



THE EFFECTIVENESS OF CONSTRUCTIVIST BASED APPROACH IN LEARNING SELECTED ENVIRONMENTAL CONCEPTS

I.Tharvin Sumi¹, Ph. D. & V. Rajakumaran²

¹Associate Professor, Achariya College of Education

²Assistant Professor, Achariya College of Education

Abstract

The study developed constructivist based approach to determine the effectiveness in learning environmental concepts. Parallel group experimental design was adopted as the method of study. A sample of 60 IX standard students (30 in control group and 30 in experimental group), were selected for the present study. The experimental group was subjected to constructivist based approach of learning (Project method), while the control group was subjected to traditional method. Both groups were subjected to pre and post-tests in the subject tackled by the researcher. The analysis result of the pre-test showed no statistically-significant differences, which in turn proves the equivalence of the two groups. The analysis result of the post- test showed significant increase in the score of the experimental group when compared to the control group. Hence the finding of the study reveals the constructivist based approach of learning is more effective than traditional method.

Keywords: Constructivist based approach, Project method



Scholarly Research Journal's is licensed Based on a work at www.srjis.com

Introduction

The latest catchword in educational circles is "constructivism". Constructivist view of learning considers the learner as an active agent in the process of knowledge acquisition. In the constructivist classroom, the focus tends to shift from the teacher to the students. The classroom is no longer a place where the teacher is a purveyor of knowledge, who simply fills the minds of the student, rather he is the facilitator of knowledge who helps the student in construction of knowledge. In the constructivist classroom, the students are urged to be actively involved in their own process of learning and understand that knowledge are not as inert facts to be memorized, but as a dynamic in nature.

Project method as a constructivist learning method provides opportunity for the students for self-study and helps in developing their personality. Project method of learning

results in good knowledge gaining; it gives opportunities to form informative, problem solving, communicative, cultural competencies, as well as social-cultural competencies of the students

Need for the study

Education has been experiencing a revolution. The goals of education have changed. Memorization of facts has been recognized to be less important than developing skills for problem-solving and life-long learning. The 21st-century classroom is filled with a dynamic assortment of learners. Students are coming from all different types of socio-economic backgrounds, culturally diversified experiences, and learning styles and preferences unique to each individual. These dynamics create a challenge for teachers as they attempt to accommodate the needs of all learners within the various academic settings. Constructivist based approach of learning stimulates the development of students' critical thinking skills, these skills, in turn, stimulate intrinsic motivation to continue and to enjoy learning. Constructivist based approach of learning inculcates innovative ideas and life-long learning of individual. Hence the researcher attempted to study the effectiveness of constructive based approach in learning selected environmental concepts.

Objectives:

1. To compare the mean scores of the students in experimental group(adopting constructivist approach) and controlled group (adopting traditional approach) in pre-test.
2. To compare the academic achievement of the students in experimental group (adopting constructivist approach) and controlled group (adopting traditional approach).
3. To compare the academic achievement of the students in experimental group w.r.t
 - Gender
 - Locality
 - Parental Qualification

Hypotheses:

1. There will be no significant difference in the mean scores of the Experimental and Control groups at the pretesting condition.
2. There will be no significant difference in the mean scores of the Experimental and Control groups at the post testing condition.

3. There will be no significant difference in the mean scores of the Experimental group with respect to gender.
4. There will be no significant difference in the mean scores of the Experimental group with respect to locality.
5. There will be no significant difference in the mean scores of the Experimental group with respect to parental qualification.

Method of Study

Parallel group experimental design was used as the method of study. Purposive sampling technique was used to select the sample of the study. The sample was selected based on the 1st mid-term marks in environmental science. Sixty students of average mark scores (60-55%) were pooled and equalled into two groups. The control group (30 students) and the treatment group (30 students) were equated with equal level of students with respect to their academic achievement scores. The experimental group adopted project method. The control group adopted traditional method. The treatment lasted for a period of ten days.

Research Tools

A Self-made achievement test on pollution was administered to all the students in the sample. The test was conducted on two occasions as a pre-test and as a post-test. The purpose of the pre-test was to examine the student's prior knowledge and post-test was to analyse the academic performance after lessons are taught through constructive based approach and traditional approach. The tool consists of 40 test items sales. Each test items have 4 multiple choices, of which, one is the correct answer and three are distracters.

Scoring Procedure

The scoring procedure was simple. For each right answer, one mark was awarded and no mark was given for the wrong response. The aggregate score of an individual reflects his/her knowledge regarding pollution

Reliability

A Pilot study was conducted with 30 IX standard students and the reliability of the tool was calculated using test re-test method. The reliability co- efficient of the tool was found to be 0.86.

Delimitations

1. IX standard students of Achariya siksha Mandir alone constituted the sample of the study

2. The sample was drawn using purposive sampling technique.
3. "Pollution" is the content selected for the present study
4. Project method was the constructive based approach used.

Statistical Techniques

To analyse and interpret the data both descriptive and inferential statistical techniques were used. The data collected was analysed and interpreted using mean, standard deviation and t-test.

HYPOTHESIS-1

There will be no significant difference in the mean scores of the Experimental and Control groups at the pretesting condition.

Table-1 Mean difference between the Experiment group and Control group at pretesting condition.

CATEGORY	NUMBER OF STUDENTS	MEAN	STANDARD DEVIATION	t' VALUE
CONTROL GROUP	30	62.60	13.32	0.0824
EXPERIMENTAL GROUP	30	62.93	11.46	

Interpretation

It is inferred from table 1 that the calculated 't' value between the experimental group and the control group with respect to their achievement in the pre-test is lower than the table value at 0.05 level of significance. Therefore the null hypothesis is accepted.

Hence there is no significant difference in the achievement of experimental and control group in the pre-test.

HYPOTHESIS-2

There will be no significant difference in the mean scores of the Experimental and Control groups at the post testing condition.

Table-2 Mean difference between the experimental group and control group at post testing condition.

CATEGORY	NUMBER OF STUDENTS	MEAN	STANDARD DEVIATION	't' VALUE
CONTROL GROUP	30	63.32	13.27	6.873
EXPERIMENTAL GROUP	30	89.90	5.83	

Interpretation

It is inferred from table 2 that the calculated 't' value between the experimental group and the control group with respect to their achievement in the post-test is higher than the table value at 0.05 level of significance. Therefore the null hypothesis is rejected.

Hence there is significant difference between the achievement of experimental and control group in their achievement in post-test . Achievement of the experimental group is high.

HYPOTHESIS-3

There will be no significant difference in the mean scores of the Experimental group with respect to gender.

Table-3 Mean difference between the Experimental group with respect to gender.

CATEGORY	NUMBER OF STUDENTS	MEAN	STANDARD DEVIATION	't' VALUE
Male	30	62.70	13.42	0.465
Female	30	64.82	13.07	

Interpretation

It is inferred from table 3 that the calculated 't' value of the experimental group with respect to gender is lower than the table value at 0.05 level of significance. Therefore the null hypothesis is accepted.

Hence there will be no significant difference in the mean scores of the Experimental group with respect to gender.

HYPOTHESIS-4

There will be no significant difference in the mean scores of the Experimental group with respect to locality.

TABLE- 4

Mean difference between the experimental group with respect to locality.

CATEGORY	NUMBER OF STUDENTS	MEAN	STANDARD DEVIATION	't' VALUE
Rural	30	64.93	12.56	8.923
Urban	30	86.90	7.33	

Interpretation

It is inferred from table that the calculated 't' value of the experimental group with respect to locality is higher than the table value at 0. 05 level of significance. Therefore the null hypothesis is rejected.

Hence there will be significant difference in the mean scores of the Experimental group with respect to locality. Achievement of urban student is more when compared to rural student.

HYPOTHESIS-5

There will be no significant difference in the mean scores of the Experimental group with respect to parental qualification.

Table- 5 Mean difference between the experimental group with respect to parental qualification.

CATEGORY	NUMBER OF STUDENTS	MEAN	STANDARD DEVIATION	't' VALUE
Degree	30	73.90	14.56	9.642
Non-Degree	30	54.93	8.67	

Interpretation

It is inferred from table 5 that the calculated 't' value of the experimental group with respect to parental qualification is higher than the table value at 0. 05 level of significance. Therefore the null hypothesis is rejected.

Hence there will be significant difference in the mean scores of the Experimental group with respect to parental qualification.

Findings of the study

The finding of the study reveals that

1. There is no significant difference in the achievement of experimental and control group in the pre-test.
2. There is significant difference between the achievement of experimental and control group in their achievement in post-test. Achievement of the experimental group is high.
3. There will be no significant difference in the mean scores of the Experimental group with respect to gender.

4. There will be significant difference in the mean scores of the Experimental group with respect to locality. Achievement of urban student is more when compared to rural student.
5. There will be significant difference in the mean scores of the Experimental group with respect to parental qualification. Achievement of students whose parents are degree holders is high.

Educational Implications:

- Encourage and accept student autonomy and initiative.
- Use a wide variety of materials, including raw data, primary sources, and interactive materials and encourage students to use them.
- Encourage students to engage in dialogue with the teacher and with one another.
- Encourage student inquiry by asking thoughtful, open-ended questions and encourage students to ask questions to each other and seek elaboration of students initial responses;
- Engage students in experiences that show contradictions to initial understandings and then encourage discussion.
- Provide time for students to construct relationships and create metaphors;
- Assess students understanding through application and performance of open-structured tasks.

Conclusion

Constructivist based teaching approach strategies, positively impacts student learning, and it produces student-centered learning environments. The study reveals that there is an effectiveness in students learning when constructive approach is used rather than traditional method of teaching.

References

- Al-Weher, M. (2004). The effect of a training course based on constructivism on student teachers' perceptions of the teaching/learning process. Asia-Pacific Journal of Teacher Education, 32(2), 169-184.*
- Lou, Y. & Kim MacGregor, S. (2004) 'Enhancing Project-Based Learning Through Online BetweenGroup Collaboration'. Educational Research and Evaluation, 10 (4-6). pp 419-440*
- Kilingç, A. (2010) 'Can project-based learning close the gap? Turkish student teachers and proenvironmental behaviours'. International Journal of Environmental and Science Education, 5 (4). pp 495-509.*
- Stauffacher, M., A. Walter, et al. (2006). "Learning to research environmental problems from a functional socio-cultural constructivism perspective: the transdisciplinary case study approach." International Journal of Sustainability in Higher Education 7(3): 252-275.*