

USE OF INQUIRY TRAINING MODEL FOR TEACHING CHEMISTRY

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Paper Received On: 21 JUNE 2021

Peer Reviewed On: 30 JUNE 2021

Published On: 1 JULY 2021

Content Originality & Unique: 70%

Abstract

Education system of India has great history of Gurukul system and today's world of technological use, but teaching and learning on different platforms are same that is to learn something new. So many changes have been taking place in Education field as time changes same modification in the ways of teaching –learning methods.

Education plays important role in the student's life and this way changed students learning style. Students are always interested in learning new things and are engaged in creating new ideas and to develop new ideas especially in the subjects of science. To solve this problem, an innovation of new methods of teaching was developed with a new by Richard Such man (1961) like Inquiry training model.

This study includes the students of science background and graduate students of science, like those want to learn chemistry subjects. In this model children's Enters through difficult situation and followed one by one steps up to their satisfaction and teacher guides, motivates the students to show the way or path to students. This method is effective for development of motivation and achievement in science particularly chemistry subject for the better understanding of area.

Keyword: *Inquiry, Model, Chemistry, science*



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Introduction

This model was designed by Richard Such man to teach students to engage in casual reasoning and to become more fluent and precise in asking questions, building concepts and hypotheses, and testing them. As the Indian Education Commission of 1964-66, also known as the Kothari Commission, had stated that the destiny of our country is being shaped in our classrooms. No doubt, the knowledge, skills and attitudes acquired by students form the basis for nation building.

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In the world of science and technology, it is education that determines the level of prosperity welfare and security of the people. But quality education is necessary for the development of a country. Quality of education has been direct consequence and outcome of the quality of teachers and teacher education system.

In this regard different types of teaching strategies are effective for adaptation and implementation of innovations in education. It helps the students for the development of adjustment, motivation, values, problem solving skills, attitude and achievement etc.

So there will be great need of Inquiry Training Model on the development motivation and achievement in Science subject for students. This research investigated the effectiveness of inquiry Training Model over traditional teaching method in teaching chemistry for different class's students. Education continuously builds ideas & creativity. The children come to school-college filled with words that exist in their memories of speaking, listening and experience the transformation of the words and all they mean into reading and writing.

The teacher providing tasks generate those new realities. The realities however, were possessions of the minds of the children. The students of education had been given the knowledge of learning principles in the process of education until now in order to solve the teaching problems. It is the experience that no teaching problem could be solved by acquiring the knowledge of learning principles. These could be developed only in the form of models. These models act as the basis for the instruction of teaching theories. One of them is inquiry training model.

Inquiry training model:

This model is applied to students for those who ask the questions to teachers for particular query. The model is involving the problems of students, try to inquiry by confronting them with an area of investigation and helping them identify the conceptual or methodological problem within that area of investigation, inviting them to design way of overcoming the problems.

When we see a strange object, we may get puzzled about it and Then we try to find out its answers of all such activities like observing, imagining, experimenting, theory testing are part of inquiry and The purpose of these activities is to gather more information.

The meaning Inquiry word is the act of inquiring, a question; a query, a close examination of a matter in a search for information or truth. And also synonyms are inquiry are inquest, inquisition, investigation, research etc.

Thus they see knowledge in the making is initiated into the community of scholars. At the same time, they gain a healthy respect for knowledge & will probably learn both the limitations of current knowledge and its dependability. The teacher needs to be careful that the identification of facts not become the big issue & should encourage a generation of hypothesis, the interpretation of data & the development of constructs, which are seen as emergent ways of interpreting reality.

Models of Teaching

This model of teaching consists of guidelines for designing educational activities for students & environments.

Model of Teaching is a plan, which can be utilized to shape courses of studies, to design instructional material and to guide instruction. "Model of teaching can be defined as instructional design which describes the process of specifying & producing a particular environmental situation which causes the students to interact in such a way that a specific change occurs in their behavior".

Information Processing Models (IPM)

Enquiry Come from an Ancient philosopher Socrates ask various questions to his students and students learned from those questions. Inquiry training model gives more emphasis on developing awareness of and mastering the inquiry process. Richard Such man proposed Inquiry Training Model in 1960's.

Teacher presents a puzzling situation or event in front of students. Students are allowed to ask questions that must be answered by 'yes' or 'no'. Students gather information and verify the occurrence of the puzzling situation. Students identify relevant information. Next, the teacher ask students to organize the data and formulate an explanation for the puzzle. Finally, students analyze their pattern of inquiry.

Teacher tells the problematic situation in the classroom and teacher explains the procedure of inquiry also Teachers guides to students and control this process. Students ask many questions and try to Learn.

This model has especially been prepared for teacher education. Here, pupil teacher analyses learning problems and reaches the solution one by one. Information processing refers to the way people handle stimuli from environment, organize data, sense problems, general concepts and solutions of problems and employ verbal and non-verbal symbols. Models are

concurred with ability of the learner to solve problems and thus emphasize productive thinking; others are concerned with general intellectual's ability.

Inquiry Training Model

Out of different models the teaching Inquiry Training Model is one of Information processing Model, which would, developed by Richard Such man, based on the premise that the intellectual strategies used by educational scientists to solve problems and inquire into the unknown can be taught to students.

Using the natural curiosity of students, they can be trained and disciplined in the procedures of inquiry. The model was developed from analyzing the methods used in creative research personnel.

The elements of their inquiry process were identified and these were built into an instructional model called inquiry training. Inquiry training is designed to bring students directly into the scientific process through exercises that compress the scientific process into small periods of time.

The training has resulted in an increased understanding of chemistry, more creative thinking, and skills for obtaining and analyzing information as students establish facts, build concepts, and then generate and test explanations or theories. The students are active learners involved in exploration, questioning, problem solving, inductive reasoning, invention, labeling, and discovery. Inquiry Training model was developed by Richard Such man in 1961, which was intended to engage students in causal reasoning, become precise in asking questions, building hypothesis and testing them.

It was also intended to teach students a process to investigate and explain unusual phenomenon and help develop their thinking abilities. It is most commonly used in science and social study.

The inquiry process will help the students to approach for future problems with confidence in their abilities to seek out the solution;

Objectives of the study

The study has the following objectives

- To study the effectiveness of Inquiry Training Model in the achievement in Chemistry.
- To study the effectiveness of Inquiry Training Model on the development of motivation in Chemistry.

- To find out the differences among all boys and girls in achievement in Chemistry.
- To find out the differences between all boys and girls in the development of motivation in Chemistry.

The lesson plans were taught through Inquiry Training Model for an experimental groups and traditional method was followed by one control group. After planning, the students of three high schools were administrated with intelligence test, motivation test and achievement test. Different test gives positive and good results for Learning area for students development.

Effectiveness

- To practice the process to develop the ability to sense the relevance of variables, make intuitive leaps, and put problems into forms with which they know how to work,
- The inquiry training method requires active participation in scientific inquiry and capitalizes on the student's natural curiosity in class and in environment.
- To improve their memory process because when they integrate material into their own cognitive structure, thus material is made more readily retrievable.
- To develop the intellectual discipline and skills necessary to raise questions and search out answers stemming from their natural curiosity.
- To acquire and process data logically
- To develop intellectual strategies that they can use to find out why things are as they are.

The Inquiry Training Model is based on Such man's theory:

- The students inquire naturally when they are puzzled;
- They can become conscious of and learn to analyze their thinking strategies;
- New strategies can be taught directly and added to the students' existing ones; and
- The cooperative inquiry enriches thinking and helps students to learn about the tentative, emergent nature of knowledge and to appreciate alternative explanations.

This model differs from other inquiry models in the way the data are presented. Students gather data in a simulated process through questioning rather than actual manipulation of data. Thus, the method is more process oriented as the primary goal is to improve students' ability to relate data to the inferences they have formed.

Preparation for the Inquiry

Selecting and Identifying problem: In selecting the problem or event, these criteria need to be considered

- a) The problem must be absolutely interesting and stimulating to the learner.
- b) The level of the problem must be approximately matched with the level of the students.
- c) The Eagerness, curiosity and motivation to learning of the student are enhanced if the problem is prepared away which makes it appear differing.

The Study is focusing on Learner on Particular Problems than on a set of in general

3. In selecting the medium for presenting the problem/event, design experiences which will bring students into contact with a problem-evoking situation. Discrepant events, demonstrations, films, audio tapes, graphs, tables, problems and case studies can be used to start the inquiry process.

The model can be presented in a variety of ways. To help the students improve their thinking skills, have them work in groups and follow the format on the worksheet. Student collects data surrounding the new situation and gives its wanted shape. He organizes is knowledge within the contest of new framework.

Advantages of Inquiry Training Model –

- Inquiry Training Model makes the students opportunity to think.
- It gives the students opportunity to think carefully about ideas, problem & questions being considered valid by class.
- It creates curiosity among students.
- It makes the students to develop the spirit of personal initiative.

Application:

The application of such types of model when we think, we should understand that these models are supportive to students of basically science learning and all other fields also. Inquiry training model is very useful in the subjects of sciences like Chemistry, Physics, Biology, Geology, Environmental sciences, etc

This model of teaching is also useful for the other subjects on the basis of utilization of its procedure as per problem is there. Any area or topic, unit or information related to the desired subject could be formulated as a puzzling situation for the learners to conduct an inquiry.

The strategy is to teach the students the important techniques of social psychology as a living discipline whose concepts & method have continuous application to inquiry as human

behavior. The students see and compare their analysis of the samples so that they can check observations & investigate one another and they realize problem of obtaining agreement about observations.

Conclusion:

In the inquiry method the science teacher will create a situation in the classroom in which students are asked to formulate their own ideas state their opinion on an important issue or to find things themselves. This study includes the students of science background like graduate students of science, those want to learn chemistry subjects easily with interaction with each other.

In this model children's Enters through difficult situation and followed one by one steps up to their satisfaction and teacher guides, motivates the students to show the way or path to students. This method is effective for development of motivation and achievement in science particularly chemistry subject for the better understanding of area.

The inquiry-based learning encourages collaboration in some form either through small group or whole class evaluations. Inquiry training model have significant effect on students cognitive affective development & rate of learning.

It also contributes in increasing the learners & aptitude for learning the subject than traditional approach. The inquiry based learning enhances the quality of learning and leads to cognitive development through students engagement with complex and novel problem, teaches students complex processes and procedures such as planning and communication and supports authentic inquiry and autonomous learning for students.

Basically, this Inquiry Training model is easily learning technique with or without any guide or teacher you can learn subjects with the effective inquiry concept of asking questions to other students and people in same environment and you get satisfaction in interesting subjects for better understanding.

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