
Effectiveness of Problem Solving Method in Teaching of Science

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ABSTRACT: Among many methods of teaching science, the problem solving method is one of the best methods. Science is an important subject in which knowledge is useful only when it is permanent and when they apply this knowledge in their day-to-day lives. This method helps the students to develop many skills using which they learn to solve their problems. In this method, students discuss and work on their problems to find out the best possible solution for their problems. In this way, they learn what they want to know.

KEYWORDS: Teaching, Students, Experiential, Science, Problem Solving Method.

INTRODUCTION: Problem solving method is a student-centered approach in which the students are active participants. They are presented with problems and then they attempt to find out the most suitable solution. Students are trained to solve difficult situations by performing experiments. In our daily routine, we encounter many problems which we can solve using proper experiential knowledge.

Problem solving method is a method of teaching which provides opportunity of analyzing to students and solve a problem by using their previous experiences. It is a systematically and an orderly process. The

process begins when a student identifies a problem and faces difficulty in finding out the solution. Then he starts to think about the problem with the help of a self-study, mutual discussions and practical work. He tries to apply, one-by-one, all the possible solutions of his problem and finally, he find a solution of his problem that is valid and applicable in that situation.

METHODOLOGY OF THE PROBLEM

SOLVING APPROACH: In this method, the scientific attitude of a student is developed. He tries to solve his problem scientifically. Following are the systematic steps involved in this method:-

- 1) IDENTIFYING THE PROBLEM- In this step, the students(as per their ability and available resources) find out a problem or a teacher presents a problem to the studentswhich is related to the daily lifeand provides maximum learning to the students.
- 2) COLLECTION OF RELEVANT DATA- Here, the students try to collect the information relevant to their problem. They collect data by consulting experts, reading literature, from library and by any other means which is available to them.
- 3) ANALYSIS AND INTERPRETATION OF DATA- Once the data is collected, the students analyze and interpret the data. The information which is useful is kept and which is not useful is discarded. Thereafter, the student try to find out the solution which is most useful in the situation.
- 4) FORMULATING HYPOTHESIS - After the nature and parameters of a problem are understood, the students need to select one or more appropriate strategies to resolve the problem. Students need to understand that they have many strategies available to them and that no single strategy will work for all problems.
- 5) TESTING THE HYPOTHESIS- After understanding the various tentative solutions,the students try to find out the best-possible solution. For this, hypothesis are tested one by one in terms of their validity and reliability. The best suitable hypothesis is selected which is applicable in all the similar situations. The solution should be practical, reliable and valid.
- 6) FORMULATING CONCLUSION- After testing the hypothesis, the conclusion is drawn. The students try out our findings in many similar situations. If it is applicable in all the similar situations, then our result is reliable and valid. Otherwise, further attempts are made to search for most reliable and valid solution.

MERITS OF PROBLEM SOLVING METHODS:

This method helps in development of many skills of students using which they can solve their daily lives problems. This method provides students opportunities to resolve

many problems related to their subjects and to gain practical knowledge. There are many advantages of problem solving method for students as follows:-

1. **SCIENTIFIC ATTITUDE:** Students develop the ability to solve their problems systematically and efficiently as they select their own problems and attempt to solve them on their own. In doing this, they proceed step-by-step in a scientific manner. They do not accept things as told by others, instead indulge in fact-finding behind everything
2. **DAILY LIFE SOLUTIONS:** As this method helps students to find solutions to their day-to-day issues, they do not hesitate to face any situation in their lives, rather confidently find out the solution and come out of them easily.
3. **ACTIVE INVOLVEMENT OF STUDENTS:** In this method, students play active role in finding the solutions of the problem. They are not passive listeners, but actively participate in gaining knowledge for them.
4. **HIGH LEVEL THINKING SKILLS:** By this method, high level thinking skills are developed in students. They select their problems, make hypothesis, collect data and finally select one best solution of their problem.
5. **ORIGINALITY:** Using problem solving method, the students try to find out their own solutions of the problem. So originality is developed in the students as they search for their own answers.
6. **CRITICAL THINKING:** Critical thinking is developed among students by this method as they analyze the data in the light of various facts and evidences. They observe all the situations before arriving at the end result. They scrutinize all the facts minutely, all positive and negative results of their work.
7. **SOCIAL EXPERIENCES:** By this method, the students while finding out the solution to their problem get opportunities to meet diverse people from different fields. This way they learn numerous things from knowledge base of others.

8. COOPERATION: In this method, the students work in groups. They discuss their problems with each other. Moreover, they help each other in finding out the solution of their problems. They share knowledge, experiences, resources and materials with each other. This inculcates learning-by-cooperation approach in them.

CONCLUSION: As Science is a subject wherein knowledge is imparted practically not theoretically, the Problem Solving method is an effective method of teaching science. In this method, a student is not a passive learner, but actively gains the knowledge as per his own analysis and experiences. Knowledge is permanent only when the student learns by his own efforts and adopts learning-by-doing approach. Being student-centric method, the Problem Solving method is a very fruitful method of teaching science in lesser amount of time.

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