the American Educator – Edgar Dale, is a method to classify and category teaching aids based on learning experience and sense stimulation involved. Read more about Dale's Cone of Experience

1. Radio Programmes

A prominent example of Radio Programmes as a teaching aid for science is the Radio Science Lesson created from the collaboration of UNICEF and several Non-governmental Development Organizations in Sierra Leone when the government shut down all school to curb the spread of Ebola in 2015



Jimmy Kamara, 9, is one of the students in Sierra Leone who use radios to continue their education while schools remain closed owing to Ebola. Tolu Bade/Courtesy of UNICEF.

As the example shown, Radio Programmes can be effective teaching tools for science in remote areas or war-torn areas where opportunities for formal education are severely limited due to the paucity of school and teachers.

The downside is that as effective as it is, radio programmes broadcasting science facts cannot serve as an alternative to a science classroom. Another barrier is that the cost to establish a radio programme is not cheap and require collaborative efforts from various resources.

N.B: You may compare this situation with the present scenarios due to covid -19.

2. Still Pictures:

Charts

On the basis of presentation, charts can be of the following kinds:

- Tree charts: To show various kinds or relationships.
- Classification charts: To present classifications e.g. plant kingdom or animal kingdom.
- Collages: Are those charts where information or pictures from other sources (newspaper, magazine, etc) are pasted.
- Flip charts: Are a series of charts which are shown one after the other. They are bound to make a flip book or put on a stand and flipped backward like calendar sheets.

Models

Models represent real things but size and shape may change. They may be static, sectional or working. In a static model, parts of a system cannot be separated. If a model where all parts can be removed and replaced, it is a sectional model. Working models show actual operation of an object or process, e.g, conduction of electricity, body systems, etc.

Both Charts and Models are the most common teaching aids for science due to its high availability, low-cost preparation and can be effectively recycled.

Many charts can easily get lost in student's yawns due to its repetitive format. Therefore, upon making a chart as a teaching aid for science, the teacher must take into serious consideration:

- the balance between text and pictures on a chart (e.g too much text can make the lesson double student's boredom)
- the combination of colors
- the information presented

3. Motion Pictures

Animated films as illustration

Animated learning videos are short cartoons or motion graphics that play as visual supporting tools for teachers. A short animated film can be introduced into the lesson to illustrate a particular point e.g. during the teaching of the digestive system, actions of enzymes in various organs can be shown using a film. The adoption of animation in education, especially in the context of a science classroom, is in fact, a strong method of teaching science subject.

Background films

Generally, documentary and interest films provide a background to science lessons. Science teaching can be improved using well-balanced documentary films on industrial and social themes e.g. pollution, population, hunting or natural disasters. Documentaries can go beyond the core science lesson to be emotionally powerful vehicles that can transport students to other cultures and create an awareness of current global issues from the inside out through feeling and empathy. When enhanced with written reflection, films help students develop social and emotional learning in ways not available from textbooks or lectures.

4. Science Fairs

The power of science exhibition as a teaching aid for science lays in its inspiring nature. The exhibition gives students a great sense of ownership toward their science projects and increases student engagement in science by encouraging them to apply what they are taught in science class. Furthermore, science fairs involve much more than science, students have to the chance to hone their presentation skill, researching skill, report writing skill, debating skill, etc.. Proud faces and energetic faces of students painted across the science fair scene is always an exciting spectacle. Science fair, therefore, should be recommended as the cornerstone of successful science teaching.

Cons: The major drawback for students is the time commitment. Since the projects are unique, students will have to carry out the experiments on their own time. This con conflict with other school assignments if not planned well. A science fair is also a huge commitment on the part of teachers. For every students, they need to assess if the project is acceptable, help with finding reliable information sources, and give feedback when a student encounters a problem. On top of that, there are numerous other responsibilities, involved with getting all the projects displayed and judged. In addition, organizing a school-sice science fair can sometimes require an unnecessarily large amount of financial resource which can be equally allocated to other teaching aids.

5. Field Trip

Student loves field trips. Without a doubt, a carefully planned educational field trip can be a great teaching aid for science. Students are exposed to new experiences that potentially broaden their horizons. Concepts that have already been learned in the classroom can be reinforced and students are provided with shared reference points that teachers can then refer to and use in future classes.

Cons: Beware of the underlying red flag! Fieldtrip can result in a heap of burdens for teachers (imagine managing 50 over-exciting students running around wildly for a whole day), a mere holiday for students, an expensive extravagance and bad publicity for a school, unless they are well-planned and motivated.

Excursions should be made with a definite purpose in mind to answer questions that are best settled by first-hand observations. Students should be aware of the purpose of the trip. The teacher should have knowledge on the place being visited and should ensure that there is plenty of opportunities to see and to ask questions. Furthermore, it is not necessary that a field trip has to be out of school or of long duration. It can always be carried out within school premises – in a field, to school museums, to science laboratories, etc. Field trips can be of immense value to the study of science. Probably, more time should be spent getting ready for an excursion and gathering deductions from it, than on the actual excursion.

6. Dramatic Participation (Roleplay)

It's common knowledge that Drama and Science are as different as chalk and cheese and dramatics is only for languages. However, if you take a step back and a broader look, drama can be applied to primary classes as well. Science teacher can think of many topics which can be taught through role play or drama.

Pros: Dramatic Participation as teaching aids for science proves to be useful to teach very abstract and uninteresting ideas. Some topics which can be taught through dramatics are the solar system, ecosystem, nutrients, vitamins.

Furthermore, Roleplay in Science classroom can deliver various benefits regarding to student's interpersonal skill development including: encouraging student to interact with each other and create their own reality; raising student's awareness of ethical and moral issues arising from science curriculum; helping students to have a better conceptual skils (with analogical roleplay)

Cons: Roleplay session in a science class, as appealing as it may sounds, can be very time-consuming and result in poor learning outcomes if not planned thoroughly.

7. Direct Experience

Pros: Direct experience is the process of acquiring knowledge by fully and directly participating in an activity. Generally speaking, this produces more usable and vivid knowledge than learning about something with indirect experiences such as a game, video or book. The primary example of this teaching aid, despite being not new – classroom science experiment, still prove to be an incredibly effective means of helping students to actually apply what they have learned from textbook and lectures!

Cons: All such experiences may not be meaningful especially when the real things are too small or too big to comprehend e.g. airport, factory, atom, furnace, ecosystem, etc. The science teacher has to decide the type of direct experiences which will be useful for their students. Some examples are – phyllotaxy, types of leaves, the structure of flower, common animals.

BY Egder Dale

Essential rules when choosing teaching aids for science

As detailed in the early section, the choices for teachings aid for science are not limited, at all! However, the decision about which aid will be most helpful for a particular scientific topic to be taught in class. To avoid hastily adopting trendy teaching aids for science and suffering counterproductive consequences, there are a few simple rules to keep in mind when choosing teaching aids for science.

1. A teaching aid for science should be affordable and should not be time-consuming.
2. A teaching aid is not a substitute for teaching.
3. “informative” and “Entertaining” must go hand in hand. Teaching aids not only need to fulfill teaching objectives for a particular subject but also need to create interest among students.