

## DIVERGENT THINKING AND CREATIVE IDEATION OF HIGH SCHOOL STUDENTS

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### ABSTRACT

*Divergent thinking is an integral process in creativity. Openness to experience is a personality trait that relates to divergent thinking and, therefore, is hypothesized to be related to creative performance among the students. The effects of openness to experience are likely to be partially mediated by an individual's attitude toward divergent thinking.*

*Schools being miniature of society can chalk out programmes to nourish the Divergent thinking of the students. It is within their reach because it has been found that creativity is more developable than intelligence. Today's student will be the future nation builder therefore it is important to develop Divergent thinking among them. This study presents and tests divergent thinking of individual creativity among the High School students. The methodology selected is the survey method. The sample selected for the study consists of 400 students comprising of boys and girls of English and Marathi medium IX standard students of high schools situated in Aurangabad city.*

*The result showed that:*

- i. There is significant difference in English medium schools situated in posh and slum localities as far as there divergent thinking is concerned.*
- ii. There is significant difference in Marathi medium schools situated in posh and slum localities as far as there divergent thinking is concerned.*
- iii. There is significant difference between the students of English medium and Marathi medium students as far as there Divergent thinking is concerned.*

*Keywords: Divergent Thinking, Creativity, Flexibility.*

### INTRODUCTION

It is not essential for a country to be most populous in order to make progress because we cannot produce even one creative individual by combining together ten non-creative individuals. Thus, it becomes imperative for every nation to chalk out an adequate programme for the identification of creative students and subsequently for teacher education and training programme in a suitable environment and thus to provide them opportunities to develop their creative potentials.

Psychologists have found that a high IQ alone does not guarantee creativity. Instead, personality traits that promote divergent thinking are more important.

Generally, people have been of the view that only writers, poets, painters, musicians and, scientists are creative

persons, but nowadays a number of psychologists have started feeling that creativity can exhibit its pleasant influence in any sphere of life. Even a doctor, teacher, clerk, mother, labour, students, etc. can be creative person in his respective field of work.

In the classroom there is a dynamic interaction between the teacher and pupil, between pupil and pupil, between pupil and materials. This interaction is a very big area for Educational Research as it provides a rich source of problems to be solved. Therefore, the researcher decided to find out whether the students are having divergent thinking in expressing their ideas, and secondly, students of which medium are having more divergent thinking than the other.

The results of this research would be very useful in bringing out the improvement to develop divergent thinking in the

student of Aurangabad city.

## What is divergent thinking?

Divergent thinking is a thought process or method used to generate creative ideas by exploring many possible solutions. It is often used in conjunction with convergent thinking, which follows a particular set of logical steps to arrive at one solution, which in some cases is a "correct" solution. Divergent thinking typically occurs in a spontaneous, free-flowing manner, such that many ideas are generated in an emergent cognitive fashion.

Creativity is an important facet of giftedness. Creativity is, however, very difficult to define and measure. Divergent thinking tests are often used, though of course they really just estimate the potential for creative thought.

Idea generation technique (such as brainstorming) in which an idea is followed in several directions to lead to one or more new ideas, which in turn lead to still more ideas. In contrast to convergent thinking, (which aims at solving a specific problem) divergent thinking is creative, open-ended thinking aimed at generating fresh views and novel solutions.

Guilford (1971) Considered creativity as a cognitive function which involves divergent thinking abilities. The creative person, therefore, should be 'a Divergent Thinker'.

Guilford (1967) grouped the 16 Divergent production factors that he initially was able to identify into four categories which are given below –

- *Fluency*: Includes word fluency, ideational fluency, associationistic fluency, and expressional fluency. Therefore, fluency is the ability to produce a large number of ideas.
- *Flexibility*: Is the ability to produce wide variety of ideas.
- *Originality*: Is the ability to produce unusual ideas.
- *Elaboration*: Is the ability to develop or embellish ideas, and to produce many details to "flesh out" an idea.

According to Scott David Williams, (2004) "Personality, attitude, and leader influences on divergent thinking and creativity in organizations", European Journal of

Innovation Management, Vol. 7 Iss: 3, pp.187 – 204.

## Divergent thinking Syndrome

A creative person as divergent thinker, must be in possession of these cognitive abilities expressed in terms of fluency, flexibility and, originality.

### *Ideational fluency*

On a particular topic or a problem, a creative person can express his ideas very fluently. To identify this ability, the students can be asked to express their ideas on a given topic in limited time. The relevant ideas given by an individual are counted to ascertain the level of his creative thinking ability.

### *Flexibility*

A creative person's thinking capability is characterized by flexibility rather than rigidity. The ideas expressed by him on a particular topic are not of the same type, that is, they do not belong to one and the same category. To evaluate this ability, the ideas expressed by an individual may be categorized and the number of the categories may be counted.

### *Originality*

Originality is the most important element of creativity. While expressing his ideas on a certain topic or devising solutions for everyday problems, a creative person will put forward such ideas as are original or they are indirectly based on ideas previously read or heard.

A number of abilities in creativity are based on imagination, only a person with imaginative mind can express a greater number of ideas fluently, his thinking will be characterized by flexibility and originality.

## Review of Related Studies

- Vora, Gira C. (1984) focussed his research on "An Investigation into the Impact of Divergent thinking Programme in Mathematics on Creative Level of the Children of Class VIII", the findings reveals that
  - The Creativity increases as a result of treatment of Divergent thinking Programme.
  - Divergent thinking Programme in Mathematics was equally effective in both the groups of boys and girls.

- The experimental group proved superior in the components of Creativity namely fluency, flexibility and, originality after taking Divergent thinking programme than the other group.
- Mark A. Runco (1997) says performance on divergent thinking can be influenced by models, including parental divergent thinking, incentives and reinforcement, task perception, environmental cues, stimulus characteristics, and age.
- Rabari, J.A., Indoshi, F.C. and Okwach, T. (2011) in the research paper titled "Correlates of Divergent thinking among Secondary School Students". The study has demonstrated that divergent thinking is important, but not sufficient for creative work, which also seems to depend on non-cognitive factors such as creative attitude and motivation. The result shows implications of school and out-of-school environment on the students, as having important contributions in the development of the creativity.
- Patel R.P (1988) conducted a study on "Development of Brain Storming Technique Programme and to Study its Effect on Creativity of the Secondary School Children". He concluded that the experimental group did better on the fluency, flexibility components of creativity than the control group. The main effect of IQ on the fluency component of creativity was significant and fluency was in favour of high IQ group children while flexibility was in favour of the low IQ group children. Thus, the brainstorming technique procedure is powerful for developing creativity.

## Objectives of the study

- To study the effect of a divergent thinking programme in learning on the creativity of the students with respect to the feedback.
- To study the effect of divergent thinking programme in learning on the creativity components, viz., fluency, flexibility and, originality.
- To investigate the level of Divergent thinking among the students of different medium and different area schools.
- To provide excellent experience in associative

thinking and help children become better Divergent thinkers and problem solver.

## Hypotheses

**H1:** There is no significant difference in "Fluency" of Divergent thinking in between the students of English medium schools situated in posh and slum locality.

**H2:** There is no significant difference in "Fluency" of Divergent thinking in between the students of Marathi medium schools situated in posh and slum locality.

**H3:** There is no significant difference in "Fluency" of Divergent thinking in between the students of English medium and Marathi medium students of Aurangabad city.

**H4:** There is no significant difference in "Flexibility" of Divergent thinking in between the students of English medium schools situated in posh and slum locality.

**H5:** There is no significant difference in "Flexibility" of Divergent thinking in between the students of Marathi medium schools situated in posh and slum locality.

**H6:** There is no significant difference in "Flexibility" of Divergent thinking in between the students of English medium and Marathi medium students of Aurangabad city.

**H7:** There is no significant difference in "Originality" of Divergent thinking in between the students of English medium schools situated in posh and slum locality.

**H8:** There is no significant difference in "Originality" of Divergent thinking in between the students of Marathi medium schools situated in posh and slum locality.

**H9:** There is no significant difference in "Originality" of Divergent thinking in between the students of English medium and Marathi medium students of Aurangabad city.

## Population

English and Marathi medium IX standard students of high schools of Aurangabad city is the population used for this study.

## Sample

With the help of stratified sampling method, 400 students of standard IX were taken as sample from English and

Marathi medium schools of Aurangabad city. This sample size has been taken to increase the precision of results in this study.

## Methodology of research

The researcher has selected Normative Survey Method for present study because this method served as a stepping stone to more precise investigations.

## Variables

Variable refers to attributes properties or characteristics which can change from one individual to the next. The researcher has selected fluency, flexibility and originality factors of the Divergent thinking as variables to study the differences between the students of different medium and locality schools.

## Tools of the study

A standardized tool was used i.e., "Verbal Test of Scientific Creativity (VTSC)" constructed by Dr. V.P Sharma and Dr. J.P Shukla to study the Divergent thinking of high school students.

## Data collection

The test was administered on the students of IX standard of Aurangabad city. The researcher personally visited each and every school; he obtained the necessary permission for the collection of data from the selected institutions. The students were given an average one hour to complete the survey form (test) and then the tests were collected back by the researcher. After collection of data the responses of the students were quantified. While scoring, it was kept in mind by the researcher that each item was to be scored for fluency, flexibility and originality separately.

## Statistical treatment

The researcher put the data once edited and coded together in carefully designed tables for statistical analysis. Mean, S.D, 't' test (CR) were used to analyze the data.

## Findings

- Table 1 reveals that 't-value' is 3.31 which is greater than table value at both 0.01 and 0.05 level. Therefore H1 is rejected and thus it is concluded that English Medium schools located in posh areas are better in developing fluency in Divergent thinking as compared to the schools

located in slum areas.

- Table 1 reveals that 't-value' is 3.26 which is greater than table value at both 0.01 and 0.05 level. Therefore H2 is rejected and thus it is concluded that Marathi Medium schools located in posh areas are better in developing fluency in Divergent thinking as compared to the schools located in slum areas.

- Table 2 reveals that 't-value' is 4.6 which is greater than 2.58, hence, there is a significant difference between the mean at 0.01 level in between English and Marathi medium schools and therefore, H3 is rejected, it is also inferred that English medium students are better in developing fluency in Divergent thinking as compared to Marathi medium students.

- Table 1 reveals that 't-value' is 14.08 which is greater than table value at both 0.01 and 0.05 level. Therefore H4 is rejected and thus it is concluded that English Medium schools located in posh areas are better in developing flexibility in Divergent thinking as compared to the schools located in slum areas.

- Table 1 reveals that 't-value' is 8.10 which is greater than table value at both 0.01 and 0.05 level. Therefore H5 is rejected and thus it is concluded that Marathi Medium schools located in posh areas are better in developing flexibility in Divergent thinking as compared to the schools located in slum areas.

- Table 2 reveals that 't-value' is 7.2 which is greater than 2.58, hence, there is a significant difference between the mean at 0.01 level in between English and Marathi medium schools and therefore, H6 is rejected, it is also inferred that English medium students are better in developing flexibility in Divergent thinking as compared to Marathi medium students.

- Table 1 reveals that 't-value' is 2.51 which is less than table value at both 0.01 and 0.05 level. Therefore H7 is accepted and thus it is concluded that there is no significant difference in English Medium schools located in posh and slum areas in developing originality in divergent thinking.

- Table 1 reveals that 't-value' is 2.36 which is less than table value at both 0.01 and 0.05 level. Therefore H8 is

Factors	Medium	Locality	N	Mean	S.D	df	t-value	Significant\ insignificant
Fluency	English	Posh	50	249.8	24.2	98	3.31	Significant
		Slum	50	233.7	24.2			
	Marathi	Posh	50	217.8	24.1	98	3.26	Significant
		Slum	50	202	24.0			
Flexibility	English	Posh	50	44.68	6.8	98	14.08	Significant
		Slum	50	26.68	5.96			
	Marathi	Posh	50	16.1	5.0	98	8.10	Significant
		Slum	50	9.04	3.6			
Originality	English	Posh	50	315.3	29.14	98	2.51	insignificant
		Slum	50	313.4	29.1			
	Marathi	Posh	50	283.3	29.0	98	2.36	insignificant
		Slum	50	281.5	28.5			

Table 1. Showing mean, SD, 't' value of the scores of Divergent thinking of the students of IX standard of English & Marathi medium schools located in posh and slum areas of Aurangabad city

Factors	Medium	N	Mean	S.D	df	t-value	Significant insignificant
Fluency	English	100	241.75	24.2	198	4.6	Significant
	Marathi	100	209.9	23.8			
Flexibility	English	100	35.68	6.38	198	7.2	Significant
	Marathi	100	12.57	4.3			
Originality	English	100	307.3	29.12	198	1.25	Insignificant
	Marathi	100	306.35	29.3			

Table 2. Showing mean, SD, 't' value of the scores of Divergent thinking of the students of IX standard of English & Marathi medium schools of Aurangabad city

accepted and thus it is concluded that there is no significant difference in Marathi medium schools located in posh and slum areas in developing originality in divergent thinking.

- Table 2 reveals that 't-value' is 1.25 which is less than 2.58, hence, there is no significant difference between the mean at 0.01 level in between English and Marathi medium schools and therefore, H<sub>9</sub> is accepted, it is also inferred that there is no difference in English and Marathi medium students in developing originality in Divergent thinking.

### Conclusion

The conclusion is drawn on the basis of the test known as "Verbal Test of Scientific Creativity (VTSC)" employed on the students of IX standard of English and Marathi Medium schools located in posh and slum localities of Aurangabad city.

- It is interesting to note that the students learning in English Medium School situated in posh localities were found to be more superior in the Divergent thinking, rather than students of Marathi Medium schools situated in posh as well as slum localities.

- There could have been number of factors responsible for above differences. The home environment is primarily responsible for low creativity in the students of Marathi Medium School situated in slum localities, because the parents are too busy to earn their livelihood. They are also ignorant about the importance of education to their children; therefore they never encourage their children to pay attention even towards their regular studies.

- On the other hand the parents of students studying in English Medium posh and even in the slum localities found to be very conscious about their ward's academic as well as creative activities.

- Lack of knowledge on the part of the teacher and ignorance about the development of Divergent thinking among the students, in Marathi Medium schools situated in slum localities was also a main reason to keep the students inferior.

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