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## ACADEMIC ACHIEVEMENT OF SECONDARY SCHOOL STUDENTS AS FUNCTION OF DIVERGENT PRODUCTION ABILITY

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### ABSTRACT:

*Thinking, problem solving and creating such things or thoughts which are novel to the person are some of the most complex activities of the human being. But often it has been seen that the expressions of divergent production ability among school children are punished rather than awarded this presents a serious problem in developing the divergent production ability of students in school settings. Creative pupils are the most valuable human resource because divergent production ability involves originality which generates inventions therefore; creative pupils should be*

*properly identified and nurtured. The present study is an attempt to measure the level of divergent production ability of secondary school students and its relationship with academic achievement. For this purpose a 'divergent production ability test' was administered to 120 eleventh grade secondary school students and coefficient of correlation with their percentage of marks in previous examination was calculated. A strong dependence of divergent production ability on 'Academic Achievement' was observed. High achiever group of students were found to exhibit a higher level of divergent production ability. Science students scored better than arts students on divergent production ability but the difference between means is not significant.*

**KEYWORDS:** *Divergent Production Ability, Academic Achievement.*

### INTRODUCTION:

Modern cyber era is full of competition. In this age everyone has developed a competitive zest to compete with other to achieve life goals. Amongst the various areas where people try to compete with others, the academic pursuit seems to emerge as the most important and relevant aspect of life where people try to do their best over others. According to George (1983), "The future of any country depends on the quality of

young people, their motivation, their aspiration, their ambition and in the final analysis, their character." In all such efforts there is the notion of excellence. Excellence in education has been of prime importance for themselves, their parents, teachers etc. Hence all school machinery along with the parents of school going children makes all efforts to create such an academic environment where excellence is nourished and developed.

The world of today is progressive due to the constructive efforts of minority of population known as creatives who could device new

methods, reorganize existing ideas and offer improved solution to the familiar problems. The need for identification and nurturance of creative talent has been advocated by many psychologists and writers like Baron (1968), Toynbee (1962), Mohsin (1963), Rogers (1959), Conant , Mehrens and Lehmann (1973) and Indian Education Commission (1966). This has generated a lot of research interest in the

field of creativity.

## OBJECTIVES

In the present study following specific objectives have been set down -

1. To classify the sampled students as having high, average and low divergent production abilities.
2. To find out the strength of relationship between Academic Achievement and Divergent Production Ability.
3. To compare students of Science and Arts discipline with regard to their divergent production ability.

## DIVERGENT PRODUCTION ABILITY

J.P. Guilford gave the idea of "Structure of intellect" in 1950, prepared a model by 1956, and revised it in 1957 and 1959 giving rise to 120 human mental abilities (although we can not bind mind with such a fixture). In the model he differentiated intelligence and creativity and substituted them by the terms convergent and divergent thinking abilities respectively. Convergent production is "closed system thinking" while divergent production is "open system thinking". On the basis of his model Guilford gave six divergent production abilities -

1. **Ideational fluency**- is generation of more ideas to stimulus, may be word, phrase sentence, story quality or any idea etc.
2. **Associational fluency**- is to produce ideas or words from a restricted area, i.e. of relationship.
3. **Expressional fluency** - is to produce many ideas to fit a system or logical theories, may be in the form of sentences or verbal ideas etc.
4. **Spontaneous flexibility**- is production of a diversity of ideas in a relatively unrestricted situation. It may include variety of kinds or responses into classes, like number of considerations or properties, attributes or inherent characteristics of problem or product, number of shifts or category responses, versatility etc.
5. **Originality**- measures quality. It indicates uncommonness or newness in the product. Various names like new, uncommon, unusual, clever, singular, individual, idiographic, non classifiable, novel, unique, remote, infrequent, surprise etc. are used to designate originality.
6. **Elaboration**- Indicates expanding or combining activities of higher thought. It is to provide specification of details that contribute to the development of a general idea. It shows production of detailed steps, variety of implications and consequences which can be quantitatively measured.

The factor of fluency, flexibility, originality and elaboration fall in the operation category of divergent production. The "production" part of this label means that in tasks of the abilities in this category when the examinee is given an item of information, he produces other items of information according to specification of the test instruction. The "divergent" part of label means that examinee must produce several items of information and they must all be different.

## ACADEMIC ACHIEVEMENT

Learning is measured in terms of academic achievement. Achievement to Crow and Crow (1956) means, "The extent to which a learner is profiting from instructions in a given area of learning." It is also considered as, "The attained ability or degree of competence in school tasks which is usually measured by standardized tests and is expressed in percentage or grade units based on the norms derived from the wide sampling of pupil's performance". Thus achievement indicates the relative position of an individual in a group regarding his accomplishment proficiency or performance in a given skill or body of knowledge.

## HYPOTHESES:

To meet the objectives of the study following hypothesis was formulated and tested:

1. There is a significant relationship between Academic Achievement and Divergent Production Ability.

2. There is a significant difference between students of Science and Arts discipline with regard to Divergent Production Ability.

### Procedure

#### Sample

The study was restricted to the city of Raebareli, Uttar Pradesh. 120 students (60 boys and 60 girls) who were studying in two schools were taken for the study. Stratified random sampling technique was employed in present study. The selection of the schools situated in urban areas of Raebareli city was made on random bases. Further sections of science and arts group of class XI students were selected. Tools were administered on all the students present in the class on that particular day.

### Instruments

#### (a) The Divergent Production Ability test

In present study divergent production ability has been considered as being referred by Guilford and Torrance and the test used to measure divergent production ability is based on Torrance, Thurston and Baqer Mehdi's test of creative thinking, adapted, developed and standardised by Dr. K.N. Sharma. He considered Fluency, Flexibility, Originality and Elaboration to be the most important primary traits, related to divergent thinking.

#### (b) Academic Achievement

In present study by Academic Achievement we mean students performance as percentage of scores of the students achieved in class X board examination, and these percentages were taken as such for measure of academic achievement.

### ANALYSIS AND RESULTS

After analysis of total DPA scores of students, it was found that scores lies between 51 to 177 with mean 115.50. By using Mean  $\pm$  S.D. students were classified as having high, average and low divergent production abilities.

**Table -1**  
**The Level of DPA of Sampled students**

Class of scores	Level of DPA	No. of Students	Percentage
144 and above	High DPA	22	18.33
between 144-87	Average DPA	80	66.66
Below 87	Low DPA	18	15.00
	Total	120	100

An inspection of table-1 shows that among sampled students 66.66 percent students have taken average position on DPA test scores. 18.33 percent students have taken above average position with high DPA test scores while 15 percent students are in below average position with low DPA scores.

**Table - 2**  
**The Level of DPA and Academic Achievement of Students**

Level of DPA	No. of Students	Average percentage of Academic Achievement Scores
High DPA	22	69.81
Average DPA	80	62.68
Low DPA	18	62.22

Table- 2 shows that students with high academic achievement records, acquired high scores on DPA test while students with low academic achievement records scored low DPA test scores. Thus it is clear that divergent production ability has significant positive relationship with Academic Achievement.

**Table - 3**  
**Mean of Academic Achievement scores of various groups**

Gender	Science	Arts
Boys	71.06%	60.03%
Girls	65.60%	60.73%

An inspection of Table 3 shows that in present sample in case of science students mean of academic achievement scores of Boys is high than Girls while in arts students mean of academic achievement scores of Girls is high than in Boys.

**Table - 4**  
**Mean of Academic Achievement scores in sub groups**

Sub Sample	Mean of Academic Achievement
Boys	65.54
Girls	63.16
Science Students	68.33
Arts Students	60.38

Table 4 shows that in present sample mean of academic achievement scores is more in case of Boys than in Girls. In case of science students mean of academic achievement scores is more than in arts students.

#### **Academic Achievement and Divergent Production Ability**

The coefficient of correlation was computed by Pearson method to estimate the strength of relationship between academic achievement and divergent production abilities. The coefficient of correlation is found 0.4591, shows that DPA has significant positive relationship with academic achievement

#### **Comparison of science and arts students with regard to their divergent production abilities -**

The comparison between above said sub- samples with regard to above said variable was done by testing the significance of difference between their means by using t-test. The results are presented in table-5

**Table - 5**  
**Influence of independent variable (Type of Discipline) on DPA**

Variable	Sample description	N	Mean	S.D.	SE <sub>D</sub>		
Type of Discipline	Science	60	118.25	30.67	5.15	.921	.S.
	Arts	60	113.50	25.56			

Here the calculated value of  $t = 0.921$  which is less than 1.98 and 2.62 the value of  $t$  at 0.05 and 0.01 level of significance for degree of freedom 118. Result of table 5 indicates that no significant difference was found between students of science and arts on the measure of DPA in selected sample. The research hypothesis that there is significant difference between students of science and arts discipline with regard to divergent production ability is rejected.

## DISCUSSION AND CONCLUSION

Present study establishes the dependence of academic achievement on divergent production ability i.e. there is significant positive relationship between DPA and academic achievement. The finding is also supported by Barga (1971) D' Lima (1979), Mehdi (1977), Gupta (1979), Jarial (1981) Bhagwan (1988) Darshana P. Sharma (2003) and Md. Mahmood Alam (2009). This study establishes the dependence of academic achievement on divergent production ability i.e. there is significant positive relationship between divergent production ability and academic achievement. In present sample average of percentage of scores of academic achievement is more in case of boys (65.54) than in girls (63.16), (see table 4). We have already concluded that divergent production ability and academic achievement are directly proportional to each other. So individual having high academic achievement, also achieve better on DPA test and vice versa. The reason for present findings may be that in present structure of society, generally it has been found that parents take less care of their girls and do not provide them all the facilities to make them more independent in their work, thinking and decision making. Though science students scored better than arts students on DPA but the difference between means is not significant. Then it can be concluded that DPA is a mental process to express the original outcomes and it is not confined to any special group of individuals like science students or arts students.

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