AWARENESS TRAINING MODEL AND CONSTRUCTIVISM AS RELATED TO ACQUISITION OF CONCEPTS OF SCIENCE

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Abstract

The Present study is Awareness Training Model and Constructivism as related to Acquisition of concepts of Science. Pre test – Post test control group experimental design was followed. Sample of 80 students was picked up for the study comprising of two groups of 40 students each viz. control and experimental group. The study shows the-(1)There exists a significant difference in Academic Achievement of Both Groups.(2)There exists a significant difference in level of Awareness of Experimental Group.(3)There exists a significant difference in level of Constructivism of Experimental Group.(4)There exists a significant difference in level of Awareness and Constructivism (Combined) of Experimental Group.(5)There exists no significant relationship between Awareness Training Model and Acquisition of Concepts of Science.(6)There exists a significant relationship between Constructivism Model and Acquisition of Concepts of Science.(7)There exists a significant relationship between levels of Awareness and Constructivism (Combined) Acquisition of Concepts of Science. The results revealed that Awareness Training Model and Constructivism plays a central role in Acquisition of Concepts of Science.

Introduction

Teaching Models are Prescriptive teaching strategies designed to accomplish particular teaching goals. The most important aim of any model of teaching is to improve the instructional effectiveness in an interactive atmosphere and to improve and shape the curriculum and its transaction. Awareness Training Model is a model to create awareness and to increase self understanding of one's own behaviour and that of others and also to help students develop alternate patterns for their personal and social development. Greater awareness, integrated self, integrative interpersonal relations and goals as selected by the client are the four components of Awareness Training Model. Constructivism is associated with cognitive psychology. Constructivist learning is knowledge construction based on the assumption that learners actively create and restructure knowledge in highly individual ways, through experiences. Constructivism emphasizes the importance of knowledge, beliefs and skills and individual brings to the

experience of learning. It recognizes the construction of new understanding as a combination of prior learning, new information, and readiness to learn.

A concept is the acquisition of a mediating process that can be abstracted from the stimulated objects. A concept is a mental representation or a mental picture of some object or some experience. A concept is a basic limit of information that represents a category. A concept consists of individuals organized information about one or more things, objects, events, ideas, processes or relations that enable the individual to discriminate a particular thing or class of things and also relate it to other things or classes of things. Concept Academic Achievement has travelled down in lanes of history of education. From mere knowledge acquisition, it aims at developing consistency in the production of traits of knowledge and skills and thereby moving on to the higher trajectory along the line. It is this concept of Academic Achievement which formulates basis of working definition for the present study.

The effectiveness of teaching models and Constructivism on academic attainment has been tested by Kaur, A. (2008), Dogru & Kalender (2007), Molnar, J. A (2003), Perumal, V. (2002), Khan, M.S & Siddiqi, M.H (1992), and Singh, A. (1990). They have reported that these models and Constructivism enhance the academic attainment of students.

Objectives
The following were the objectives of the study:
1. To use Awareness Training Model for teaching of concepts of Science.
2. To use Constructivism for teaching of Concepts of science.
3. To study the Academic Achievement of Both Groups.
4. To study the level of Awareness of Both Groups.
5. To study the level of Constructivism of Both Groups.
6. To study the level of Awareness and Constructivism (Combined) of Both Group.
7. To study the relationship between Awareness Training Model and Acquisition of Concepts of Science.
8. To study the relationship between Constructivism and Acquisition of Concepts of Science.
9. To study the relationship between Awareness Training Model and Constructivism (Combined) and Acquisition of Concepts of Science

Hypotheses
The following were the hypotheses of the study:
1. There will be a significant difference in Academic Achievement of Both groups.
2. There will be a significant difference in level of Awareness of Experimental Group.
3. There will be a significant difference in level of Constructivism of Experimental Group.

4. There will be a significant difference in level of Awareness and Constructivism (Combined) of Experimental Group.
5. There will be a significant relationship between Awareness Training Model and Acquisition of Concepts of Science.
6. There will be a significant relationship between Constructivism and Acquisition of Concepts of Science.
7. There will be a significant relationship between Awareness Training Model and Constructivism and Acquisition of Concepts of Science.

Sample

In the present study, a representative sample of 90 students was drawn at the initial stage from 9th class of Govt. senior secondary school, Ukasi Sainian, Rajpura, based on stratified randomized sampling technique. The students constituting sample were nearly equated on the basis of their Academic Achievement scores in the subject of science. A purposive sample of 80 students nearly equated on the trait- Academic Achievement was picked up for further study. These chosen 80 students were divided into two groups of 40 each forming control and experimental group.

Design

Experimental design consisting of controlled and experimental groups was used in this study. Pre- test and Post- test were administered to study the effect of awareness Training Model and Constructivism on their Academic Achievement. Control group was taught through traditional lecture method whereas experimental group was taught through Awareness Training Model and Constructivism module extending over nine days.

Tools

One self made Academic Achievement test(Criterion Test) for the topic "Our Natural Resources" in the subject of Science for 9th class students were framed which was used as pre-test as well as post-test. Awareness Training Model and Constructivism was generated for teaching the selected topic to the experimental group.

Procedure

The Data was collected in three stages:

Pre-test- At this stage, pre-test in academic achievement in Science was administered to 90 students. Out of this group two groups of 40 each were created and they were equated in their composition on the basis of their pre-test scores.

Teaching Sessions- At this stage, ordinary teaching was resorted to the control for nine days on the topic 'Our Natural Resources' as prescribed in the P.S.E.B. syllabus for Science for the 9th students. During those nine days a self made module of Awareness Training Model and Constructivism model was followed for teaching the same topic to the students of experimental group.

Post-test- A same test for academic achievement in Science was administered to the students of both the groups. The same test was devised to control the factor of familiarity.

The students were also tested on self made questionnaires to measure the level of Awareness and Constructivism.

Situational variables were kept constant and uniform. Before starting the session, it was ensured that the 9th class students were seated comfortably in the room where there was no disturbance.

Awareness Training Model (A.T.M) and Constructivism

Awareness Training Model and Constructivism Model were developed for teaching the topic "Our Natural Resources" to the experimental group whereas ordinary teaching was resorted to the control group. The generation of Awareness and Constructivism was monitored in two areas-personal and the environmental (social) area. The focus of attention for generating personal Awareness and Constructivism was on the individual himself and the same for the environment level was to make the individual conscious of the learning opportunities available in the environment/society. Keeping these thrust areas in mind the entire model was divided in nine units.

Statistical Analysis

The data collected was analyzed by employing elementary statistical computations namely mean, standard deviation, correlation, standard error of difference between means and t-ratio.

Results

Table 1: Mean Scores and Standard Deviation of Academic Achievement (Pre-Test and Post-Test) (N=40)

Test	Type of Group	Mean	SD
Pre Test	Control Group	15.82	3.67
	Experimental Group	15.74	3.01
Post test	Control group	25.49	3.14
	Experimental Group	29.02	2.22

The mean scores of the pre-test on Academic Achievement for the control group is 15.82 and whereas the same for experimental group came out to be 15.74 ,as both the groups were almost equated on the basis of pre-test Academic Achievement scores and therefore the standard deviation for the two groups were almost same i.e. 3.67 and 3.01 respectively.

The mean scores of the post-test on Academic Achievement for the control group were found to be 25.49 whereas the same for the experimental group came out to be 29.02.The standard deviation for the two groups was 3.14 and 2.22 respectively.

H1: There will be a significant difference in Academic Achievement of Both groups.

Table 2: Significance of Difference between Mean Scores of Academic Achievement (Post Test) (N=40)

Type of Group	Mean	SD	t-ratio
Control Group	25.49	3.14	5.79**
Experimental Group	29.02	2.22	

**Significant at 0.01 level

The pre-test mean scores and standard deviation of Academic Achievement showed minor difference. This insignificance of difference is attributed to the fact that the two groups were almost equated on their level of academic achievement through pre-test to avoid any inherent difference in the group. On administering the post-test for the same to the control group and the experimental groups the mean differences were significant at 0.01 level. This verifies the hypothesis that there will be a significant difference in Academic Achievement of Both groups.

H2: There will be a significant difference in level of Awareness of Experimental Group.

Table 3: Significance of Difference between Mean Scores of Level of Awareness (N=40)

Type of Group	Mean	SD	t-ratio
Control Group	22.22	3.70	9.320**
Experimental Group	29.12	2.86	

** Significant at 0.01 level

The post-test mean scores on level of Awareness of control group and the experimental group was 22.22 and 29.12 respectively. The outcomes of the questionnaire to measure level of Awareness after the intervention period recorded 6.9 raise in the level of Awareness in favor of the experimental group. Significance of difference between these scores recorded standard error of difference of 0.740 and t-ratio came out to be 9.320. This verifies the second hypothesis that there will be a significant difference in level of Awareness of Experimental Group.

H3: There will be a significant difference in level of Constructivism of Experimental Group.

Table 4: Significance of Difference between Mean Scores of Level of Constructivism (N=40)

Type of Group	Mean	SD	t-ratio
Control Group	23.25	4.60	8.457**

Experimental Group	30.05	2.19	

** Significant at 0.01 level

The post-test mean scores of level of Constructivism of control group and the experimental group was 23.25 and 30.05 respectively. The outcomes of the questionnaire to measure level of Constructivism after the intervention period recorded 6.8 raise in the level of Constructivism in favor of the experimental group. Significance of difference between these scores recorded standard error of difference of 0.804 and t-ratio came out to be 8.457. This verifies the third hypothesis that there will be a significant difference in level of Constructivism of Experimental Group.

H4: There will be a significant difference in level of Awareness and Constructivism (Combined) of Experimental Group.

Table 5: Significance of Difference between Mean Score of Levels of Awareness and Constructivism (Combined) (N=40)

Type of Group	Mean	SD	t-ratio
Control Group	45.42	7.33	10.385**
Experimental Group	59.17	4.05	

** Significant at 0.01 level

The post-test mean scores of levels of Awareness and Constructivism (Combined) of control group and the experimental group was 45.42 and 59.17 respectively. The outcomes of the questionnaire to measure levels of Awareness and Constructivism (Combined) after the intervention period recorded 13.75 raise in the level of Constructivism in favor of the experimental group. Significance of difference between these scores recorded standard error of difference of 1.324 and t-ratio came out to be 10.385. This verifies the fourth hypothesis that there will be a significant difference in level of Awareness and Constructivism (Combined) of Experimental Group.

H5: There will be a significant relationship between Awareness Training Model and Acquisition of Concepts of Science.

Table6: Correlation between Scores of Academic Achievement and Level of Awareness (N=40)

Type of Group	Correlation (r)
Control Group	0.24
Experimental Group	0.25

Note-None of Coefficient of Correlation is significant at .05 level

The correlation between the post-test scores of Academic Achievement and levels of Awareness of control group and experimental group were found to be 0.24 and 0.25 respectively. This rejects the fifth hypothesis that there will be a significant relationship between Awareness Training Model and Acquisition of Concepts of Science.

H6: There will be a significant relationship between Constructivism and Acquisition of Concepts of Science.

Table7: Correlation between Scores of Academic Achievement and Level of Constructivism (N=40)

Type of Group	Correlation (r)
Control Group	0.02
Experimental Group	0.42**

** Significant at 0.01 level

The correlation between the post-test scores of Academic Achievement and levels of Constructivism of control group and experimental group were found to be 0.02 and 0.42 respectively. This verifies the sixth hypothesis that there will be a significant relationship between Constructivism and Acquisition of Concepts of Science.

H7: There will be a significant relationship between Awareness Training Model and Constructivism and Acquisition of Concepts of Science.

Table8: Correlation between Scores of Academic Achievement and Levels of Awareness and Constructivism (Combined)(N=40)

Type of Group	Correlation (r)
Control Group	0.14
Experimental Group	0.41**

** Significant at 0.01 level

The correlation between the post-test scores of Academic Achievement and levels of Awareness and Constructivism (Combined) of control group and experimental group was 0.14 and 0.41 respectively. This verifies the seventh hypothesis that there will be a significant relationship between Awareness Training Model and Constructivism and Acquisition of Concepts of Science.

Conclusion

It is very clear from the study that teaching through scientifically designed Awareness Training Model and Constructivism of teaching are very helpful in making teaching

learning effective. It has proved that Awareness Training Model and Constructivism have significant positive effect on Academic Achievement of 9th students.

Educational Implications
The innovations in Educational Technology, especially in the field of models of teaching, are worth implementing and they must be employed after careful try out procedure. In this age of heightened competition in an increasingly closed world it is essential that our school subjects introduce all such skills which are needed for the social survival of an intellectually developed individual. Awareness Training Model and Constructivism Model in this direction can be eminent help as they are not only compatible for enhancement of awareness and constructivist traits but walk hand in hand with enhancement in academic achievement too. Teaching and learning can at once be transformed into a fun filled meaningful activity by following these engrossing models of teaching. These models can prove instrumental in attaining our micro as well as macro teaching objectives.

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