

# International Multidisciplinary Research Journal

## *Golden Research Thoughts*

Chief Editor  
Dr.Tukaram Narayan Shinde

Publisher  
Mrs.Laxmi Ashok Yakkaldevi

Associate Editor  
Dr.Rajani Dalvi

Honorary  
Mr.Ashok Yakkaldevi

Golden Research Thoughts Journal is a multidisciplinary research journal, published monthly in English, Hindi & Marathi Language. All research papers submitted to the journal will be double - blind peer reviewed referred by members of the editorial board. Readers will include investigator in universities, research institutes government and industry with research interest in the general subjects.

### Regional Editor

Dr. T. Manichander

### International Advisory Board

Kamani Perera  
Regional Center For Strategic Studies, Sri Lanka

Mohammad Hailat  
Dept. of Mathematical Sciences,  
University of South Carolina Aiken

Hasan Baktir  
English Language and Literature  
Department, Kayseri

Janaki Sinnasamy  
Librarian, University of Malaya

Abdullah Sabbagh  
Engineering Studies, Sydney

Ghayoor Abbas Chotana  
Dept of Chemistry, Lahore University of  
Management Sciences[PK]

Romona Mihaila  
Spiru Haret University, Romania

Ecaterina Patrascu  
Spiru Haret University, Bucharest

Anna Maria Constantinovici  
AL. I. Cuza University, Romania

Delia Serbescu  
Spiru Haret University, Bucharest,  
Romania

Loredana Bosca  
Spiru Haret University, Romania

Ilie Pinteau,  
Spiru Haret University, Romania

Anurag Misra  
DBS College, Kanpur

Fabricio Moraes de Almeida  
Federal University of Rondonia, Brazil

Xiaohua Yang  
PhD, USA

Titus PopPhD, Partium Christian  
University, Oradea, Romania

George - Calin SERITAN  
Faculty of Philosophy and Socio-Political  
Sciences Al. I. Cuza University, Iasi

.....More

### Editorial Board

Pratap Vyamktrao Naikwade  
ASP College Devrukh, Ratnagiri, MS India Ex - VC. Solapur University, Solapur

Iresh Swami

Rajendra Shendge  
Director, B.C.U.D. Solapur University,  
Solapur

R. R. Patil  
Head Geology Department Solapur  
University, Solapur

N.S. Dhaygude  
Ex. Prin. Dayanand College, Solapur

R. R. Yaliker  
Director Management Institute, Solapur

Rama Bhosale  
Prin. and Jt. Director Higher Education,  
Panvel

Narendra Kadu  
Jt. Director Higher Education, Pune

Umesh Rajderkar  
Head Humanities & Social Science  
YCMOU, Nashik

Salve R. N.  
Department of Sociology, Shivaji  
University, Kolhapur

K. M. Bhandarkar  
Praful Patel College of Education, Gondia

S. R. Pandya  
Head Education Dept. Mumbai University,  
Mumbai

Govind P. Shinde  
Bharati Vidyapeeth School of Distance  
Education Center, Navi Mumbai

G. P. Patankar  
S. D. M. Degree College, Honavar, Karnataka

Alka Darshan Shrivastava  
Shaskiya Snatkottar Mahavidyalaya, Dhar

Chakane Sanjay Dnyaneshwar  
Arts, Science & Commerce College,  
Indapur, Pune

Maj. S. Bakhtiar Choudhary  
Director, Hyderabad AP India.

Rahul Shriram Sudke  
Devi Ahilya Vishwavidyalaya, Indore

Awadhesh Kumar Shirotriya  
Secretary, Play India Play, Meerut (U.P.)

S. Parvathi Devi  
Ph.D.-University of Allahabad

S.KANNAN  
Annamalai University, TN

Sonal Singh,  
Vikram University, Ujjain

Satish Kumar Kalhotra  
Maulana Azad National Urdu University



# **GRT** A STUDY OF EFFECTIVENESS OF CONSTRUCTIVE TEACHING STRATEGIES ON ACADEMIC ACHIEVEMENT OF VIII CLASS STUDENTS IN TEACHING BIOLOGICAL SCIENCE

**T. Arunakumari**

Assistant Professor, S.R.K. College of Education, Raichur, Karnataka

**Abstract:**-This study was aimed to find out the effectiveness of constructive teaching strategies on academic achievement of students in teaching biological science. A sample of 50 8th class English medium students of Tagore memorial High School of Raichur is selected. Data was analyzed by t-test. Results revealed that the constructivist teaching strategies caused a significantly better academic achievement in the biological concepts for secondary school students than the traditional teaching methods.

**Keywords:**Academic Achievement in Science, Traditional Teaching Method, Constructivist Teaching Strategies.

## **CONSTRUCTIVISM**

In our country 10 lakhs schools and 2,025 lakhs children are there. About 55 lakhs teachers engaged to educate these children. Only 50% percent of children pass out of the secondary schools system. The reason for this is usually in classroom, science teaching takes place through conventional method where There is no connection seen by learners between the class room learning and what they experience in their real life and schools So the interest is developing for more effective approaches which provides the experience among the students and the much heralded approach of student centered approach is constructivist approach. According to Santosh Sharma constructivist, learners construct knowledge in the social and cultural context in which they are embedded (Santosh Sharma). In the constructivist teaching strategies, both already known information of students and the new information gained by them are fitted together. This leads to the new knowledge.

## **STATEMENT OF THE PROBLEM**

The present study attempts to look at the effectiveness of constructive strategies using multimedia on eighth class school students in biology. This study attempts to use the two approaches of instruction; they are traditional teaching approach and the approach that use constructivist-teaching strategies. This study tried to know will there be any specific effectiveness with the constructive teaching approach for the same contents covered. Studies in the recent years have confirmed that academic achievement is a major contributes to constructive approach in science. Thus the study focus on the academic achievement as variables and this study will prescribe and report on the differences in attainments using constructivist-strategies instruction and whether or not this approach helps in acquisition of academic achievement.

## **NEED OF THE STUDY**

Though the NCERT advocated urgent need of the practicing of constructivist strategies in Indian classrooms, the number of schools practicing constructivist approach using multimedia is very less. This is mostly due to a lack of understanding of the way or prescription to using as described in the NCF, unfortunately still not understood by many schools and teachers even today. Some studies are there using a4E model but there are not many studies using 5E models of constructivist strategies and confirming to support the constructivist teaching strategies. In this context the present study attempts to look at the effectiveness

of constructive strategies using multimedia on eighth class school students in biology.

**OBJECTIVE**

- To find out the effectiveness of constructive approach based teaching strategies on academic achievement of students of VIII standard in Biology.

**HYPOTHESES**

1. There is no mean significant difference between the experimental group and control group in the academic achievement of Biology at pre-test level.
2. There is no mean significant difference between the experiment group and control group in the academic achievement of Biology at post -test level.
3. There is no mean significant difference between the pre-test and post-test in the academic achievement of Biology for the experimental group.
4. There is no mean significant difference between the pre-test and post-test in the academic achievement of Biology for the control group.

**RESEARCH DESIGN**

Group	Pre-test	Treatment	Post-test
Experimental	O1	X1	O3
Control	O2	X2	O4

O1 & O2: Pre-test

O3 & O4: Post-test

X1: Teaching based on Constructivist Approach; and

X2: Traditional Teaching.

**Sample**

A random sample of 50 8th class English medium students of Tagore Memorial Boys High School, Raichur is selected for this study.

**SAMPLING PROCEDURE**

The researcher divided the sample of 50 students into two parallel equated groups through “Raven’s Progressive Matrices Test of General Intelligence” and average percentage scores of previous three years scholastic achievement of VIII standard students. One of the groups was assigned to be the control group and the other was the experimental group. Each group had 25 students.

**TOOLS**

- Lesson Plans Based on Constructivist Teaching Strategies of 5E’s Model of BSCS; Raven’s Standardized Progressive Matrices; Achievement Test in Biology are developed by the investigator

**SCOPE OF THE STUDY**

The research findings have shown that the constructivist teaching strategies can be used as efficient strategies in developing academic achievement which are some of the qualities expected to develop a better personality of the individual which in turn helps the students to lead a dignified life. Academic achievement The findings of the study are useful for students, teachers educational school psychologists, school counselors and common people. Though the research was conducted for secondary education, the results are applicable for primary education and even for higher education. The research results not only serve to biological science education but also for other science and mathematics education. It also serves for social sciences.

**DATAANALYSIS**

**Hypothesis 1:** There is no significant difference between the mean scores of the experimental group and control group in the

achievement at pre-test level.

**Table 1: Mean, SD and t-value of the Pre-Test on Achievement of the Experimental Group and Control Group**

Group	N	Mean	SD	t-value	Remark
Experimental	25	14.76	4.70	0.49	Not Significant
Control	25	16.96	3.69		

From Table-1, the t-value of the pre-test on achievement of the experimental group and control group shows that the obtained t-value (1.8) is less than to the theoretical t- value of (1.96) at 0.05 level of significance. Therefore the hypothesis-1 is accepted. Hence it is concluded that there is no significant difference between the mean scores of the experimental group and control group in the achievement at pre-test level.

**Hypothesis 2:** There is no significant difference between the mean scores of the experiment group and control group in the achievement of Biology at post-test level.

**Table 2: Mean, SD and t-value of the Post-Test on Achievement of the Experimental Group and Control Group**

Group	N	Mean	SD	t-value	Remark
Experimental	25	20.36	3.42	2.72	Significant
Control	25	17.64	4.15		

From Table-2, the t-value of the post-test on achievement of the experimental group and control group shows that the obtained t-value (2.72) is greater than to the theoretical t-value of (2.58) at 0.01 level. So the hypothesis-2 is rejected. It means the experimental group had shown improvement after subjecting it to the treatment. Hence it is concluded that constructive strategies are more effective than traditional method in development of academic achievement.

**Hypothesis 3:** There is no mean significant difference between the mean scores of the pre- test and the post- test scores of the experimental group.

**Table 3: Mean, SD and t-value of the Pre- and Post-Test on Achievement of the Experimental Group**

Test	N	Mean	SD	t-value	Remark
Pre-test	25	14.76	4.70	5.00	Significant
Post-test	25	20.36	3.42		

From Table-3, the t-value of pre- and post-test on achievement of the experimental group shows that the obtained t-value (5.00) is greater than the theoretical value (2.58) at 0.01 level. The mean difference is found to be in favor of the experimental group. Hence the hypothesis-3 is rejected.

**Hypothesis 4:** There is no mean significant difference between the mean scores of the pre- test and the post- test scores of the control group.

**Table 4: Mean, SD and t-value of the Pre- and Post-Test on Achievement of the Control Group**

Test	N	Mean	SD	t-value	Remark
Pre-test	25	16.96	3.69	0.60	Not Significant
Post-test	25	17.64	4.15		

From Table-4, the t-value of the pre- and post-test on achievement of the control group shows that the obtained t-value (0.6) is less than the theoretical t-value (2.01) at 0.05 level of significance. Therefore the hypothesis-4 is accepted.

**MAJOR FINDINGS**

- There is no significant difference between the mean scores of the pre-test of the experimental group and control group in the development of academic achievement by using constructivist teaching strategies using multimedia (t-value: 1.8).
- There is significant difference between the mean scores of the post-test in academic achievement by using constructivist teaching strategies using multimedia of the experimental and control group (t-value: 2.72).

- There is significant difference between the mean scores of the pre- and post-test in the academic achievement of experimental group by using constructivist teaching strategies using multimedia (t-value: 5.00).
- There is no significant difference between the mean scores of the pre- and post-test in the academic achievement of the control group by using constructivist teaching strategies using multimedia (t-value: 0.60).

### **SUGGESTIONS FOR FURTHER RESEARCH**

- The study can be conducted in different schools like Govt., Quasi Government, Private Management etc.
- The scope of the study may be broadened by including other variables such as critical thinking skills problem solving skills, creative skills and real world skills.
- The study can be undertaken to the other classes of secondary schools and with the students of primary schools of Karnataka.
- Similar study can also be conducted at larger scale as an academic research project.
- The similar study can be undertaken with a larger sample size.
- A similar study can be undertaken with various regional languages.

### **REFERENCES**

1. NCERT (2000). National Curriculum Frame Work for School Education. NCERT, New Delhi.
2. NCERT (2005). National Curriculum Framework. New Delhi: NCERT.
3. Santosh Sharma. (2005). Constructivist Approaches to Teaching and Learning, Hand book for teachers of secondary stage. NCERT, New Delhi.
4. Bahaddin, M. The Problems Encountered in Designing Constructivist Learning Environments in Science Education and Practical Suggestions, p. 33.
5. John Dewey. (1966). Democracy and Education. New York Press, p. 10.
6. Oliver, K. M. (2000). Methods for Developing Constructivist Learning on the Web. Educational Technology, p. 18.
7. Novak, J.D. (Eds.). Teaching Science for Understanding: A Human Constructivist View, Academic Press, San Diego, pp. 29-92.
8. Manjula P. Rao (2011). Constructive approach and Problem solving ability in science. Journal of Community Guidance and Research, 28(1), 70.
9. Sridevi, K.V. (2004). Effectiveness of constructivist approach on students Achievement in science. Scientific attitude and perceptions of Nature of Science at Secondary level, R.I.E. NCERT. Mysore.
10. Vickneasvari A.P. Krishnasamy (2007). The Effects of a Multimedia Constructivist Environment on Students' Achievement and Motivation in the Learning of Chemical Formulae and Equations.
11. Santosh Sharma. (2005). Constructivist Approaches to Teaching and Learning. Handbook for teachers of secondary stage. NCERT, New Delhi. p. 2.
12. Yager, R.E. (1993). Constructivism and Science Education Reforms. Science Education International, p. 15.
13. Kashinath, H.M. (2009). Nature of Knowledge in Constructivism Implications for education. Journal of Community Guidance and Research, 26(3), 262.
14. Duffy, T.M. & Cunningham, D. J. (1996). Constructivism: Implications for the design & delivery of instruction. In Jonassen, D.H. (Ed.), Handbook of research for educational communication & technology. NY: Simon & Schuster, pp. 171.

### **WEBSITES**

- [http://www.cudenver.edu/~mryder/aect\\_95.htm](http://www.cudenver.edu/~mryder/aect_95.htm)
- <http://www.classroom.net/>
- <http://www.coe.uh.edu/~ichen/ebook/ETIT/case.htm>
- <http://www.coe.uh.edu/~ichen/ebook/ET-IT/infobank.htm>
- <http://www.gwu.edu/~tip/bruner.html>
- <http://www.asu.edu/educ/edrev/reviews/rev8.htm>
- <http://www.stemnet.nf.ca/~elmurphy/emurphy/cle.html>
- [http://www.indiana.edu/%7Eric\\_rec/ieo/bibs/cons-ele.html](http://www.indiana.edu/%7Eric_rec/ieo/bibs/cons-ele.html)
- <http://pespmc1.vub.ac.be/construc.html>
- <http://www.ilt.columbia.edu/publications/dewey.html>
- <http://hagar.up.ac.za/catts/learner/lindavr/lindapg1.htm>
- <http://www.gwu.edu/~tip/bruner.html>
- <http://www.inform.umd.edu/UMS+State/UMD-Projects/MCTP/Essays/Constructivism.txt>
- <http://www.exploratorium.edu/IFI/resources/constructivistlearning.html>
- <http://www.miamisci.org/ph/lpintro5e.html>
- [http://www7.nationalacademies.org/bose/Bybee\\_21st%20Century\\_Paper.pdf](http://www7.nationalacademies.org/bose/Bybee_21st%20Century_Paper.pdf)

# Publish Research Article

## International Level Multidisciplinary Research Journal For All Subjects

Dear Sir/Mam,

We invite unpublished Research Paper, Summary of Research Project, Theses, Books and Book Review for publication, you will be pleased to know that our journals are

### Associated and Indexed, India

- \* International Scientific Journal Consortium
- \* OPEN J-GATE

### Associated and Indexed, USA

- EBSCO
- Index Copernicus
- Publication Index
- Academic Journal Database
- Contemporary Research Index
- Academic Paper Database
- Digital Journals Database
- Current Index to Scholarly Journals
- Elite Scientific Journal Archive
- Directory Of Academic Resources
- Scholar Journal Index
- Recent Science Index
- Scientific Resources Database
- Directory Of Research Journal Indexing

Golden Research Thoughts  
258/34 Raviwar Peth Solapur-413005, Maharashtra  
Contact-9595359435  
E-Mail-ayisrj@yahoo.in/ayisrj2011@gmail.com  
Website : www.aygrt.isrj.org