

Studies on creativity and intelligence quotient among school going children

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■ **ABSTRACT** : The present study was conducted in Pantnagar, Udham Singh Nagar District of Uttarakhand. The purpose of the study was to find out the level and relationship of Creativity and intelligence among school going children and to know the study behaviour and environment of the children. Three hundred children belonging to 12-16 yrs of age (100 children each from class VII, IX and XI drawn by simple random sampling without replacement from of Campus School of Pantnagar University Uttarakhand. The study suggested that the experiment and research upon educational strategies for utilizing creative abilities of children in their intelligence and involvement of the teachers and parents. The data was collected through survey method using self constructed questionnaire schedule to elicit information on general information of the respondents, their family income, information related to their study behaviour. The test of Non Verbal Test of Creative Thinking and Indian Adaptation of Wechsler Adult Intelligence Scale were analyzed in terms of frequency and percentage. It was observed that there is no significant association between creativity and intelligence. The silent's finding of the study revealed that there is no significant relationship between intelligence and creativity among school going children.

■ **KEY WORDS**: Creativity, Intelligence, Relationship, Behaviour, School going children

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School days are the golden period that treasures the developing capabilities of an individual and lays the foundation for the future accreditation in the society. International researchers including researches in India are continuously exploring the importance of school days for the synergistic overall development of the child. The integrated development focuses men in the young children and has begun to direct its attention towards the development needs of

the school age children (Miller, 2001). Creativity draws a distinction between convergent and divergent production (commonly renamed convergent and divergent thinking). Convergent thinking involves aiming for a single, correct solution to a problem whereas divergent thinking is creative generation of multiple answers to a set of problem. Often researchers had occasionally used the terms flexible thinking or fluid intelligence, which are roughly similar to (but not

synonymous with) creativity (Eysenck, 1995). It is a concept of individual differences which is intended to explain why few people have higher potential to provide new solutions to old problems than others. It leads us to change the way we think about things and is conceived as the driving force that moves civilization forward. It's examined at different conceptual levels. One of the most general distinctions to be made is the one between creative potential as opposed to creative achievement (Hennessey and Amabile, 2010). Isen (2000) shows that a positive mood promotes a tendency towards greater creativity and flexibility in negotiation and in problem solving as well as more efficiency and thoroughness in decision making.

Intelligence is a complex topic (Hunt, 1995) which has been defined as the ability to learn. In this sense individual's intelligence is a matter of the degree to which he or she is educable. If a person is able to learn something readily and quickly, he is said to be an intelligent person. The school conditions also affect the development of creativity. If unfavorable, these can counteract much of the stimulation of creativity, provided by a favorable home environment (Gehlbach, 1991). Freeman (1996) administered tests of creativity-verbal and visual forms; the 'Something about Myself' test to measure creative perceptions; and the general mental ability test used for the talent search examination. It was found that there was significant difference between the two groups of students—selected and rejected—on the verbal dimensions of creativity but no significant difference in scores on visual creativity tests and no significant relationship was between General Mental Ability Test scores and scores on verbal and visual tests of creativity.

The literature pertaining to the present study has been reviewed as under. Chauhan (1977) reported of the results of a study of originality in 240 Indian students (between 17-21 years of age) showed that (a) originality developed consistently through late adolescence, with adjustment and introversion as a negative and positive correlates, respectively and (b) the characteristic of 'alert poise' and being subdued appeared to develop related to the growth of originality, with males conforming better to this model in mid-adolescence and females better in late adolescence. Rastogi and Nathawat (1982) administered a test of creativity to 50 emotionally secure and 50 emotionally insecure (determined by the security-

insecurity inventory) students (female's mean age 16.5 years, males age 16.4 years). Emotionally secured subjects scored significantly higher on creativity than did their emotionally insecure counterparts. No significant sex differences were found and emotional security-insecurity had no interacting effect with sex.

Chaudhari and Bindal (1986) administered Mehdi's Tests of Creative Thinking, Cheong's Pupil Situational Inventory, and Pupil's Perception of Parents Attitude Towards Creativity Inventory (PPPATC) to 3,952 scheduled caste/tribe (SC/ST) and non-SC/ST students of 9th and 10th standard from ten government and private higher secondary schools in Ratlam (India). Data analyzed, using the t - Tests, indicated that the non SC/ST students were significantly superior to the SC/ST students on measures of creativity, experimental attitude and PPPATC.

Ahmed and Joshi (1988) studied the impact of socio-culture disadvantage on non verbal creative thinking in 120 students from advantaged or disadvantaged schools, advantaged or disadvantaged homes and studying in 7th, 9th or eleventh grades. Scores on Baquer's Mehdi Non Verbal test of Creative Thinking showed that home and school differences were important only at the 7th grade level, whereas the combined effects of the two environment were significant through the 11th grade. At higher grade levels, irrespective of the type of school, there was a more rapid increase in the creative scores of the disadvantaged subjects as compared to their advantaged counterparts.

Bowers (2008) examined the interactive effects of IQ (Intelligent quotient) and creativity upon ninth-grade achievement, with special focus upon the IQ threshold concept of Torrance, 1969. It was observed that, there was weak support for the existence of an IQ threshold, but the regression of achievement on creativity decreased rather than increased with higher IQ. Jarial and Sharma (1988) examined the effects and interaction of intelligence and personality on fluency, flexibility, originality and total creativity in 55 urban high school students. The results showed a significant effect of intelligence on fluency, flexibility, originality and total creativity of subjects, there were differences between introvert and extrovert on originality. The research further accentuates previous findings that creativity may help compensate the lack of intelligence in enhancing academic achievement.

Therefore, considering the above facts and constraints, the present study was undertaken with following objectives

- To find out the level and relationship of academic achievement and intelligence among school going children.
- To know the study behaviour and environment of the children's.

■ RESEARCH METHODS

A total of 300 children belonging to age group 12-16 yrs of age (100 children) each from class VII, IX and XI drawn by simple random sampling were studied from Campus school of Pantnagar University Uttarakhand in year 2008.

Self constructed questionnaire were developed to find out the study behaviour of children. A self constructed questionnaire to elicit information on personal information namely name, age, ordinal position, siblings, family monthly income, education and occupation of their parents and information on study behaviour of children in terms of their subject, help and support taken to study was constructed.

The Non-Verbal Test of Creative Thinking by S Bacquers Mehdi a standardized test, was used to examine the creativity among children, as it is intends to measure the individual's ability to deal with figural content in a creative manner. Three types of activity are used for this purpose, picture construction, picture completion, and triangles and ellipses. The total time required for administering the test is 35 minutes, the battery is meant to identify creative talent at all stages of education except pre-primary and primary.

In the Non-Verbal Test of Creative thinking by Mehdi (1985), pictures were scored for elaboration and originality. The subjects were also asked to give an interesting and unusual title to each picture which was scored for both verbal elaboration and originality. The scores of non verbal creativity test was given according to the individuality of the picture they have portrait by subject. As in the case of scoring for elaboration, the originality non verbal scores represented by a person's ability to produce ideas which differ in approach or thought trend. All ideas which differ in approach or thought trend are treated. Since the norms given in the test include only the scores of Activity I and activity II, it has been recommended that the researcher when

preparing their own norms should add elaboration scores of Activities III also. Therefore, the score obtained from the three activities was added. To categorize, range method with class interval of 36 was used. Accordingly, the students were classified as high (more than 200 scores on creativity), average (164 to 200 scores) and low (less than 164 scores) in creativity, which has been operationally defined.

Indian Adaptation of Wechsler Adult Intelligence Scale by Ramalingaswamy (1972): A standardized test was selected to know the intelligent quotient of the student in the study. Wechsler Adult Intelligence Scale assesses intelligence in terms of performances on Picture completion, digit symbol, block design, picture arrangement and object assembly.

For Intelligence Quotient (IQ), the raw scores obtained from the subtest were converted into IQ as per the instruction given in the manual. The classification suggested for interpreting IQ of the subjects in the manual of WAPIS was used which is as follows:

The scores of intelligent quotient from 80 to 89 were taken to be dull normal intelligent quotient .The scores of intelligent quotient between 90 to109 were taken to be average normal intelligent quotient. The scores of intelligent quotient from 110 to 119 were taken to be bright normal intelligent quotient. The scores of intelligent quotient between 120 to129 were taken to be superior intelligent quotient.

The data was analyzed in terms of frequency percentage and chi –square (X^2)

Frequency it was used to find out the number of respondents in a particular cell.

Percentage was used for making simple comparisons. For calculating percentage the frequency of a particular cell was multiplied by 100 and total number of respondents in a particular category.

$$\text{Percentage (P)} = \frac{n}{N} \times 100$$

where, n = frequency of a particular cell;
N = total number of respondents in a particular cell
The formula for chi square is

$$X^2 = \frac{(O - E)^2}{E}$$

where:
 X^2 is the value for chi square.
 Σ is the sum;
O is the observed frequency;

E is the expected frequency.

RESEARCH FINDINGS AND DISCUSSION

On the basis of the analyzed data the results revealed that majority of the children had average creativity and intelligence (21.33%) followed by (16%) have average creativity but bright normal and 15.33 per cent had high creativity but average intelligence. Interestingly it was found that a few children had high creativity but dull normal in intelligence (2%), and low creativity with superior intelligent (1.66%) (Fig. 1).

Since the calculated value (116.58) was greater than table value (16.8) at 6 degree of freedom at 1 per cent LS, the hypothesis was rejected, thus, can be said that Bowers (2008) studied that there was weak support for the existence of an IQ threshold, but the creativity increased rather than decreased with higher IQ (Table 1).

The correlation matrix revealed that creativity was significant at 1 per cent level of significance with grade or standard of the children (Table 2). This implies that children of higher grade were having better creativity. The negative correlation between creativity and income group was significant at 5 per cent level of significance. It indicated that the children from lower income group had better creativity. Thus, curricular and co-curricular activities should provide the children with higher income group environmental support to improve their creativity while creative children may be given opportunities to use the talent in the interest of the society and personal growth. There existed a negative correlation between gender and creativity which was not significant. This

implied that the girls had better creativity than boys. Singh (1988) on administering 17 tests and scales on 158 boys and 162 girls also found that girls had higher levels that boy in word association, ideational and expressional fluency, spontaneous flexibility and originality and autonomy in thinking, non- conformity to conventions and less rigidity in their belief systems. Omkar (1993) in his study found that the creativity was found to be significantly correlated with family functioning.

Relationship between creativity and intelligence quotient :

The finding of the study reveals that there is no significant relationship between intelligence and creativity among school going children. Creativity simply does not significantly predict Intelligence of students in the Polytechnic system. The inverse or negative relationship between intelligence and academic

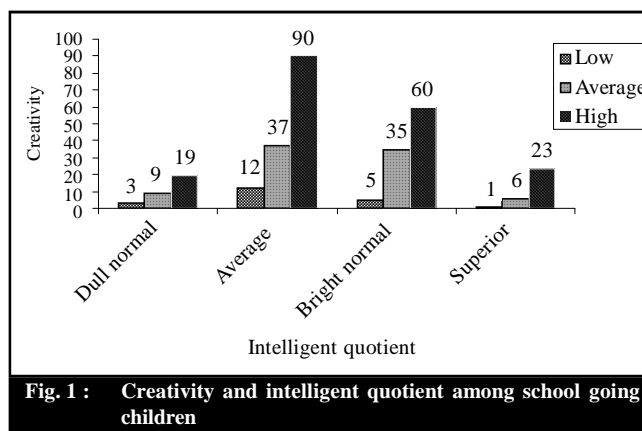


Table 1 : Creativity and intelligent quotient among school going children

Creativity	Intelligence quotient				Total	Calculated χ^2 value
	Dull normal	Average	Bright normal	Superior		
Low	3(1)	12 (4)	5 (1.67)	1 (0.33)	21	5.40
Average	9(3)	37(12.33)	35(11.67)	6 (2)	87	
High	19(6.33)	90(30)	60(20)	23(7.66)	192	
Total	31	139	100	30	300	

Figure in parenthesis are percentages.

Table value of χ^2 at 5 per cent level of significance = 12.6,

1 per cent level of significance = 16.8

Table 2: Correlation matrix of different variables

	Gender	Grade	Income group	IQ	Creativity
Gender	1.000				
Grade	0.00	1.000			
Income group	0.067	-0.146**	1.000		
IQ	0.076	-0.010	0.024	1.000	
Creativity	-0.049	0.224**	-0.106*	0.063	1.000

achievement is surprising. Similar kind of relationship was observed by Dalal and Rani (2013).

Therefore based on the above study it can be concluded that intelligence is highly relevant for creativity, but the kind of relationship depends on the level of intelligence as well as on the actual indicator of creativity. In line with early assumptions, intelligence may increase creative potential up to a certain degree where it loses impact and other factors come into play. At this, it possibly applies that the more complex the measure of creativity that is considered, the higher the threshold up to which intelligence may exert its influence. For the most advanced indicator of creativity, namely creative achievement, intelligence remains relevant even at the highest ability range.

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