

# A Study on the Relative Effectiveness between Advance Organizer Model and Traditional Method of Teaching in Biology

M. C. Kowshik

*B.E.A College of Education, Davanager  
Karnataka, India*

## Abstract

*In this study the researcher had studied the relative effect between Advance organizer model and Traditional method on achievement of IX standard students in Biology. For the purpose of the study a sample of 100 students of IX Standard English Medium from four high schools of Davanagere taluk were selected by random sampling method. R.P.M test of J.C. Ravens and achievement test in Biology were used to collect the data. Mean, SD and t-test were used to analyze the data. From this study it was found that advanced organizer model is more effective than Conventional Method of teaching on achievement of students in Biology. The conclusions emanating from the study have important implications for day-to-day classroom teaching. 'Model Approach' to the teaching of Biology may be introduced for the benefit of the students and teachers.*

## 1. Introduction

Education plays an important role in the progress of an individual's mind and country. Ignorance and poverty are major speed-breakers in the swift developing country and can be overcome easily through education. You can't call yourself educated if you can only read and write, get full marks in every subject and can recite Shakespeare's sonnets by heart. A person who is educated has a certain aura around him, of dignity and wisdom. If you are educated, you don't need to abide by the facts that the book recites, or follow Aristotle's philosophy. An educated person builds on the facts the book says and has his own philosophy. If you are educated, you can't have a wrong philosophy. Education is everything. People are made aware of what is going on in the wide world and can understand these issues and take necessary measures. If people are educated, it is not difficult to find a job- keeping in mind the fact that no job is low. Education tames the astray mind, nurturing its capabilities the same way training builds a clever dog. Do you think any country will ever look back if the people are fully educated, have some income to support their family, are aware of the happening in the world, and contribute to the country's development? If you think it will look back, dear reader, you need education. At present, explosion of knowledge is being achieved through

the development of science and technology. Instructional technology has come out with bubbling ideas. Pupils have varied personalities, which need different styles of learning. The common implication of both facts is that teacher should use such strategies of teaching which would match the instructional objectives of learning styles. There are many powerful models of teaching designed to bring about particular kinds of learning and to help students become more effective learners. As educators, we need ability to identify these models and to select the ones we will master in order to develop and increase our own effectiveness.

Education has been considered in all times to be an instrument of social change. This objective cannot be achieved without having improved the class room practices.

At present, explosion of knowledge is being achieved through the development of science and technology. Instructional technology has come out with bubbling ideas. Pupils have varied personalities, which need different styles of learning. The common implication of both facts is that teacher should use such strategies of teaching which would match the instructional objectives of learning styles. There are many powerful models of teaching designed to bring about particular kinds of learning and to help students become more effective learners. As educators, we need to able to identify these models and to select the ones we will master in order to develop and increase our own effectiveness. To become competent to use these teaching strategies comfortably and effectively requires much study and practice, but by concentrating on one or two at a time we can expand our repertoires quite easily.

Models of teaching enhance the ability of students to achieve various learning objectives. Thus, in a very real sense, increasing aptitude to learn is one of the fundamental purposes of these models.

## 2. Need and Importance

In the point of view of teaching according to Joyce and Weil [4] a model of teaching is a plan or pattern that can be used to shape curricula, to design instructional material and to guide instruction in the classroom and other settings. In the present context education focuses on Discovery learning, problem

solving, self motivated learning, meaningful learning, these methods help the learners to become innovative, creative, productive citizen of the country which is the need of the our globalized world, hence the researcher found need to study the effect of above mentioned model to investigate into effectiveness in bringing about desired learning outcomes. There is a need to study AOM because,

- Organizing concepts provide a conceptual structure on which the course is built.
- It strengthens student’s cognitive structure.
- Facilitates their acquisition and retention of information.
- Through AOM student may learn on his own.
- It avoids fall back to learning by rote.
- It promotes active processing of information meaningfully.

Keeping these views there is need to implement Advance Organizer model in improving academic achievement in Biology. So the researcher selected Advance Organizer model to improve academic achievement in Biology of secondary school students.

Since many studies have been made on AOM, no one has conducted a study on effectiveness of Advance Organizer Model on the academic achievement in Biology separately. Therefore the researcher was interested to know to what an extent the AOM influence on the achievement of students in Biology studying in Davanagere taluk. Hence present study was taken up.

### 3. Objectives of the Study

The objectives of the present study are:

- To develop an “Advance organizer model” on the unit “Microorganisms” in Biology for IX standard English medium students.
- To construct pre-test and post-test in Biology on the unit “Microorganisms” for IX standard English medium students.
- To evaluate the effectiveness of Advance Organizer Model over Conventional method of teaching in Biology for IX standard English medium students.

### 4. Hypotheses of the Study

The research hypotheses of the present study are formulated as follows:

H1: There is no significant difference between the means of scores on pre-test and post-test of experimental group.

H2: There is no significant difference between the means of scores on pre-test and post-test of control group.

H3: There is no significant difference between the means of scores on post-test of experimental and control group.

## 5. Construction of Advance Organizer Model

In order to fulfill the objective, i.e., “To develop an Advance organizer model on the unit “Microorganisms” in biology for IX standard English medium students in Biology”, the investigator developed an advance organizer model on the unit “Microorganisms”. There are different approaches of development of model given by different researchers.

Table 1. Preparation of lesson plans on the basis of syntax of AOM

<b>Phase one</b>	<b>Phase two</b>
Presentation of Advance organizer	Presentation of learning task or material
Clarify aims of the lesson, Present organizer, Identify defining attributes, Give example, Provide context, Prompt awareness of learner’s Relevant knowledge and experience, Repeat	Present material, Maintain attention Make organization explicit, Make logical order of learning material explicit
<b>Phase Three</b> Strengthening Cognitive Organization	
Use principles of integrative reconciliation, Promote active reception learning Elicit critical approach to subject matter, Clarify	

## 6. Methodology

Experimental design in the blue print of the procedures that enables the researcher to test hypothesis by reaching valid conclusions about relationship between independent and dependent variables. Selection of particular design was based on the purposes of the experiment, type of variables to be manipulated and the conditions or limiting factors under which it was conducted. The design deals with such practical problems as how subjects are to be assigned to experimental and control groups, the way variables are to be controlled and how Phase One presentation of advance organizer.

Phase Two: presentation of learning task or material clarify aims of the lesson, present organizer, identify defining attributes, give example, provide context, prompt awareness of learner’s relevant knowledge and experience, repeat present material,

maintain attention, make organization explicit, make logical order of learning material explicit

Phase Three: strengthening cognitive organization, use principles of integrative reconciliation, promote active reception learning, elicit critical approach to subject matter, clarify observations are to be made and the type of statistical analysis to be employed in interpreting data relationships.

In the present study parallel group experimental design was used.

**Sample:** In the present study, the researcher adopted the random sampling technique. The population constitutes the 100 number of the students studying in IX standard English medium of Davanagere Taluk.

**Statistical Techniques used for the Analysis of the data:** The following statistical techniques were used to analyse and interpret the data.

**Mean:** In the present study means were found out for the academic achievement of both the group in order to match the group and also means of pre-test and post-test were calculated.

**Standard Deviation:** In the present study the standard deviation was found out for the scores on pre-test and post-test of both the groups.

**'t'-test:** In the present study the significance of the means of two parallel groups 't' value was found out by using formula of pooled variance.

### 7. Analysis and Interpretation of Data

Table 2. Mean, Standard deviation and 't' value on pre-test and post-test of experimental group N=50

Group	Pre-test		Post-test		't' Value	Level of Significance
	Mean	S.D	Mean	S.D		
Experimental	19.5	2.77	27.3	1.26	12.86	*
* = Significant at 0.05 level						

The above table reveals that the obtained 't' value of 12.86 is greater than the theoretical 't' value of 1.96 at 0.05 level of significance. The obtained 't' value is found to be significant. Therefore the null hypothesis is rejected, the rejection of null hypothesis made the researcher to formulate alternative hypothesis, i.e., There is a significant difference between the means of scores on pre-test and post-test of experimental group.

The mean difference of '-7.8' was found to be in favor of the experimental group on post-test. Therefore, the experimental group has shown improvement after subjecting them to the treatment.

From this it could be inferred that, the model constructed on the unit "Microorganisms" in Biology seems to be effective in bringing improvement. Therefore it could be concluded that instruction through advance organizer model is significant over conventional method of teaching.

Table No. 3: Mean, Standard deviation and 't' value on pre-test and post-test of control group. N=50

Group	Pre-test		Post-test		't' Value	Level of Significance
	Mean	S.D	Mean	S.D		
Control	16.08	3.81	18.5	3.92	1.52	NS
NS = Not significant at 0.05 level						

The above table reveals that the obtained 't' value of 1.52 is lesser than the theoretical 't' value of 1.96 at 0.05 level of significance.

The obtained 't' value was found to be not significant. Therefore the null hypothesis will be accepted, i.e., There is no significant difference between the means of scores on pre-test and post-test of control group. The mean difference - '2' was found to be not in favor of any groups mentioned above.

Table 4. Mean, Standard deviation and 't' value on post-test of Experimental group and control group N=100

Group	Mean	S.D	't' value	Level of Significance
Experimental	27.3	1.26	9.47	*
Control	18.5	3.92	47	
* = Significant at 0.05 level				

The above table reveals that the obtained 't' value of 9.47 is greater than the theoretical 't' value of 1.96 at 0.05 level of significance. The obtained 't' value was found to be significant, Therefore the null hypothesis is rejected, the rejection of null hypothesis made the researcher to formulate the alternative hypothesis, i.e., There is a significant difference between the means of scores on post-test of experimental group and control group.

The mean difference of - '8.8' is found to be in favor of the performance of experimental group. Thus the achievement in Biology of experimental group is found to be better than that of control group. Therefore it could be inferred that the model constructed was effective in bringing improvement for experimental group. Therefore it could be concluded that instruction through advance organizer model is effective than conventional method of teaching.

## 8. Researcher's File

Till now, the data collected was analysed and interpretations were drawn based on quantitative analysis. To give a view of what really happened in the class room and the reactions of the students towards a new approach like Advance Organizer approach to teach Biology, the following changes noted by the researcher are presented here.

At first, the students just looked towards the researcher with eager faces during the first sessions of stretching exercises on analogies. After an example was given some students started participating but many were hesitant to participate. In the next session almost all the students have shown eagerness to participate and the researcher even had problems in controlling the over participation of students so that the neighboring classes would not be disturbed. By the time the sessions of Advance Organizer approach adopted to Biology topics were started, the students were freely participating and fluently came out with interesting analogies.

They were so much interested with this type of teaching approach that they started asking the researcher to continue with another topic and to even engage the next period also. This approach of teaching was talked about with other sections by the experimental group students. Though the treatment was for a short duration, the students were enjoyed. It could thus be concluded that Advance Organizer approach could certainly be used to make teaching – learning more interesting and playful.

## 9. Educational Implications

It has been found out that in the present study advance organizer model was significantly effective with the experimental group in achieving the objectives. This implies that, this technique/method of teaching could be used in schools after developing the model for various units to different courses of the study whenever possible.

Following are the some of the implications:

- These models sketch a sequence on various activities involved to teaching-learning process.
- Advance Organizer model is especially useful to structure extended curriculum sequences or courses and to instruct students systematically in the key ideas of a field.
- Step by step, major concepts and propositions are explained and integrated so that, at the end of the period on the entire area being studied.
- Effective model can provide the teachers to help the students its grasp relationships and make connections.
- It can help the students to relate new information to prior knowledge.

## 10. Conclusion

Models approach of teaching has many advantages which have revolutionized the theory and practice of teaching. A number of researches have been conducted on Advance organizer model, which have shown model approach in teaching is more effective technique in the learning process. The present study is also one of them, which shows Advance organizer model is the effective method in comparison with the conventional method.

So by all these observations, we can conclude that this study by saying AOM is an effective method of teaching. The conclusions emanating from the study have important implications for day-to-day classroom teaching. 'Model Approach' to the teaching of Biology may be introduced for the benefit of the students and teachers.

## 11. References

- [1] Aggarwal, S.K, "Principals, Methods and Techniques of Teaching" Vikas Publishing House Pvt., Ltd., New Delhi.
- [2] Bairagya, S.S, J. Mete & S. K. Ghosh, "A Study on the Relative Effectiveness between Concept Attainment Model and Traditional Method of Teaching in Economics" Journal of Educational Research & Extension, College of Education, Coimbatore, Vol.42 (1), January- March 2005, pp.9-15.
- [3] Best W. J., "Research in Education", III Edition, Practce Hall of India Pvt., Ltd., New Delhi.
- [4] Joyce, B., Weil, M., "Models of Teaching" IV Edition, Prentice Hall of India Pvt Ltd., New Delhi.
- [5] Government of Karnataka, "Science Part II – Biology for IX standard".
- [6] Hooda Jai Parkash and Sushma Rani, "A Comparative study of the Effectiveness of Science Inquiry Model and Advance Organizer Model in attaining Mastery in

Biology”, Paper presented at Annual International AIAER/MIER QAER Conference, Chitradurga on 2nd Nov, 2010.

[7] Kochhar, S.K, “Methods and Techniques of Teaching”, II Edition, Sterling Publishers Private Limited, New Delhi, 16.

[8] Mujubil Husan Siddiqui and Mohd Sharif Khan, “Models of Teaching-Theory and Research”, Ashish Publishing House, Punjabi Bagh, New Delhi-26.

[9] N. N Pandy and Archan Purohit, “Advance Organizer Model; Does it Facilitate Learning Outcomes?” in Journal of Educational Research and Extension, Vol. 29, No. 3, Jan.

[10] Nagender Nath Pandey and Satya Prakash Pandey, “Efficacy of Advance Organizer Model in Relation to Cognitive Development” in Media and Technology of Human Resource Development.

[11] Rajender Pal Kaul Sidhu, “Transforming the Learning Process through Teaching Models” in Journal of All India Association for Educational Research, Vol. 9, March-December.

[12] Rajinderpal Kaul and Harvinder Kaul, “Effectiveness of Advance Organizer Model for Teaching of Concepts in Economics” in Journal of All India Association for Educational Research, Vol. II, No.1 and 2 March and June.

[13] Rajinderpal Kaul and Parminder Singh, “Comparative study of Concept Attainment Model, Advance Organizer Model and Conventional method in teaching Physics in relation to Intelligence and Achievement motivation of IX class students” in Journal of All India Association for Educational Research, Vol. 17, Nos.1 and 2 March and June.

[14] Sanat K. Ghosh, “Effectiveness of Advance Organizer and Summary as Self Instructional Component in Distance Education”, in Journal of All India Association for Educational Research, Vol. XVIII, No.5, March and June.