



Teaching Science with Project Method: Problems & Remedies

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Abstract

Scientific temperament can be inculcated in children from a very early stage, if they are taught science subject in an innovative and creative way. Studies have proved that the best method to learn science is project method (PM). In PM the teacher has to direct the students to solve a practical problem which is a challenging task. In this paper “The problems faced by high school teacher’s while teaching Science subject using project method” are discussed. The paper also suggests some remedies over them.

Introduction

Science curriculum

One of the objectives of science education is to develop inventiveness and creativity along with competence. Science education in India at its best develops competence, but does not encourage inventiveness and creativity. This is evident from the fact that many Indian students perform very well in formal/ scholastic tests but relatively few make it to the grade of truly outstanding researchers or original thinkers. An average science student in the country demonstrates neither inventiveness nor competence in science.

Curricular transaction alone is not sufficient to provide scope for inventiveness and creativity. This is particularly so in our education system, dominated as it is by the examination system. It is in this context that non-formal modes of learning assume

great significance. It is through non-formal channels that creative learning could be encouraged by providing students an environment wherein they can undertake investigative science projects, develop innovative models / exhibits or just tinker around with gadgets and machines. In many schools this kind of activity does exist in some form such as science exhibitions / science projects.

Though it often assumes the form of annual rituals, this is the only activity that allows non-formal interaction between students and science teachers which stimulate innovation and creativity outside the classroom, if only in a small way.

We see in it a big potential and recommend that a major effort be launched to convert this activity into a large-scale children's science movement in the country.

At the secondary stage the students should be engaged in learning science as a composite discipline, in working with hands and tools to design more advanced technological modules that at the upper primary stage, and in activities and analysis on issues surroundings environment and health. Systematic experimentations as a tool to discover/verify theoretical principles and working on locally significant projects involving science and technology are to be important parts of the curriculum at this stage.

Project Method

The Project method is the outcome of the pragmatic educational philosophy of Dewey, the well known American philosopher-cum-educationist. It was developed and perfected by Dr. William Head Kilpatrick of the University of Columbia.

Kilpatric :- *“A project is a whole hearted purposeful activity proceeding in a social environment.”*

Various Steps in a Project

1. Providing a situation
2. Choosing and Purposing
3. Planning
4. Executing the plan

5. Judging
6. Recording

Merits of the Project method

1. Based on the law of learning – The law of readiness, The law of exercise and The law of effect.
2. Related with life .
3. Correlation with all the subjects.
4. Training in citizenship.
5. Upholding dignity of labor.
6. Stressing problem-solving.
7. A source of happiness for the backward.
8. Providing freedom.
9. Solving the problem of indiscipline.

Role of teacher

Project management is the systematic approach for executing and leading project. The project approach has the goal of achieving the result certainly and efficiently, especially to prevent the delay in time and to reduce uncertainty and risk.

Objectives of survey

To study the various problems faced by the high school science teachers while teaching with the project method.

To suggest the remedies over the problems faced by high school science teachers while teaching with project method.

Sample for the survey

Sample of 50 high school science teachers from 10 granted schools and 5 experts of science subject from Pune city were chosen.

Procedure

A questioner was prepared for the teachers and interview of experts were taken to find out the remedies of the problems faced by the teachers.

Findings of the study

Students IQ :- All the students are not of the same IQ.

Student strength :- It becomes difficult for the teacher to guide each student because of excess student strength in class.

Time availability :- Teachers has to complete their school syllabus in limited period of time as well as they have to handle and prepare students for extra-curricular activities.

Economical Problem :- Parents cannot afford the expenses of the project method.

Remedies suggested by the experts

Despite the challenges, there are different strategies that high school science teachers can use to implement project method in the class rooms. The best way to implement Project method is to tie it to standard, unit curriculum, program of study or after school science program. Below are some steps that could be followed :-

1. Administer a pre-assessment to determine student's knowledge, process skills and disposition in the specific theme or topic. Explain the PM to the students.
2. Emphasize that collaboration is a must in PM. Explain the importance of collaboration with various examples.
3. Discuss the advantages and disadvantages of working in groups. However emphasize that the advantages of working in groups are more than disadvantages.
4. Note that as they work in groups they will have to complement each other's weaknesses with each other's strengths, make constructive criticism as opposed to destructive criticism and take collective responsibility as opposed to individual responsibility.
5. Divide the class into small manageable groups. Where possible make sure that each group is balanced in terms of gender, academic ability, and socio-economic background.
6. Review each question with the individual groups to make sure that they are well defined and focused.
7. Ask each group to present their research question. During the presentation encourage the group to evaluate each other's research questions.
8. Monitor, mentor, advice, assist and facilitate group activities. Ask students to analyze their data and prepare reports.

9. Ask students to reflect in writing what they knew prior to and after completion of their project.

For the teachers who want to implement PM, some knowledge and experiences in the theory and practice of this method is required. In addition, the teacher must know how to organize and manage students from the diverse backgrounds and learning styles, know how to mentor students as they work on their project and how to assess students project.

Teacher should have estimate of time and space requirement then only administrative support, resources and scheduling could be requested to accommodate PM.

Funds can be arranged from the private organizations. Best out of west can be prepared.

Exhibitions at the time of parents meeting can be arranged. So that students can get parents appreciation and help.

Conclusion

For the successful implementation of the project method the teacher must be resourceful, innovative and willing to experiment with new ideas.

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Science Curriculum

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