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EFFECT OF INSTRUCTIONAL STRATEGIES FOR GIFTED STUDENTS AT HIGHER PRIMARY LEVEL ON THEIR ACHIEVEMENT IN SCIENCE – A STUDY

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ABSTRACT

Today's educational system focuses only on bombardment of giving information to students, but it does not focus on the instructional strategies which make the learning more interesting and leads to incorporating the knowledge more deeply. This educational system does not frame the curriculum with taking into consideration of students interest. Moreover the teaching strategies are more focused on the normal students only in which there is no consideration of gifted students in the class makes bored them and this leads to limit their creativity. Hence, the special strategy needs to be used for them.

Therefore to know the effectiveness of instructional strategies for gifted students on their achievement in science is undertaken with the objectives. The first objective of the study is to identify gifted students from eighth standard. The second objective of the study is to find out the effectiveness of Triarchic Approach, Problem Based Learning, Bloom's Revised Taxonomy, Tiered Assignments, Flexible Grouping strategy for gifted students of standard eighth in the units of The Structure of a Cell and Micro-organisms, Diseases and Air, Soil and Animal Husbandry respectively. The third objective of the study is to give suggestions for using instructional strategies in teaching in science subject.

In the present study purposive sampling procedure was used. It was experimental study. True experimental research design was used. Teacher made tests were used to collect the data and data obtained were calculated by using descriptive and inferential statistics.

The objective wise study was done and these instructional strategies found more effective for gifted students.

KEYWORDS : gifted, Triarchic Approach, Tiered Assignments.

INTRODUCTION:

"We are altogether too easily deceived by the time-worn argument that the gifted student, 'the genius' perhaps, will get along somehow without much teaching. The fact is, the gifted ...and the brilliant...are the ones who need the closest attention of the skillful mechanic" - W. Franklin Jones

The above quotation indicates that in everyday classroom teaching proceeds with taking into account of the normal children but we do not consider the need of gifted children who really need the closest attention of a skillful teacher.

Today's educational system focuses only on bombardment of giving information to students, but it does not focus on the instructional strategies which make the learning more interesting and leads to



incorporating the knowledge more deeply. This educational system does not frame the curriculum with taking into consideration of students interest. Moreover the teaching strategies are more focused on the normal students only in which there is no consideration of gifted students in the class.

Every school insists that achieving the highest possible rank in test scores should be the top priority in our school system, instead of producing happy well-adjusted human beings who can think, care about others and innovate.

The vast range of learners in today's school environment is subjected typically to one of the following three models.

CONCEPT OF GIFTEDNESS

Although gifted and talented are often used interchangeably, Gagne'(1985) differentiated between the two terms. For Gagne' giftedness is above-average aptitude (as measured by IQ tests) in creative and intellectual abilities and talent is above-average performance in an area of human activity, such as music, mathematics or literature.

a) Intelligence and Giftedness

Joseph Renzulli (1978) proposed his own definition that giftedness means demonstrating high performance in nearly all areas of intellectual and artistic pursuit with the traits such as general abilities or specific abilities which are above average, commitment to task and creativity.

Robert Sternberg (1985) defined the intelligence is analytical, creative and practical behavior and giftedness results from the ability to perform the skills in one or more of these areas with exceptional accuracy and efficiency.

Sternberg and Zhang (1995) introduced the pentagonal implicit theory to describe giftedness in which the gifted person is one who meets the five criteria such as excellence, rarity, productivity, demonstrability and value.

Gagne (2003) differentiates between giftedness and talent, proposing that giftedness represents innate abilities in multiple domains, while talent is a skill in a single domain that has been systematically developed. The innate abilities fall into four aptitude domains : intellectual, creative, socioaffective and sensory motor.

From these definitions the following characteristics of gifted children are noted.

b) Characteristics of Gifted Children

a. General Intellectual Ability

- Formulates abstractions
- Processes information in complex ways
- Observant
- Excited about new ideas
- Enjoys hypothesizing
- Learns rapidly
- Uses a large number of vocabulary

b. Specific Academic Ability

- Good memorization ability
- Advanced comprehension
- Acquires basic skill knowledge quickly
- High academic success in special interest area
- Pursues special interest with enthusiasm and vigor

c. Leadership

- Assumes responsibility

- Fluent, concise self expression
- High expectations for self and others
- Foresees consequences and implications of decisions
- Good judgment in decision making

d. Psychomotor

- Challenged by difficult athletic activities
- High energy level
- Exhibits precision in movement
- Well coordinated, good manipulative skills
- Excels in motor skill

e. Visual / Performing Arts

- Outstanding in senses of spatial relationships
- Unusual ability in expressing self
- Desire for producing “own product”
- Exhibits creative expression

STRATEGIES FOR GIFTED STUDENTS

General classroom teaching strategies used in the classroom are not benefited to the gifted students. It makes boarded them and this leads to limit their creativity. Hence, the special strategy needs to be used for them. These are –

1. Triarchic Approach
2. Problem- Based Learning Strategy
3. Strategy based on Bloom’s Revised Taxonomy
4. Tiered Assignments
5. Flexible Grouping

OBJECTIVES OF THE STUDY

1. To identify gifted students from eighth standard.
 - 2.1 To find out the effectiveness of Triarchic Approach for gifted students of standard eighth in the unit of The Structure of a Cell and Micro-organisms.
 - 2.2 To find out the effectiveness of Problem Based Learning strategy for gifted students of standard eighth in the unit of Diseases.
 - 2.3 To find out the effectiveness of Bloom’s Revised Taxonomy strategy for gifted students of standard eighth in the unit of Air.
 - 2.4 To find out the effectiveness of Tiered Assignment strategy for gifted students of standard eighth in the unit of Soil.
 - 2.5 To find out the effectiveness of Flexible Grouping strategy for gifted students of standard eighth in the unit of Animal Husbandry.
3. To give suggestions for using instructional strategies in teaching in science subject.

NULL HYPOTHESIS OF THE STUDY

- 1.1 There is no significant difference between the mean performance scores of students from group ‘E’ and that of group ‘C’ on post test 1 after using Triarchic Approach for the unit of The Structure of Cell and Micro-organisms.
- 1.2 There is no significant difference between the mean performance scores of students from group ‘E’ and that of group ‘C’ on post test 2 after using ProblemBased Learning strategy for the unit of Diseases.
- 1.3 There is no significant difference between the mean performance scores of students from group ‘E’ and that of group ‘C’ on post test 3 after using Bloom’s Revised Taxonomy strategy for the unit of Air.

1.4 There is no significant difference between the mean performance scores of students from group 'E' and group 'C' on post test 4 after using Tiered Assignments strategy for the unit of Soil.

1.5 There is no significant difference between the mean performance scores of students of group 'E' and that of group 'C' on post test 5 after using Flexible Grouping strategy for the unit of Animal Husbandry.

ASSUMPTIONS OF THE STUDY

1. The uniform syllabus is used for all types of students. (NCF 2005, 2009)
2. There is no special provision for teaching gifted students in the classroom. (Kurup, A., Basu, A. - "Education Option for Gifted Children")
3. The group of students in the classroom are heterogeneous. (Rojers, K. B. - "Do the Gifted Think and Learn Differently?")

VARIABLES IN STUDY

Three types of variables considered in the study are as –

1. Independent Variable

Instructional strategies

1. Triarchic Approach
2. Problem Based Learning
3. Bloom's Revised Taxonomy
4. Tiered Assignments
5. Flexible Grouping

2. Dependent Variable

Students' academic achievement in science subject.

DELIMITATIONS AND LIMITATIONS OF STUDY

1. The study was delimited only to implement the instructional strategies for gifted students studying at standard eighth in science subject.
2. The research was delimited for only gifted students studying at higher primary level in academic year 2016-2017, in aided Semi English medium school.
3. The findings of the study is limited to only implementation of the five instructional strategies i.e. Triarchic Approach, Bloom's Revised Taxonomy, Problem Based Learning, Tiered Assignments, Flexible Grouping strategy for gifted students.

NEED AND SIGNIFICANCE OF THE STUDY

1. This study will help the gifted students to show their potentialities.
2. This study will help the teachers to understand the need of gifted students.
3. This study will help teachers to use the instructional material for gifted students and enhance the academic achievement of gifted students.
4. This study will help the institutions to identify the gifted students and to give them special treatment.

RESEARCH PROCEDURE

Research design

In the present study researcher has selected the True Experimental research design and Post Test Only experimental design.

Research tools

Teacher made tests were used to collect the data.

The objective wise procedure

The first objective is to identify Gifted Students. For fulfillment of this objective researcher used purposive sampling procedure. Only 50 students were selected for the experiment. These 50 students then grouped randomly to form two equivalent groups i.e. Experimental group and Control group. Each group contain 25 students.

The second objective is to find out the effectiveness of Triarchic Approach, Problem Based Learning, Bloom's Revised Taxonomy, Tiered Assignments, Flexible Grouping strategy for gifted students of standard eighth in the units of The Structure of a Cell and Micro-organisms, Diseases and Air, Soil and Animal Husbandry respectively. For fulfillment of this objective the program of instructional strategies for gifted students was implemented only on experimental group of gifted students for 28 days. After implementing the program the post test was administered on both control and experimental group and collected the required data through post test. The collected data was analyzed by using t-test.

Analysis and Interpretation

Objectivewise analysis and interpretation as follows

Objective 2.1

To find out the effectiveness of Triarchic Approach for gifted students of eighth standard in unit of The Structure of Cell and Micro-organisms.

Null Hypothesis 1.1

There is no significant difference between the mean performance of students from group 'E' and that of group 'C' on post test1 after using Triarchic Approach in unit of The Structure of Cell and Micro-organisms.

The Means and Standard deviations of individual differences of both the groups were calculated. In order to test the null hypothesis 1.1, 't' test was applied.

Table No. 1
Mean, SDs and 't'- value calculated from the post test 1 scores of both group 'E' and 'C' on unit of The Structure of Cell and Micro- organisms.

Group	Number of Sample(N)	Mean (M)	Standard Deviation (SD)	Degrees of Freedom (DF)	t - value	t- value at significance level		Remark
						0.05	0.01	
E	25	11.04	2.82	48	5.24	2.01	2.68	Significant
C	25	7.24	2.61					

Observations

The mean of group 'E' is greater than that of group 'C', the difference is 3.8. The standard deviation of group E is greater than that of group C, the difference is 0.21. Comparatively performance of group E students is better.

Interpretation

The calculated 't' value 5.24 is significant at 0.01 level. Hence, the above stated null hypothesis 2.1.3 was rejected at 0.01 level.

Objective 2.2

To find out the effectiveness of Problem Based Learning strategy for gifted students of eighth standard in unit of Diseases

Null Hypothesis 1.2

There is no significant difference between the mean performance of students from group 'E' and that of group 'C' on post test after using Problem Based Learning strategy in unit of Diseases.

Means and standard deviations of individual differences of both the groups were calculated. In order to test the null hypothesis 1.2, 't' test was applied.

Table No. 2
Mean, SDs and 't'- value calculated from the post test 2 scores of both group 'E' and 'C' on unit of Diseases.

Group	Number of Sample(N)	Mean (M)	Standard Deviation (SD)	Degrees of Freedom (DF)	t value	t- value at significance level		Remark
						0.05	0.01	
E	25	7.44	2.26	48	6.69	2.01	2.68	Significant
C	25	3.52	1.63					

Observation

The mean of group 'E' is greater than that of group 'C', the difference is 3.92. The difference in the standard deviation is 0.63. The performance of group E students is comparatively better.

Interpretation

The calculated 't' value 6.69 is significant at 0.01 level. Hence, the above stated null hypothesis was rejected.

Objective 2.3

To find out the effectiveness of Bloom's Revised Taxonomy strategy for gifted students of eighth standard in unit of Air.

Hypothesis 1.3

There is no significant difference between the mean performance of students from group 'E' and that of group 'C' on post test after using Bloom's Revised Taxonomy strategy in unit of Air

On the basis of individual differences means and standard deviations of both the groups were computed. In order to test the null hypothesis 1.3, 't' test was applied.

Table No. 3
Mean, SDs and 't'- value calculated from the post test 3 scores of both group 'E' and 'C' on unit of Air.

Group	Number of Sample(N)	Mean (M)	Standard Deviation (SD)	Degrees of Freedom (DF)	t value	t- value at significance level		Remark
						0.05	0.01	
E	25	8.12	2.37	48	6.86	2.01	2.68	Significant

C	25	3.96	1.84					
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Observation

The difference between the mean of group 'E' and group 'C' is 4.16. the mean of group 'E' is greater than group 'C'. the difference in the standard deviation is 0.53. The performance of group 'E' students is comparatively better.

Interpretation

The calculated 't' value 6.86 is significant at 0.01 level. Hence, the above stated null hypothesis was rejected.

Objective 2.4

To find out the effectiveness of Tiered Assignments strategy for gifted students of eighth standard in unit of Soil

Null Hypothesis 1.4

There is no significant difference between the mean performance of students from group 'E' and group 'C' on post test after using Tiered Assignments strategy in unit of Soil.

Based on the individual differences the means and standard deviations of both the groups were computed. In order to test null hypothesis 1.4, 't' test was applied.

Table No. 4

Mean, SDs and 't'- value calculated from the post test 4 scores of both group 'E' and 'C' on unit of Soil.

Group	Number of Sample(N)	Mean (M)	Standard Deviation (SD)	Degrees of Freedom (DF)	t value	t- value at significance level		Remark
						0.05	0.01	
E	25	10.6	2.19	48	2.95	2.01	2.68	Significant
C	25	8.56	2.499					

Observation

The difference between the mean of group 'E' and group 'C' is 2.04. The standard deviation of group 'C' is greater than that of group 'E', the difference is -0.309. The performance of group 'E' students is comparatively better.

Interpretation

The calculated 't' value 2.95 is significant at 0.01 level. Hence, the above stated null hypothesis was rejected

Objective 2.5

To find out the effectiveness of Flexible Grouping strategy for gifted students of eighth standard in unit of Animal Husbandry.

Null Hypothesis 1.5

There is no significant difference between the mean performance of students of group 'E' and that of group 'C' on post test after using Flexible Grouping strategy in unit of Animal Husbandry.

Means and standard deviations of individual differences of both the groups were computed. In order to test the null hypothesis 1.5, 't' test was applied.

Table No. 5
Mean, SDs and 't'- value calculated from the post test 5 scores of both group 'E' and 'C' on unit of Animal Husbandry.

Group	Number of Sample(N)	Mean (M)	Standard Deviation (SD)	Degrees of Freedom (DF)	t - value	t- value at significance level		Remark
						0.05	0.01	
E	25	9.72	3.56	48	5.26	2.01	2.68	Significant
C	25	5.16	2.01					

Observation

The mean of group 'E' is greater than that of group 'C', the difference is 4.56. the difference in the standard deviation is 1.55. Comparatively the performance of group 'E' students is better.

Interpretation

The calculated 't' value 5.26 is significant at 0.01 level. Hence, the above stated null hypothesis was rejected.

CONCLUSION

The Triarchic Approach was found more effective in enhancing the analytical, creative and practical thinking and the problem solving skill among gifted students in the Experimental Group. The Problem Based Learning strategy was found more effective in enhancing the analytical thinking, decision making ability and ability to develop an action plan among gifted in the Experimental Group. The Bloom's Revised Taxonomy strategy was found more effective in enhancing the convergent thinking and divergent thinking among gifted in the Experimental Group. The Tiered Assignment strategy was found more effective in enhancing the convergent thinking and divergent thinking among gifted in the Experimental Group. The Flexible Grouping strategy found more effective in enhancing the adjustment ability and co-operative ability among gifted in the Experimental Group.

The third objective of the study is to give suggestions for using instructional strategies in teaching in science subject. From the findings of the present study following implications could be drawn

1. The strategies such as Triarchic Approach, Problem Based Learning, Bloom's Revised Taxonomy, Tiered Assignments and Flexible Grouping are useful in enhancing analytical, creative and practical thinking, convergent and divergent thinking, decision making ability, ability to develop action plan, adjustment ability and co-operative ability among the gifted students.
2. Teachers should use these strategies for gifted students.
3. Teachers should be inspired to develop strategies and supporting material, activities for the gifted students.
4. Teachers should provide visual experiences, use different instructional strategies for gifted students to enhance the creativity and higher order thinking among the gifted students.
5. The government should arrange training programme for the teacher to deal the gifted students.
6. The government should compact the curriculum for gifted students.

REFERENCE

- Alfeiri, L., Brooks, P. J., Aldrich, N. J., Tenenbaum, H. R. (2010). Does Discovery – Based Instruction Enhance Learning? *Journal of Educational Psychology* 2011, Vol. 103. No. 1, 1-18. doi : 10.1037/a0021017.
- Center for Talent Development. (n.d.). Retrieved from [http://www.ctdnet.acms.nwu.edu/Challenging Gifted Students in Regular Classrooms](http://www.ctdnet.acms.nwu.edu/Challenging_Gifted_Students_in_Regular_Classrooms). (n.d.). Retrieved from <http://www.canteach.ca/links/linkgifted.html>
- Characteristics And Behaviors Of The Gifted. (2012). Retrived from http://www.ri.net/gifted_talented/character.html#Recognizing
- Education Resources Information Center. (2012). Retrieved from [http://www.enc.ed.gov/Gifted Resources Home Pages](http://www.enc.ed.gov/Gifted_Resources_Home_Pages). (n.d.). Retrieved from <http://www.eskimo.com/%7euser/kids.html>
- Jensen, E. (1977). *Brain Based Learning A Paradigm of Teaching*. IL: Skylight Training and Publishing
- Kurup, A., Basu, A., Chandra, A., Parvathy, J. (2013). *An Introductory Reading on Giftedness in Children*. Bangalore : National Institute of Advanced Studies.
- Kurup, A., Sarma, J., Basu, A., Chandra, A. (2015). *Identification and Mentoring Gifted Children Age 3-15 Years*. Bangaluru : National Institute of Advanced studies.
- Kothari, C. R. (1990). *Research Methodology Methods and Techniques* (2nd Ed). New Delhi : Wishwa Prakashan.
- Koul, L. (1984). *Methodology of Educational Research*. New Delhi: Vani Educational Books, Vikas Publishing House Ltd. Publishers.
- National Research Center on the Gifted and Talented (NRC/GT). (n.d.). Retrieved from <http://www.gifted.uconn.edu/nrcgt.html>
- Strategies for Gifted. (2012). Retrived from http://www.kidsource.com/kidsource/content/academic_creativity.html
- Strategies for Teaching Gifted Students in the Inclusive Classroom. (n.d.). Retrieved from http://www.nwre.org/msec/just_good/g/ch4.html
- Supporting the needs of high potential learners. (n.d.). Retrieved from <http://www.nagc.org>
- Sousa, D. A. (2009). *How The Gifted Brain Learns*. USA : Crowin A SAGE company.
- Treffinger, D. J. (2004). *Creativity and Giftedness*. California : A Sage Publications Company.
- Wood, S. (2010). Best Practices in Counseling the Gifted in Schools : What's Really Happening? *Gifted Child Quarterly*, 54(1) 42-58. doi : 10.1177/0016986209352681.
- Working with Gifted and Talented Students. (n.d.). Retrieved from <http://www.teachersfirst.com/gifted.shtml>

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