Chapter V

SUMMARY, CONCLUSION AND IMPLICATIONS

Teaching of a school subject in its various forms is still considered to be the primary objective of the schools. The instructional objectives for different class of students vary greatly, thus, different teaching strategies must be used to realise these different goals. Joyce & Weil (1985, 2008) have given four major families of models of teaching. These models can take into account the educational goals and curriculum together with the psychology and the need of the child. These model can also equip the teachers with alternate teaching strategies in order to suit different types of goals at different levels. Model of teaching is also a teaching strategy but here the teaching steps are well defined and they are interrelated. All the steps are arranged in a sequence to provide the guidelines for specific goals. Each model has its veil defined rationale which identifies the model and tells the purpose. It involves the interactive methods of teaching in which students and teacher interact and help to achieve the objectives of teaching.

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In the earlier days teaching was mainly aimed to impart the knowledge to the younger generation. This aim still exists but along with this very aim other Instructional goals cannot be overlooked. Information processing family of models is a group which includes such models of teaching that help in processing the Information along with realising other educational objective. Today a great need is felt to develop thinking capacity of student and, also give attention towards the Independent learning skill of the pupils, which can be very well developed by the Information processing models of teaching.

Use of models of teaching in Biological Sciences will be more feasible as the existing teaching techniques are less effective. From the other studies in India and abroad it is clear that the models are more effective, though the studies are not in abundance. Keeping this in view present researcher has tried to find out the effectiveness of models for teaching school subjects.

5.1 Problem of the Study:
The problem of the present study is Effectiveness of Advance Organizer and Concept Attainment Model for Teaching Biological Sciences to Grade IX Students.
5.2 Objective of the Study:

The objectives of the present study were –

1. To study the effect of Advance Organizer Model based teaching on pupils’ achievement in Biological Sciences.

2. To study the effect of Concept Attainment Model based teaching on pupils’ achievement in Biological Sciences.

3. To compare the effectiveness of Advance Organizer Model, Concept Attainment Model and Conventional Method of Teaching on pupils’ achievement in Biological Sciences.

4. To study the effect of Advance Organizer Model based teaching on pupils’ attitude towards Biological Sciences.

5. To study the effect of Concept Attainment Model based teaching on pupils’ attitude towards Biological Sciences.

6. To study the difference in change in attitude towards the Biological Sciences when taught through AOM, CAM and Conventional Method of teaching.
5.3 Hypotheses of the Study–

The following null hypotheses were tested during the proposed study:

\( H_{01} \): There is no significant difference between the pre-test and post-test achievement scores of pupils in Biological Sciences taught through Advance Organizer Model.

\( H_{02} \): There is no significant difference between the pre-test and post-test achievement score of pupils in Biological Sciences taught through Concept Attainment Model.

\( H_{03} \): There is no significant difference among the mean gain achievement scores of pupils in Biological Sciences taught through Advance Organizer Model, Concept Attainment Model and Conventional Teaching.

\( H_{04} \): There is no significant difference between the pre-test and post-test attitude scores of pupils in Biological Sciences taught through Advance Organizer Model.

\( H_{05} \): There is no significant difference between the pre-test post-test attitude scores of pupils in Biological Sciences taught through Concept Attainment Model.
Ho₆ : There is no significant difference among the mean of gain scores of pupils attitude towards Biological Sciences when taught through Advance Organizer Model, Concept Attainment Model and Conventional Teaching.

5.4 Tools used:
For the collection of data following tools were used in the present study—

1. Samanya Manslk Yogyata Parlkshan
   - M.C. Joshi (1956)
2. Socio-Economic Status Index Scale
   - Varma and Saxena (1976)
3. Uplabdhi Parikshan - prepared by the researcher
4. Jeev Vigyan Ke Prati Chhatra Abhivriti Mapan Suchi
   - constructed by the Shushma (1987)

5.5 Sample

Purposive sampling was done for the present study. For this the school, Maharaja Kumar Anant Narayan Singh Vidya Sansthan, Gyanpur, was selected. Initially there were 74 students but only those students were included in the study who were present throughout the experiment. Thus, finally, the sample consisted of 69 male students dispersed in three groups.

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5.6 Design of the Study

The present study is confined to find out the different in achievement scores and attitude towards the Biological Sciences, of IX Grade students when taught through Advance organizer model, Concept Attainment Model and Conventional teaching. So, the study envisages the measurement of academic achievement and attitude of pupils before and after the treatment. For this purpose three groups, two experimental and one control group have been taken into account.

Experimental groups

(a) Advance Organizer Model (AOM)
(b) Concept Attainment Model (CAM)

Control Group

(a) Taught according to the conventional teaching based on Herbartian steps.

Before teaching through different models the teaching groups were matched on the basis of the intelligence and socio-economic status index scores. All the groups were found to be equal and, thus, matched to one another so far as intelligence and socio-economic status are concerned.
All the approaches and overall design of the study is given in table 5.1.

**Table – 5.1**
Summary Table Showing Design for the Study

<table>
<thead>
<tr>
<th>Phase</th>
<th>Duration</th>
<th>Treatment</th>
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| Pre-testing      | Three days | 1. Administration of Joshi’s Metal Ability Test  
|                  |          | 2. Administration of SES Index  
|                  |          | 3. Administration of Uplabhdhi Parikshan in Biological Sciences  
|                  |          | 4. Administration of Jeev Vigyan ke prati Chhatra Abhivritti Mapan Shuchi  |
| Treatment        | 30 days | AOM CAM CT                        |
|                  |          | Each group was taught separately for 30 periods of 35 minutes duration  |
| Post-testing     | 1 day    | 1. Administration of Uplabhdhi Parikshan  
|                  |          | 2. Administration of Jeev Vigyan ke prati Chhatra abhivritti Mapan Shuchi  |

5.7 Treatment

All the three groups were given treatment for 30 period of 35 minutes duration. First group was taught through Advance Organizer
Model, second group through Concept Attainment Model, and the third group was taught through conventional teaching. Researcher himself acted as a teacher to all the groups.

4.8. Sequences of Activities:
Sequences of Activities involve in the study were as follows -

a) All the groups were administered Sananya Mansik Yogyata Parikshan and Socio-economic Status index for matching the group in terms of students’ intelligence and socio-economic status index scores.

b) Each group was pre-tested for measuring their achievement by self made Upalabdhi Parikshan and Attitude by Jeev Vigyan ke Prati Chhatra Abhivritti Mapan Suchi constructed by Shusma (1987).

c) Group I was taught through Advance Organizer Model, Group II was taught through Concept Attainment Model and Group III was taught through Conventional teaching. Researcher himself taught through all the groups. Content selected for each teaching were also same. Total time taken for treatment was 30 periods of 35 minutes duration for each group.
d) After the treatment was over each group was post-tested for their achievement and attitude towards the subject on Uplabdhi Parikshan and Jeev Vigyan Ke Prati Chhatra Abhivritti Mapan Suchi.

5.9 Data Collection

Pre-test and post-test scores on Uupaladhi Parikshan and Jeev Vigyan Ke Prati Chhatra Abhivritti Mapan Suchi were collected for the testing of hypotheses of the present study.

5.10 Statistical Analysis Used

Analysis of variance was applied to see the significance of difference among the mean gain scores of achievement and attitude of students towards Biological Sciences. For significant 'F' ratio, 't' test was applied for each pair of groups to test the hypotheses of the present study.

5.11 Conclusions

Following conclusions were drawn on the basis of the results found in the present study -

1. Advance Organizer Model was effective for Teaching Biological Sciences to Grade IX Students.
2. Concept Attainment model was effective for Teaching Biological Sciences to Grade IX Students.

3. Three different teaching strategies – Advance Organizer Model, Concept Attainment Model and Conventional teaching have different effects on pupils achievement in Biological Sciences.

4. Concept Attainment model was more effective than Advance Organizer Model when students' achievement in Biological Sciences was taken into account.

5. Advance Organizer Model was found more effective than Conventional touching when students' achievement was measured.

6. Conventional teaching strategy was found less effective than the Concept Attainment model when the pupils' achievement was measured.

7. Concept Attainment model was found effective to make the pupils' attitude favourable towards Biological Sciences.

8. Advance Organizer Model was found effective in changing the pupils' attitude favourably.
9. Three teaching strategies – Advance Organizer Model, Concept Attainment Model and Conventional method of teaching have different effects in terms of changing pupils attitude towards Biological Sciences.

10. When the effect of Concept Attainment Model and Advance Organizer Model was compared for the pupils gain scores in attitude, Concept Attainment model and Advance Organizer Model were found to be equally effective.

11. Concept Attainment Model was found more effective than Conventional teaching for changing the attitude of pupils towards Biological Sciences.

12. No significant difference between Advance Organizer Model and Conventional teaching was found in terms of pupils’ attitude towards Biological Sciences. Thus, Advance Organizer Model and Conventional teaching were found to be equally effective in terms of gain attitudes score towards Biological Sciences.

5.12 Implications of the Study

Findings and the conclusions of the present study shows that the teaching models should be applied in Indian classrooms. The aim of science teaching is not only to acquaint the students with the
scientific knowledge but scientific awareness is equally important. Such awareness can easily be developed through better teaching approaches in the classroom.

In the present day teaching learning process teacher seems to be more active than the learner. This may be due to the over workload of teachers so they may not be able to implement new methods/approaches of teaching, or may be due to overloaded curriculum of the school they cannot introduce novelty in teaching. Innovations in teaching should always be adopted as it helps in binding the interest of the students. Above said broad aims should be realised through teaching the science. To achieve these aims only lecture method or teacher dominated method will not work. New teaching strategies should be given due importance. Schwab (1963) has rightly said that science requires the verification of facts and this can be done by the use of conceptual principles of inquiry. For the development of scientific skill the background information of the scientific concepts is the prerequisite.

As regards the development of skills, stress on development, improvement, and refinement of tools, that help in gain in terms of achievement skill should be introduced in teaching.
"The development of scientific attitude should not be left to chance. Science teachers, on the other hand, should make special efforts to develop them (Vaidya, 1971). Scientific attitude and interest can be developed by allowing the students to find the solution of the problem, adequate experimentation, arguments of facts, verifications and testing of knowledge. These things should be included in teaching.

From the present investigations it has been found that Concept Attainment Model is most effective when the achievement and attitude are taken into consideration. Advance Organizer Model is also found effective over Conventional teaching. From the result of the study model approach of teaching can very well be introduced in the Indian situation. Model approach to the teaching of science may be introduced for the benefit of students. Here again, for the mastery of teachers for teaching through these teaching models in-service and pre-service teacher’s training programme may be implemented. Present researcher have tested the change in attitude of pupils and attitude change towards favourable side indicate that the model approach of teaching is more interesting, motivating, interactive, and lively. The evaluation programme used here is objective based.
5.13 Suggestions for further Research:

Following suggestions for the future studies can be made on the basis of the present study -

1. Effectiveness of Advance Organizer Model & Concept Attainment model for the other grades and other school subjects may be tested for.

2. In addition to the achievement and attitude of students towards Biological Sciences other variables may also be taken for the research purposes.

3. Application of Advance Organizer Model and the Concept Attainment Model under various settings be tried out.

4. Studies involving models of teaching may be conducted involving both the sexes.

5. The study can be replicated on relatively larger sample extending over rural as well as urban for the verification of result and arriving at the more generalized and dependable results.

6. The steps of two or more models may be mixed into one two see their effect on teaching Biological Sciences.
7. Some corelational studies may be made to investigate the relationship of different types of motives of learner (e.g. achievement, affiliation, power motive) and their achievement in Biological Sciences in terms of different models of teaching or the impact of different level of motivation may be observed on the achievement of the learners taught through different models of teaching.