

# EFFECTIVENESS OF LEARNER CENTRED TECHNIQUES ON ACHIEVEMENT OF VARIOUS CATEGORIES OF STUDENTS IN COMPUTER SCIENCE AT PLUS ONE LEVEL IN INCLUSIVE SETTING

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**Abstract:** The present experimental study was undertaken with two objectives in view (i) to apply learner centred techniques in teaching and learning of Computer Science at plus one level and (ii) to measure the effectiveness of learner centred techniques with special reference to various categories of students. Two matched groups of students were constituted for the purpose of this experiment. Each group consisted of ten above average students, ten average students and ten below average students. The control group was taught through the traditional lecture method while the experimental group learnt through the learner centred techniques. The obtained results show that the learner centred technique was more effective than the traditional lecture method in teaching and learning Computer Science at plus one level and it enabled the below average students to cope with the average students and the above average students to a considerable extent.

**Keywords:** Learner Centred Techniques - Achievement – Various Categories of Students – Inclusive Setting.

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## 1. INTRODUCTION

Education is being considered as an agent of modernization. Education system should aim at the all-round development of individual. The effectiveness of any educational system wholly depends upon enhancing the academic achievement of all the learners. In this scientific era, we are bound to make use of appropriate technology in educational practices to promote better teaching learning process. Appropriate techniques in the hands of a resourceful teacher can ensure better achievement of behavioural objectives.

It is more true so in inclusive setting, where all students – abled or disabled, endowed or deprived, advantaged or disadvantaged, gifted or challenged - are admitted to general education class without any discrimination or what so ever ground and system and strategy are tuned in response to the need of the various categories of students.

A classroom contains various students who differ from one another in a variety of ways. As far as learning is concerned, they differ from one another in entering behaviour, learning readiness, learning rate and learning style. Hence the normal classroom strategy cannot cater to the needs of all the students and it cannot reach out to all learners alike. So a special strategy which enhances the critical thinking of the students and which ensures active participation of the students is very much essential. This is where the learner centred techniques exactly fit in.

Learner-centred education places the students at the centre of education. It begins with understanding the educational contexts from which a student comes. It continues with the instructor evaluating the student's progress towards learning objectives. By helping the student acquire the basic skill to learn, it ultimately provides a basis for learning throughout life. It, therefore, places the responsibility for learning on the students, while the instructor assumes responsibility for facilitating the student's education. This approach strives to be individualistic, flexible, competency-based representation.

#### **Premises of Learner Centred Education:**

1. Learners have distinctive perspectives or frames of reference, contributed to by their heredity, the environment, their interests and goals, their beliefs, their ways of thinking and the like. These must be attended to and respected if learners are to become more actively involved in the learning process and to ultimately become independent thinkers.
2. Learners have unique differences, including emotional states of mind, learning rates, learning styles, stages of development, abilities, talents, feelings of efficacy and other needs. These must be taken into account if all learners are to learn more effectively and efficiently.
3. Learning is a process that occurs best when what is being learned is relevant and meaningful to the learner and when the learner is actively engaged in creating his or her own knowledge and understanding by connecting what is being learned with prior knowledge and experience.
4. Learning occurs best in an environment that contains positive interpersonal relationships and interactions and in which the learner feels appreciated, acknowledged, respected and validated.
5. Learning is seen as a fundamentally natural process; learners are viewed as naturally.

#### **OBJECTIVES:**

The main objective of the study was to apply the learner centred techniques to teach Computer Science to the students at plus one level. Keeping the above objective in mind, the following specific objectives were framed.

- (i) To find out whether there is any significant difference between the pre-test and the post-test mean scores of the control group students in terms of various categories of students and the group as a whole.
- (ii) To assess whether there exists any significant difference between the pre-test and post-test mean scores of the experimental group students in terms of various categories of students and the group as a whole.
- (iii) To find out whether there is any significant difference between the post-test mean scores of the control group and the experimental group in terms of various categories of students and the group as a whole.
- (iv) To assess whether there exists any significant difference in the post-test performance among the various categories of students in the control group.
- (v) To assess whether there exists any significant difference in the post-test performance among the various categories of students in the experimental group.

#### **HYPOTHESIS:**

- (i) There is no significant difference between the pre-test and the post-test mean scores of the control group students in terms of various categories of students and the group as a whole.
- (ii) There exists significant difference between the pre-test and post-test mean scores of the experimental group students in terms of various categories of students and the group as a whole.
- (iii) There is significant difference between the post-test mean scores of the control group and the experimental group in terms of various categories of students and the group as a whole.
- (iv) There exists significant difference in the post-test performance among the various categories of students in the control group.
- (v) There exists significant difference in the post-test performance among the various categories of students in the experimental group.

## 2. METHODOLOGY

### Identifying Various Categories of Students:

For the purpose of this investigation various categories of students were identified on the basis of their achievement in the quarterly examination and on the basis of their achievement in standard progressive matrices. The identified students were classified as above average students, average students and below average students on the basis of their scholastic achievement in the school examinations.

### Tool:

Achievement test was constructed by the investigator on the basis of item analysis. The content validity of the tool by expert opinion, item validity by item analysis and the reliability of the tool by split half method were established.

### Sample Design:

For the purpose of the investigation sixty students of plus one level from S.S.H.N. Higher Secondary School, Muhavur were selected.

### Data Collection:

The experiment was conducted for a period of thirty working days. At the end of the experimental period, a post-test was conducted for the students of the experimental group and the control group. The response given by the various categories of the students in both the control group and the experimental group in the pre-test and the post-test formed the viral data required for the analysis.

### Scoring procedure:

The achievement test consisted of 100 objectives type questions. These test items were selected on the basis of item analysis. The total score of the test was 100. For each correct answer, the score was one and for each wrong answer, the score was zero.

### Statistical techniques used in the study:

The data thus obtained were then analysed by using appropriate statistical techniques, such as mean, standard deviation and t-test.

### Findings:

1. There is no significant difference in the performance of the control group students between pre-test and the post-test in terms of various categories of students and in terms of the group as a whole. Though the performance is better in the post test, they could not make any significant difference. (Ref. Table 1)

**Table 1: ANALYSIS OF THE PRE-TEST AND POST-TEST SCORES OF THE CONTROL GROUP**

Category	Pre-test			Post-test			Calculated t-values
	N	Mean	S.D	N	Mean	S.D	
Above Average Students	10	79.15	3.75	10	81.21	3.53	1.26 @
Average Students	10	45.5	2.23	10	47.5	3.08	1.66 @
Below Average Students	10	26.5	2.61	10	27.5	1.73	1.00 @
Group as a whole	30	50.33	21.8	30	52.66	16.0	0.14 @

Note : @ not significant at 0.05 level

2. There exists significant difference in the performance of the experimental group students between pre-test and the post-test in terms of various categories of students and in terms of the group as a whole. The achievement of various categories of students is higher in the post-test than in the pre-test. Moreover, the performance of all the categories of students in the experimental groups is better than the performance of their counterparts in the control groups in the post test. (Ref. Table 2)

**Table 2: ANALYSIS OF THE PRE-TEST AND POST-TEST SCORES OF THE EXPERIMENTAL GROUP**

Category	Pre-test			Post-test			Calculated t-values
	N	Mean	S.D	N	Mean	S.D	
Above Average Students	10	79.25	3.51	10	85.15	2.44	4.35 **
Average Students	10	47.1	3.48	10	56.65	2.47	7.05 **
Below Average Students	10	26.4	2.55	10	46.15	2.48	12.70 **
Group as a whole	30	50.66	22.03	30	60.33	18.7	5.97 **

Note : \*\* significant at 0.01 level

From the mean values obtained by the students in both the tests, it is clear that all the categories of students in the experimental group have made significant mean gain in the post-test. The above average students have made a mean gain of 5.90 and the students of other two categories have made mean gains of 9.55 and 19.75 respectively. In terms of rate of progress, the below average students stand first with 70.2 % of rate of progress followed by the average students and above average student with 20 % and 7.4 % of rate of progress respectively. The mean gain made and the rate of progress is attained by each category of students establish the effectiveness of the applied strategy. i.e. the learned centred technique in teaching and learning Computer Science at plus one level.

3. There is significant difference in the post-test performance between the control group and the experimental group in terms of various categories of students and the group as a whole. The achievement of the experimental group students is higher than that of the control group students in the post-test. (Ref. Table 3)

**Table 3: ANALYSIS OF THE POST-TEST SCORES OF THE CONTROL GROUP AND THE EXPERIMENTAL GROUP**

Category	Control Group			Experimental Group			Calculated t-values
	N	Mean	S.D	N	Mean	S.D	
Above Average Students	10	81.21	3.53	10	85.15	2.44	2.89 **
Average Students	10	47.5	3.08	10	56.65	2.47	7.3
Below Average Students	10	27.5	1.73	10	46.15	2.48	19.41 **
Group as a whole	30	52.66	16.05	30	60.33	18.7	1.7

Note : \*\* significant at 0.01 level.

From the mean values obtained by the students in both the tests, it can be seen that experimental group students have made an impressive mean gain. The performance of each category of students in the experimental group is better than the performance of their counterparts in the control group. While the mean gain made by the control group is 2.33, the mean gain made by the experimental group is 9.67 %. The rate of progress shown by the control group is 4 %. On the other hand, the experimental group students have made a vertical rate of progress amounting to 18.9 %. This table substantiates the advantage of the learned centred technique over the traditional lecture method in teaching and learning Computer Science at plus one level.

4. There exists significant difference in the post-test performance among the various categories of students in the control group. The performance of the above average students is higher than the performance of the students of the other two categories. The gulf of difference that existed at the time or pre-test was found at the end of the post-test also. It reveals that the traditional lecture method as an instruction strategy, could not enable the average students and the below average students to cope with the above average students. (Ref. Table 4)

**Table 4: ANALYSIS OF THE POST-TEST SCORES OF THE VARIOUS CATEGORIES OF STUDENT IN THE CONTROL GROUP**

Name of the Group	N	Mean	S.D	Calculated t-values	
Above Average Students	10	81.21	3.53	Above Average Vs Average	22.69 **
Average Students	10	47.5	3.08	Above Average Vs Below Average	43.06 **
Below Average Students	10	27.5	1.73	Average Vs Below Average	17.83 **

Note : \*\* significant at 0.01 level.

5. There exists significant difference in the post-test performance among the various categories of students in the experimental group. The performance of the above average students is better than the performance of the students of the other two categories. (Ref. Table 5)

**Table 5: ANALYSIS OF THE POST-TEST SCORES OF THE VARIOUS CATEGORIES OF STUDENT IN THE EXPERIMENT GROUP**

Name of the Group	N	Mean	S.D	Calculated t-values	
Above Average Students	10	85.15	2.44	Above Average Vs Average	25.85 **
Average Students	10	56.65	2.47	Above Average Vs Below Average	40.19 **
Below Average Students	10	40.75	2.48	Average Vs Below Average	14.30 **

Note : \*\* significant at 0.01 level.

A close scan of the mean values brings to light many interesting revelations. Though there is significant difference between any two categories, the gulf of difference that was found at the time of pre-test has been reduced to a considerable extent in the post-test. The gulf of difference between the above average students and the average student was 32.15 in the pre-test. On the other hand, the difference between them in the post-test was 28.50. Similarly, the mean difference between the above average students and the below average students in the pre-test was 52.85 whereas in the post-test it was 39.0.

### 3. IMPLICATIONS

1. The learner centred techniques integrated experimental strategy enhances the achievement of students to a considerable extent. It is more true so in case of low achieving students. So this strategy can be applied to a wider population.
2. The same way may be extended to the secondary grade teachers and junior graduate teachers who handle classes from Std. VI to Std. VIII. DIET and SSA may give them orientation by means of in-service training or refresher course.
3. The techniques adopted in the experimental strategy can be applied at higher level to prepare the students for higher-level competitive examination. The utility and efficacy of the strategy will find an expression in the performance of the students in the higher order competitive examinations like the Civil Service Examinations.

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