

INNOVATION

Innovation is to bring some changes in the techniques of teaching in order to get desired results in the education system. Under innovation some new methods, new techniques, new teaching methodology, new services and new products are employed in the teaching and learning processes.

(1) Teaching and Innovation:

It is important to understand different teaching methods before discussing innovative methods. The teaching practices are divided into four categories based on Teacher - learner interactions

- Teacher Controlled instructions
- Student Controlled instructions
- Group Controlled instructions
- Teacher - Student Controlled instructions

All the above categories of teaching methods except teacher controlled instructions can be kept under the innovative methods of teaching. Few methods of innovative teaching have been discussed here

(A) Play Method

Playing games helps in the physical development of a child along with the mental development. It also increases the mental stress bearing capacity of an individual.

The mental development of a child can be achieved by physical exercise and gaming.

Education to children by play method makes the students more disciplined.

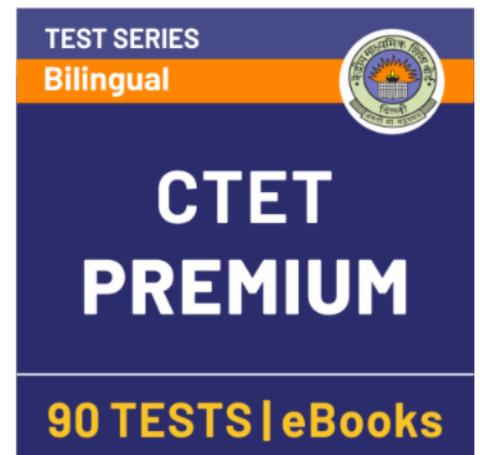
There are many methods to educate children by play method and other activity based methods. These are as follows

- Project method
- Montessori
- Heuristic method
- Kinder garden
- Dalt method
- Basic education method

(B) Project Method

This method includes the following principles

- The truth is revealed by experimentation, discovery and knowledge.
- The knowledge should be useful for mankind as human beings are social animals.
- Knowledge can be gained by practical experiences. Objectives of project method are



- To increase productivity by educating children.
- To develop personality of individual students by practical experiences.
- To develop skills and enhance the values of education to modernize the existing society.

Various characteristics of project method are

- The students get an opportunity to learn through their activities and experiences.
- The students become more interested because science related to practical life is taught to them.
- The social values are also inculcated in the students along with the knowledge of science.

Types of Project

According to W. H. Kilpatrick, projects are of four types

1. **Producer Project** Here the emphasis is on actual construction of a material object or article.
2. **Consumer Project** Here the emphasis is gain on obtaining either direct or vicarious experience, such as reading and learning stories, listening to a musical concerts etc.
3. **Problem Projects** The main purpose is to solve a problem using intellectual process, such as determining the density of a certain liquid.
4. **Drill Projects** This type of project emphasizes on attaining a certain degree of skill in a reaction as learning a vocabulary

(C) Seminar Presentations

Seminar presentations may provide quite useful opportunities for the learner/participants to gain very significant experiences related to the facts, principles, processes and application of the science.

- It actually represents a method of collective group learning where the entire participant in the shape of the members of the seminar group try to share their unique experiences related to the deliberations of the seminar.
- It may take a shape of formal as well as informal method of teaching - learning depending on the circumstances available and the objectives planned for the seminar presentation.

(2) Team - Teaching in Science:

+Team - teaching signifies the teaching work and activities organized by a team of individuals comprising teachers, resource personnel, clerical staff and other employees.

It is relatively a new concept in our country. That is why, here we can term it as an innovation in the field of teaching and learning.

In a simple way, it may be understood as an attempt to seek ways and means for bringing improvement in the process and product of teaching through collective efforts by a group of individuals mostly teachers - teaching in the same school. In this teacher first demonstrates to show the result of experiments, the students are expected to carry it out.

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Organisation, Procedure and Steps for Team - Teaching in Science

Team - teaching is carried out in a cooperative way by a team of persons. Every team has its leader and one or more cooperating teachers.

In terms of procedure, team - teaching usually involves three main stages or steps, namely planning, execution and evaluation.

(i) Planning Stage:

At this stage, team - teaching involves the following types of activities

- Decision about the topic to be taught.
- Formulation objectives and writing them in behavioural terms.
- Identifying the initial behaviour of the learner.
- Identifying the available man and material resources.
- Provide the platform to students to interact, ask queries and at the end summarize the discussed topic.
- Selection of the comprising team, teaching team, teachers, team leader and other professional and non - professional helping hands.
- Taking decision about the tentative schedule, the larger or small group teaching, the level of instruction and teaching strategies, etc. For example planning a comprehensive programme for the protection of all the physical and biological components of the forests.
- Distributing responsibilities among the members of the team according to their interest and abilities.
- Taking decision about the means and ways of evaluating the learning outcomes.

(ii) Execution Stage:

Actual teaching - learning activities are carried out by the members in following three sessions:

Large Group Session (General Assembly):

- The beginning is made by teaching students in a large group. Two or three sections of a class may be combined to form a large group. This group is taught by a most competent and expert teacher in the team.
- All other members of the team then provide essential cooperation in his task. For example, one may provide some additional points or information, the others may show the map, draw summary on the blackboard, demonstrate some experiments, give examples, etc. as needed most in the teaching - learning situation.
- The maintenance of discipline also may be left to some cooperative teachers. The students do not only listen to the lecture or observe what is demonstrated to them by the teacher; but they are also free to ask question and discuss the matter taught and points raised by the teacher.
- Here other teacher plays their part to help the main teachers in providing appropriate answers to the questions of the students.



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Small Group Session:

- After the general assembly, students are divided into small groups. These groups are taken by the individual teachers.
- Here the teacher tries to discuss with the learners, the common difficulties faced by them in understanding the material taught in the general assembly session.
- He may explain, illustrate, demonstrate and provide opportunities to the students for doing experiments or other science activities in the small groups.
- If teacher finds any student not conceiving the right concept of subject, she should try to make him understand by revising it.

Individual Study Session

- By going under the above mentioned activities in large group or small group sessions, the students are able to engage in self-study and do independent work on the individual level.
- Now they can go in library for independent reading, in laboratory for independent experimentation or in other work places for doing practical work. They can have drill and practice work or adopt other resources for self-study.
- Here the teachers and other members of the team have a big responsibility of supervising, guiding and directing the students on the right path. They have to remove their individual difficulties and suggest ways and means for their progress according to their interests and abilities.

(iii) Evaluation Stage:

- At this stage of team teaching attempts are made for the evaluation of the progress and outcomes of the activities performed in team teaching.
- The outcomes are evaluated in the light of the set objectives, learners initial behaviour, the methods and strategies, planning, the responsibilities shared by the team members, resources at command and the difficulties faced by the team members, etc.
- The evaluation of the student's performance is done through various measures. Oral, written and practical tests are conducted for this purpose. Their sessional, practice and homework is also evaluated from time - to - time for providing comprehensive picture of their learning outcomes as a result of the process of team teaching
- In the light of all such evaluation work, the attempts are made to incorporate necessary modifications and improvements in the organisation of team teaching programmes in the institution.

KEY FACTS:

Case Studies Involved in the Innovations

- Many people have shown concern about science education in our country and there have been a number of efforts to improve it at various levels which are as follows
- **Hoshangabad Science Teaching Programme (HSTP):** In this innovative method, the middle school students were taught science through discovery approach. It was started in 16 school of the districts. Later it was taken to 1000 schools of district Hoshangabad.

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- **Adhyaita Kendri Vigyan Shikshan Karyakram or (Avishika):** It is an initiative taken at Gujarat. The possibility of teaching science in rural schools were thought by three Gandhian Organisations.
- **Homi Bhabha Centre for Science Education (HBCSE):** It was developed small science. It is a series of innovative curriculum (science books). Its aim was to modify science and math education from primary school to under graduate level in the country.

(3) Lesson Planning:

Proper planning of the lessons is the key to effective teaching. A daily lesson planning consists of teaching points, specification to be achieved, organisation of an orderly sequence of learning activities, actual test items to which pupils are to be exposed. Lesson Planning is essential because, effective learning takes place only if content is presented in an integrated and correlated manner.

- **G. H. Green** says, “The teacher who has planned his lesson wisely related to his topic and to his classroom without any anxiety, ready to embark with confidence upon a job, he understands and prepares to carry it out into a workable conclusion.
- He has foreseen the difficulties that are likely to arise, and prepare him to deal with them.
- A daily lesson plan is confined to only one period. The contention presented in the form of teaching points. The learning activities discussed in detail. The test items may be in the form of an essay or short answer or objective type questions.

(a) Advantages of Lesson Plan

The advantages of lesson plan are as follows

- It stimulates the teacher to ask questions.
- It provides freedom in teaching.
- It induces confidence among teachers.
- Lesson planning make the work, regular, organized and systematic. It saves a lot of time. It also provides opportunities to students to participate and ask questions.

(b) Suggestions to Improve Lesson Plan

Various suggestions to improve lesson plans are

- It is important to highlight only the key concepts or relation and save most of the time for them.
- It must be made in the context of overall unit plan and should be continuous from day to day.
- To make the lesson plan fit a long - range schedule the teacher must give careful attention to important ideas of the textbook for a particular day.



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