A STUDY OF BIOLOGICAL SCIENCE INQUIRY MODEL FOR TEACHING SCIENCE TO 9TH STD STUDENTS OF CBSE AND STATE BOARD SCHOOL

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Abstract : The main aim of the present study was to develop instructional plans for Biological Science Inquiry Model and to study their effectiveness in real classroom. A sample of 120 students was selected by using purposive sampling method. The researcher found that the Biological Science Inquiry Model was found more effective in terms of Achievement of students. Again it was concluded that Biological Science Inquiry Model proves to be effective in enhancing reasoning ability of the students. Biological Science Inquiry Model found to be effective in enhancing favorable attitude of students towards science.

Key Words- *Models, Biological Inquiry, Achievement, Reasoning Ability, Attitude, Science*

Introduction:

Teaching is both an art and science. Able teachers always find ways and means to improve their teaching with the change in time. The teachers are asked to employ newer methods of teaching for their students more effectively so that they must be able to cop with the demand of the age. Modern teaching is not a mechanical process. It is exacting and intricate as well. Teaching is not 'Telling and Testing'. Teaching is the complex art of guiding students through variety of selected experiences towards the attainment of appropriate teaching learning goals.

Teaching is a complex task. To perform this task, a systematic planning in needed. Therefore Jackson divides the teaching act into three phases

TEACHING	PHASE	OPERATIONS
		Fixing up the goals and content
		Decision about strategy

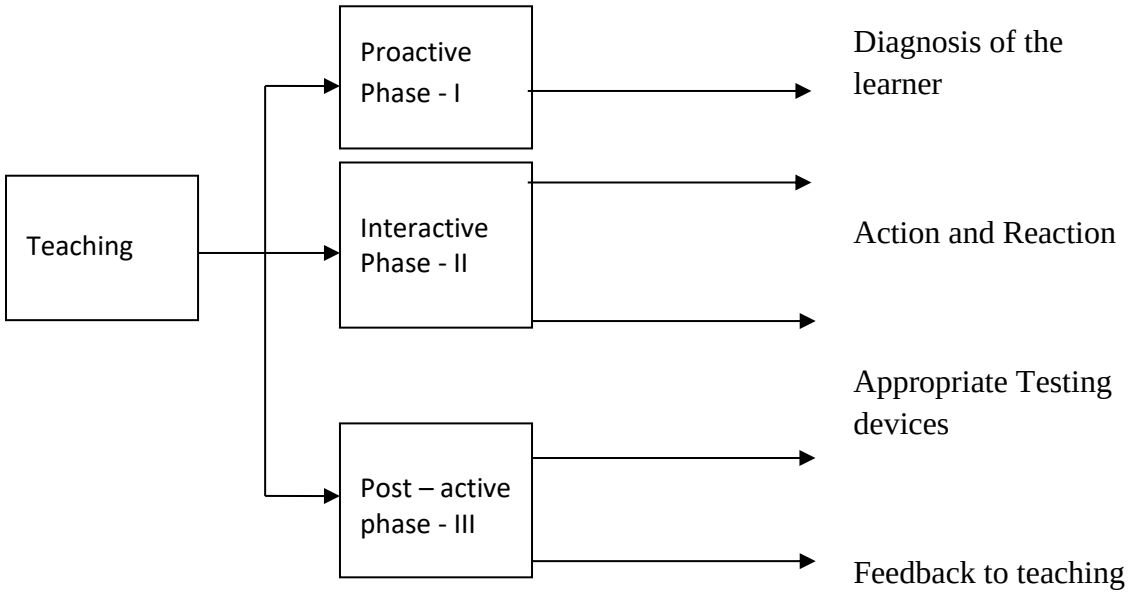

Fig. 1.1 – Phases of teaching

To overcome all the defects of traditional teaching many researches have been conducted to develop new techniques of teaching. The Programmed Instruction, Simulation Techniques, Models of Teaching, Team Teaching, Micro Teaching, CAI and Multi Media Techniques are some of the modern trends in teaching methodology. CAI, Multimedia and Models of Teaching emerged as one of the major innovations in the field of Education.

Models of teaching:

A Model of Teaching is a description of a learning environment. The descriptions have many uses, ranging from planning curriculums, courses, units and lessons to designing instructional materials – books and workbooks, multimedia programs and compute-assisted learning programs. Because the model provide learning tools to the students, they are uniquely suited to the development of programs for students, whose 'Learning Histories' are cause for concern.

The credit for transforming prevailing teaching theories into different models of teaching goes to Bruce Joyce and Marsha Weil (1972). For the last 40 years they have conducted a continuous and worldwide search for promising approaches to teaching and finally they have discovered model of teaching which they grouped into four families that share orientations toward human beings and how they learn. In the present study Biological science Inquiry Model have been selected from Information Processing Model .Present study deals with the comparative study of CBSE and State Board school students for teaching Biological science Inquiry Model.

Objectives of the Study:

1) To design and developed instructional plans for teaching Biological science at secondary level based on Joseph J. Schwab's, Biological Science Inquiry Model.

2) To study effectiveness of teaching through biological science inquiry model on Pupils achievement in Biology.
3) To study effectiveness of teaching through biological science inquiry model on development of reasoning ability.
4) To study effectiveness of teaching through biological science inquiry model on Development of favorable attitude of the students towards science.

Hypothesis :

1) There will be no significant difference between Biological Science Inquiry Model in terms of achievement of students.
2) There will be no significant difference between Biological Science Inquiry Model in terms of Reasoning ability of students.
3) There will be no significant difference between Biological Science Inquiry Model in terms of favorable attitude of students towards science.

Sample :

In the present study purposive sampling method was used. Sample were drawn from Kendriya Vidyalaya, Ajani, Nagpur. From this school three sections were selected three sections for IX class and three sections from VIII class. Similarly sample were drawn from Saraswati Vidyalaya, Shankar Nagar, Nagpur. Total 120 students were selected from two schools of Nagpur district.

Tools :

As per objectives of the study, to measure the students during pre-test and post-test on the criterion variables and the co-variance.

The following tools were developed by the investigator for collecting the data-

i) Achievement Test

The following standardized tools were selected for the study-

i) Reasoning ability Test by Dr. SadhanaBhatnagar.
ii) AvinashGrewal's Science Attitude Scale (SAS)

Research Methodology :

The present study was experimental in nature. Quasi experimental two parallel group design has been used for the study.

Analysis of Data :

1) **Hypothesis -1-** There will be no significant difference between Biological Science Inquiry Model in terms of achievement of students.

Table -I:

Relative Effectiveness: t-ratio of pre-test and post-test mean scores on Achievement in Science.

Groups	N	df	Mean	S.D	t-ratio
Pre -Test	60	59	13.7	2.80	18.00*
Post-Test	60	59	21.3	2.18	

* Significant at 0.01 and 0.05 level.

The obtained t-ratio 18.00 is significant at 0.01 and 0.05 level of significance for 59 degrees of freedom. The difference in mean scores of pre-test and post-test was due to the treatment given. This shows that the group taught by Biological Science Inquiry Model secured significantly greater mean score on achievement in science at post-test stage as compared to the pre-test . Therefore it can be said that Biological Science Inquiry Model is effective in achievement of pupils in science.

1) **Hypothesis -2-** There will be no significant difference between Biological Science Inquiry Model in terms of reasoning ability of students.

Table –II

t-test was employed to study the effectiveness of Biological Science Inquiry Model of teaching on development of Reasoning Ability, among the sample students taught through this model.

Relative Effectiveness: t-ratio for Biological Science Inquiry Model on Reasoning Ability.

Phases	N	df	Mean	SD	t-ratio
Pre-test	60	59	18.16	2.64	10.93*
Post-test	60	59	23.3	2.77	

* Significant at 0.01 and 0.05 level.

Table II reveals that the students taught through Biological Science Inquiry Model achieved higher scores on reasoning ability at post-test level as compared to pre-test level. The calculated t-ration 10.93 is significant at 0.01 and 0.05 level of significance for 59 degrees of freedom. This difference in mean clearly indicated that group taught by Biological Science Inquiry Model achieved greater on development of reasoning ability as a result of treatment. This implies that Biological Science Inquiry Model is effective in developing reasoning ability among students.

Hypothesis –III - There will be no significant difference between inductive thinking model and traditional method of teaching in terms of favorable attitude of students towards science.

Table –III

Relative Effectiveness: t-ratio for Biological Science Inquiry Model on Attitude towards Science.

Phases	N	df	Mean	SD	t-ratio
Pre-test	60	59	49.53	3.48	8.90*
Post-test	60	59	52.47	3.61	

* Significant at 0.01 and 0.05 level.

From table III it can be seen that the students has achieved higher mean score at post-test level as compared to pre-test level in terms of attitude towards science. It is further found in the table that t-ratio between pre-test and post-test mean scores on attitude towards science in group A students exposed to Biological Science Inquiry Model of teaching is 8.90 which is significant at 0.01 and 0.05 level of significance at df 59. This implies that the group taught science by Biological Science Inquiry Model of teaching achieved significantly higher score on development of attitude of students towards science as a result of treatment. Therefore, Biological Science Inquiry Model of teaching is effective in developing the attitude of students towards science.

Conclusions :

1) Biological Science Inquiry Model was found effective in terms of achievement of students in science.
2) Biological Science Inquiry Model was found effective in developing reasoning ability among students.
3) Biological Science Inquiry Model was found to be effective in terms of development of scientific attitude of students towards science.

Suggestions :

- Study can be repeated for various classes and grade levels using different contents to conform the results and conclusion of the study.
- Variables like pupils cognitive level, creativity, problem solving ability, persistency, students background, conceptual level, environment factors and the like can be studied.
- Teachers acceptance can studied for different information processing models of teaching.
- Models can be used for various disadvantaged groups, handicapped and the gifted students.

References :

- Agrawal, J C., Essentials of Educational Technology, Teaching Learning, Vikas Publishing House Pvt. Ltd. New Delhi, 1995.
- Best John. W., Research in Education, prentice Hall India Pvt. Ltd., New Delhi, 1989.

- Brady, L., 'Models and Methods of Teaching', Prentice Hall of Australia, Sydney, 1985.
- Chauhan, S.S., 'Innovations in Teaching Learning Process'. Vikas Publishing House, Pvt. Ltd., 1979.
- Garrete, H.E. &Woodworth, R.S., Statistic in psychology and Education, Vakils, Feffer& Simonds Ltd., Bombay , 10^{TH} Edition, 1981.
- Joyce Bruce & Weil Marsha, Models of Teaching, Prentice Hall of India Pvt. Ltd. New, Delhi, 1985.
- Kaul, Lokesh, 'Methodology of Educational Research', Vikas Publishing House (Pvt.) Ltd., (Reprint, Second Edition), 1993.