

B.Ed. Sem II
Pedagogy of Physical
Science
Topic- Demonstration Method

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2. Demonstration Method

Under this method, the teacher shows experimental representation before the students to make them understand any law or principle of physics. For example, the of Arkmedese's principle can be made by the experimental representation. Similarly the trustification of the laws of reflection can be represented before the students by experiment. To provide the students with the real knowledge of scientific law and facts, this method can be used.

Both the teacher and the students remain active in demonstration method. The work of the teacher is not limited only upto giving oral lectures, but he goes on representing by self experiment before the class accordingly. The teacher already collects the necessary implements etc. with regard to representation on a table, by which the teacher goes on showing the necessary experiments about the subject in the class from time to time. During the representation, the teacher also asks students the questions connected with the subject. The students go on looking, bring out the result of experiments and also answer properly to the question asked by the teacher. This method is helpful in creating a suitable atmosphere of the class room, in which the growth of students can be properly made. In demonstration method, the teacher has to explain the experiments and has also to answer the questions. The students go on looking various instruments, their experiment and activities sitting at their seats in the class. Thus, they hear about the subject matter by ears and obtain knowledge by looking on directly with eyes i.e., the students get the full knowledge of the subject merely sitting at one place in the class by demonstration method. They need not go to laboratory or elsewhere. The teacher may take the co-operation of students according to their ability, interest and capacity in representation work so that they might take part actively & courageously in teaching process. All senses of knowledge of the child remain busy in demonstration method. It is the correct, best and cheap method of teaching physics at senior primary and secondary level. This method is the compliment of lecture method.

How Demonstration Method will be Used

Most of the teachers use this method in physics teaching, so the various steps of this method are the following :

1. Preparation of the Lesson by the Teacher—A teacher should already make the preparation connected with his lesson. In his preparation, it is necessary for him to pay attention on the points written ahead :

- (i) Preparation of the subject matter.
- (ii) Construction of lesson plan. (to form questions to be asked)
- (iii) To rehearse the experiment.
- (iv) Collecting various instruments and material related with representation, and to arrange them in order.

It is necessary for the teacher that he should make a serial wise list of the subject matter connected with his lesson, of questions to be asked and activities before representing the lesson and should also place the implements serially arranged on the table. While representing no time should be devoted to search for things. The success or failure (of presentation) depends upon a large scale on the preparation made by the teacher. While preparing the lesson plan, keeping attention to students' abilities, interests and time, the description of principles to be taught, of experiments to be represented and the questions to be asked in the class, should be made in written form in the formation of the lesson plan. Before entering in the class he must himself test the experiment related with representation. By it the increase in the self confidence of the teacher would be possible.

2. To Represent the Problem—Showing representation without any pre-critical appreciation or direction, the problem can be represented. Km. Sangita used a glass and pencil to propose the study of 'reflection'. She showed keeping the pencil into to students and after having known about its situation from students, Km. Sangita, dropping water into the glass and showing it to students asked that how is the situation of the pencil seeming from its earlier form ? The answer of everyone was—'folded'. Being eager by this incident, the students demanded to become aware of its reason and thus the introduction of the lesson was made.

3. Teaching Process—The teacher should also pay attention upon the fact that teaching may not become dull in teaching process. To make the teaching work effective, sometimes a skillful teacher of physics, searches out self willingly the various instances of life and the examples of other sub topics in teaching of his subject. By such knowledge he enables himself to make his topic interesting, clear and meaningful. The teacher should make representation by easy questions. In the condition of not getting proper answers of questions, the teacher will himself present their theoretical meaning and represent their experiment. A teacher should adopt the purity of pronunciation in speech, clarity, ascend and descend similar to his subject, So that the students might understand him easily.

4. Experiment of Solve the Problem—The experiments made by physics teacher should be the ideal and example for the students. The success of experiment made by him is clearly depend on the result. The experiment having long and complicated instruments and results should not be taken in the form of representation. The effect of many experiments is not good upon students, actually the truth is that inspite of many experiments, a comparably big, clear and interesting experiment can increase more knowledge of students.

Sometimes in a very natural form, the questions of general interest emerge out. Representation can be made in the answers of those questions. Example—A student presented the problem before of shocking by wet walls during rain, by analysing the incident after the walls being wet, the problem of electric being conducted well came ahead. Thus, its solution can be made by a little representation.

5. Use of Black Board—In experimental demonstration method the black board proves to be very useful. If seen really, then the black board should be understood to be the right hand of the teacher in educational process. Its use increases even more for the physics teacher. He can use it for writing formulas, theories or laws and making sketches on the black-board. The capacity of the teacher can be evaluated to a large extent by black board work.

6. Inspection and Copy of Substance Summary—The students write in their note-book the copy of black board work done in the form of black-board summary by the teacher. At this time the teacher should find out after making observation in the class whether the students are noting the summary or not. By inspection, the teacher can get the knowledge of personal problems of students also.

Merits of Demonstration Method

1. Helpful in Mental Growth—The students have to keep on looking attentively the experimental and representing material under this method, so that the students might reach at some suitable result, thinking properly about them. Student gets enough chance to develop his mental powers such as investigation power, thinking power, reasoning power and contemplating power by it.

2. Attainment of Clear and Permanent Knowledge—By using this method, the students are provided direct, clear and permanent knowledge. The students look the action of which experiment they also look the method of work of its every part which creates steady and firm ideas upon their brain.

3. Active Atmosphere—The students do not bear shower of hail in the form of teachers lecture being dumb and helpless like innocent plants i.e. the teacher does not drop hails in the form of words. Teacher and student, the both are active in it which makes the atmosphere of the class-room fully active and alert. The teacher according to need, during representation of experiment, taking the active cooperation of students and asking suitable question related with the development of the lesson, tries to fulfil the action effectively.

4. Helpful in Teaching Work—Every teacher wishes and it is his inner desire that the teaching work imparted by him may be effective and be able to be adopted easily and it should be interesting and useful

for the students. By the use of this method the teacher has controlled certainly the shower in the form of speech. The teacher has to work hard surely in teaching by this method, but in this hard work we come across very hopeful results in a short time.

5. Means of Saving—In the schools of Indian atmosphere of today, it is a hard work to give chance to students for earning knowledge by their own experiment. So in present circumstances, such method is more useful, in which more knowledge can be provided to students by limited means. By this method, with a little money and helping the students in looking the experiment directly, hearing and representing it, the children can be provided the chance to obtain direct experience.

Demerits of Demonstration Method

1. Lack of Psychologic Trend—Psychologically, this method does not provide students the chance of flourishing inventional and constructive tendencies finely. Children are active by nature. They have constructive tendency. Even after the theories and laws having been clarified by the teacher, there remains curiosity and eagerness in students as before. The child learns merely by hearing and looking through this method. It is sure that the atmosphere of the class is active in it but teacher remains more active than the student.

2. Unfavourable to Teaching Principles—In spite of self experiment, touching and seeing the implement and learning by doing etc., the students remain more peaceful and inactive during representation, by which it is hard to keep on the interest of children engaged in experiment to a necessary limit.

3. Lack of Practical Capacity—The chance of doing experiments by self is not provided to students in this method, by which the skills of attaining knowledge by self and the skills about experiments are not developed among children. The students do not get chance to perform direct experiment and to obtain knowledge personally by direct things.

4. Absence of Favourable Results—If the teacher is less experienced and he may not be enjoying needed comforts, it would be useless to expect fine results by this method in such a situation. Because even the shortage of time and material for preparation of presentation with the teacher is obstructive in attaining success by this method.

5. The Students' Number Being More—There should be less number of students in the class for the success of this method, but in most of the schools there is a large number of students. In this condition, the success of this method becomes even more suspicious.

6. Partial Profit of Experimental Representation—One has to proceed further regarding this that all the students look, hear and observe every part of representation equally, but really all the students

are not able to pay constant attention upon all the parts of experiments & their learning process is impressed by it.

Suggestions for Good Demonstration

(1) The arrangement of a room for representation should be made according to the need in which the presentation table should be at such a suitable place where from the students may look the experiments easily.

(2) The size of represented thing must be at least so big that all the students of the class might look it.

(3) All the material should be placed beside the presentation table after being well arranged earlier before starting the representation.

(4) There should be a big black board also behind the representation table in the class by which the teachers may draw the figures about experiment, may draw sketches or may write the results of experiments, theories and other important facts.

(5) The room in which the representation is to be performed, at first after visiting it, it should be noted if the necessary facilities, such as electric, light, water facility of making darkness etc. are available in it.

(6) If the students are less in number, they may be allowed to stand all around the representation table.

(7) A teacher should have his as well as of his students' view point investigative. The results should be driven out by only students after the experiment.

(8) The thoughtful and concentrative questions should be asked from students in order to develop interest and reasoning power in them.

(9) The teacher should predecide that experiment may be easy and aimful and may be shown in the class.

(10) Teacher should rehearse the experiment before showing it in the class.

(11) Attention should be paid upon available time while making the plan, otherwise the teacher may have to face difficulty to lack of time.

(12) The use of various articles is necessary to be described to increase the interest of students. By it their faith will be more on observation.

(13) Additional material should also be placed beside representation table.

(14) For which purpose is the representation being made? The teacher must have clear knowledge of it. The teacher must be well acquainted with the aims obtained from representation.

(15) In performing representation, the teacher should follow such a manner, as a magician chows his magic and the chance should be provided to students turn by turn.