

LATERAL THINKING AND ACHIEVEMENT IN MATHEMATICS OF IX STANDARD STUDENTS

Research
Paper

ABSTRACT

The present study deals with how lateral thinking develops mathematical and problem solving ability of IX standard students. This research attempts to find out the relationship between lateral thinking and achievement in mathematics of IX standard students in Theni Educational District. For the present study the investigator randomly selected 300 samples from 10 schools in Theni district. This study reveals that there is significant relationship between lateral thinking and achievement in mathematics of IX standard students.

INTRODUCTION

“When learning is purposeful, creativity blossoms, when creativity blossoms, thinking emanates, when thinking emanates, knowledge is fully lit. when knowledge is lit, economy flourishes.” Says Dr.A.P.J.Abdul Kalam. For the creation of enlightened citizens who will make a prosperous, happy and strong nation, education is important. Thinking is one of the important aspects of one’s cognitive behaviour. Thinking provides the base for not only cognitive but also affective and conative behaviours. The development of thinking and reasoning powers not only helps in solving the numerous problems one faces in one’s practical life but also helps in striving to solve the most typical social, cultural and scientific problems for the uplift of the society and humanity. What is available on this earth in the form of products of inventions and discoveries for leading our life owes their origin to the original creative thinking of our fellow human beings. In this way, thinking and more specifically creative thinking is one of the finest tools that have been available with us for making this world of ours one of better choices.

LATERAL THINKING

Lateral thinking is a problem solving technique that was developed by Dr. Edward de Bono. It can be defined as methods which are used to alter the perception of a problem. Dr.Edward de Bono divides thinking as belonging to two methods. He calls one vertical thinking, which uses the processes of logic the traditional, historical method. He calls the other lateral thinking, which involves disrupting an apparent thinking sequence and arriving at the solution from another angle. Bono’s proven Lateral Thinking methods provide a deliberate, systematic process that will

result in innovative thinking and creative thinking. It is a skill that can be learned. It empowers people by adding strength to their natural abilities, which improves creativity and innovation, which lead to increased productivity and profit. Lateral thinking is a technique that requires a large amount of reasoning and it is a good technique to use in situations where pure logic may not be useful. The goal of using lateral thinking is to move one’s mind away from thinking which is pragmatic and orthodox. People who use lateral thinking tend to come up with unorthodox solutions to problems, and they may also be able to make discoveries which were not previously considered.

SIGNIFICANCE OF THE STUDY

Thinking is essentially a cognitive activity. It is always directed to achieve some end or purpose. In this sense, thinking differs from the aimless cognitive acts like day dreaming and imagination. In genuine thinking, we cannot let our thoughts wander without any definite end in mind. Thinking is described as a problem solving behaviour. From the beginning till the end, there is some problem around which the whole process of thinking resolves. Problems are said to arise when a fixed pattern of behaviour cannot satisfy one’s felt needs. These problems give birth to thinking and thinking helps in finding out their solutions. Thinking is only related to the inner cognitive behaviour.

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When a person tries to solve a problem by merely doing something in the situation, he is not thinking. Thinking demands the immediate suspension of one's overt or motor activities. It is an implicit activity that takes place inside the person. It's objective observation is not possible.

Thinking refers to the process of creating a structured series of connective transactions between items of perceived information. Lateral thinking is a problem solving technique that requires a large amount of reasoning. Virtually any one can think, but it is difficult to create something unique that did not exist. Lateral thinking is a powerful tool and it helps the students to solve critical and tough problems in mathematics. It is a good technique to be used in mathematical problem solving where pure logic may not be useful. The goal of using lateral thinking is to move the student's mind away from thinking which is pragmatic and orthodox. Since lateral thinking of students influence their potentialities, specifically in the area of achievement in mathematics the investigator has chosen the topic of lateral thinking and achievement in mathematics of IX standard students for the present study.

OBJECTIVES OF THE STUDY

The following are the objective of the present study

1. To find out the level of lateral thinking of IX standard students.
2. To find out the level of achievement in mathematics of IX standard students.

HYPOTHESES OF THE STUDY

The following are the hypotheses of the present study

1. There is no significant difference between male and female IX standard students in their lateral thinking.
2. There is no significant difference between male and female IX standard students in their achievement in mathematics.
3. There is no significant relationship between lateral thinking and achievement in mathematics of IX standard students with respect to gender.

METHOD USED

Survey is a fact finding study. John W. Best (1986) states that "The survey method involves interpretation,

comparison, measurement, classification, evaluation and generalization all directed towards a proper understanding and solution of significant educational problems". So the researcher has chosen the survey method to study the relationship between Lateral thinking and Achievement in Mathematics of IX standard students.

SAMPLE

A sample is a small proportion of a population selected for observation and analysis. The choice of sample is made by various methods. The sample for the present study constitutes 300 IX standard students from ten higher secondary schools of Theni Educational district in Tamil Nadu.

TOOLS USED FOR THE PRESENT STUDY

The investigator has used the following tools for data collection:

1. Tool for lateral thinking that was prepared by Dr. Edward de bono (adapted).
2. Questionnaire prepared by the investigator to measure the achievement in mathematics of IX standard students.

STATISTICAL TECHNIQUES USED

Statistical techniques such as mean, standard deviation, 't' test, ANOVA, chi-square and correlation have been used.

ANALYSIS OF DATA

Table 1
LEVEL OF LATERAL THINKING OF IX STANDARD STUDENTS

Low		Average		High	
Count	%	Count	%	Count	%
55	18.33	201	67	44	14.67

It is inferred from the above table that 18.33% of IX standard students have low, 67% of them have average and 14.67% of them have high level of lateral thinking.

Table 2
LEVEL OF ACHIEVEMENT IN
MATHEMATICS OF IX STANDARD
STUDENTS

Low		Average		High	
Count	%	Count	%	Count	%
59	19.67	172	57.33	69	23

It is inferred from the above table that 19.67% of IX standard students have low, 57.33% of them have average and 23% of them have high level of achievement in Mathematics.

Null hypothesis 1

There is no significant difference between male and female IX standard students in their lateral thinking.

Table 3
DIFFERENCE BETWEEN MALE AND
FEMALE IX STANDARD STUDENTS IN
THEIR LATERAL THINKING

Gender	Count	Mean	Standard Deviation	Calculated 't' value	Remark
Male	182	10.97	3.843	0.588	NS
Female	118	10.74	3.048		

(At 5% level of significance, the table value of 't' is 1.96)

It is inferred from the above table that there is no significant difference between male and female IX standard students in their lateral thinking.

Null hypothesis 2

There is no significant difference between male and female IX standard students in their achievement in mathematics.

Table 4
DIFFERENCE BETWEEN MALE AND
FEMALE IX STANDARD STUDENTS IN
THEIR ACHIEVEMENT IN MATHEMATICS

Gender	Count	Mean	Standard Deviation	Calculated 't' value	Remark
Male	182	10.77	4.957	8.67	S
Female	118	16.21	5.522		

(At 5% level of significance, the table value of 't' is 1.96)

It is inferred from the above table that there is no significant difference between male and female IX standard students in their achievement in mathematics.

Null hypothesis 3

There is no significant relationship between lateral thinking and achievement in mathematics of IX standard students with respect to gender.

Table 5
RELATIONSHIP BETWEEN LATERAL
THINKING AND ACHIEVEMENT IN
MATHEMATICS OF IX STANDARD
STUDENTS WITH RESPECT TO GENDER

Background Variable	Category	Correlation Value	Table Value	Remark
Gender	Male	0.301	0.159	NS
	Female	0.348	0.138	S

It is inferred from the above table that there is no significant relationship between lateral thinking and achievement in mathematics of IX standard male students. But there is significant relationship between lateral thinking and achievement in mathematics of IX standard female students.

FINDINGS

1. There is no significant difference between male and female IX standard students in their lateral thinking.
2. There is significant difference between male and female IX standard students in their achievement in mathematics.

While comparing the mean scores of male (mean=10.77) and female (mean=16.21) students, female students are better in their achievement in mathematics than their counterpart.

3. There is no significant relationship between lateral thinking and achievement in mathematics in male IX standard students. But there is significant relationship between lateral thinking and achievement in mathematics in female IX standard students.

CONCLUSION

From the above study, the investigator found that problem solving and analytical ability will develop the students' lateral thinking. The above results revealed that the female IX standard students are better in their lateral thinking and achievement in mathematics than the male IX standard students. Therefore, the investigator desires that educational institutions should provide training programmes and give importance to students' creative skills. Some of the enrichment programmes like mind calculation, Sudoku's, puzzles may be given to improve the lateral thinking ability of the students.

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FINDINGS

- 1) Combined learning strategies were found to be more effective than the conventional method for enhancing the achievement of secondary school students in English for the total sample. This conclusion was reached from the following finding: When the post-test and pre-test scores of the pupils in the experimental and control groups were compared (Table - I & Table - II), the difference between their means was found to be statistically significant.

2) Though combined learning strategies have been found to be a better device for enhancing achievement in English language as proved by the first finding there is no marked difference when the achievement is considered on the basis of gender. When the post-test scores corresponding to the total score was compared, the difference between the means was insignificant between the two groups in their achievement in English.

SUGGESTIONS AND CONCLUSION

Strategies could be used by less effective learners to help them in their learning of English as a second language. Students could be directed to use metacognitive and cognitive learning strategies to acquire all the four language skills. Strategies appropriate for different levels of knowledge and different forms of assessment could be selected. When instructional theory and knowledge about language is linked with cognitive theory, predictions could be generated about second language learning in classrooms. The scaffolding instruction needed by the less mature and motivated student could be provided by the teacher using the suggestions for learning strategy applications.

Academic language learning could be made more effective with learning strategies. Students could be more successful with the ways they approach specific classroom tasks if they think aloud and work on a task so that teachers could diagnose learning strategy needs.

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