

# A Comparative study of Creativity and Intelligence of Secondary School Students

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## Abstract

The study presented here was an attempt to study the relationship between creative thinking abilities and intelligence of secondary school students. This study also compared the creative thinking abilities and intelligence of government secondary school students with private secondary school students. A total of 115 male and female school students were taken as a sample for the study. Data was collected through standardized questionnaires (Verbal test of Creativity by Dr. Baqer Mehdi and group test of mental abilities by S.S.Jalota). Analysis showed that private and government school students differ significantly on creativity and intelligence test scores. Government school students performed better than private school students. The findings of the study also revealed that the male and female school students do not differ significantly on creativity and intelligence test scores. It was further concluded that there exists a moderate positive correlation between intelligence and creativity scores of the students.

**Key words:** Creativity, intelligence, correlation, secondary school students.

## Introduction

Creative thinking ability is the ability to perceive the world in new ways. It involves : thinking and then producing. Turning new ideas or imagination into reality is called creativity. For some individuals, it might seem to come naturally, but it is something that anyone can improve at, if they give it the time and effort. One can say creativity is bold thinking. Bold thinking means divergent thinking, breaking of old norms and creating new combinations. Curiosity to know more about new things leads to divergent thinking and hence to new ideas and creations. A creative mind has original and novel ideas which are appropriate responses as well to a problem. According to UNESCO, “The encouragement of creativity from an early age is one of the best guarantees of growth in a healthy environment of self-esteem and mutual respect – critical ingredients for building a culture of peace”. Creativity can be understood as having the power or quality to express himself or herself in his/her own way. Creativity is the basis of all the social development, new inventions and discoveries in almost every field. The progress of a society depends on the extent of development of creativity among its members.

Intelligence comes from a Latin word ‘intellegere’ which means to understand. Intelligence is an important aspect in the field of learning and education. Intelligence is the product of heredity and environment. Also,

it is not the birth right of a particular race or group. Bright and dull individuals can be found in any race, caste or cultural group. Some researchers argue that intelligence is a general ability, whereas others believe that intelligence comprises specific skills and talents. Intelligence has been discussed and interpreted by psychologists and scholars in their own ways. While some have described it as an ability to learn, or ability to adapt or adjust, others have accepted it as an ability to think, reason, imagine or problem solving. In present times, intelligence is generally understood as the ability to understand and adapt to the environment by using inherited abilities and learned knowledge. Humans are incredibly intelligent beings and rely on their intellectual abilities every day. Although intelligence can be defined and measured in a number of ways, the overall intelligence of human beings makes them incredibly unique.

### **Review of Related Literature**

There has been debate in the psychological literature about whether intelligence and creativity are part of the same process (the conjoint hypothesis) or represent distinct mental processes (the disjoint hypothesis). Researchers have suggested that some minimum level of intelligence is required for the creation of a new idea or product to occur (Silva, 2008). Even at a minimum it seems that creativity involves certain aspects of intelligence (Sternberg & O'Hara, 1999; Kaufman & Plucker, 2011). The more complex the measure of creativity that is considered, the higher the threshold up to which intelligence may exert its influence (Jauk, Benedek, Dunst & Neubauer, 2013). There is a relationship between nonverbal intelligence and the originality component of creativity (Southard, 2014). Intelligence of the students affects in a positive way the originality, flexibility and fluency factors of creative thinking (Yadav, 2015). There exists a positive correlation between intelligence and creativity (Khajuria & Mehta, 2018).

Many research findings and observations have demonstrated that there is no positive correlation between creativity and intelligence. One is not the essential or necessary prerequisite of the other. Meta-analytic findings suggest that the correlation between creative potential and intelligence generally is quite weak (Kim, 2005). The question of whether creativity and intelligence are related appears to converge at the conclusion of an only slight association (Nakano, 2015).

The relationship between the level of intelligence and the level of creativity could be different in different age groups: with 7–8 year olds, the two parameters are independent of each other, whereas with 12–13 year olds, there is a weak but significant link between them. (Nikolaeva, Novikova & Vergunov, 2018). It is not essential that an intelligent person should surely be creative or a creative person should necessarily have a high level of intelligence (Mukherjee & Samanta, 2019).

Metacognition is of fundamental importance for both intelligence and creativity (Kenett et al. 2018). Intelligence and creativity have an epistemological connection capable of directly affecting educational contexts, resulting in education founded on a new paradigm of thinking (Vestena et al. 2020). Intelligence is a necessary (but not sufficient) condition for creative achievement is also certainly recognizable but with variable significance depending on the characteristics of space and time (Corazza & Lubert, 2020). Moderate

to large correlations between intelligence facets and creative ability, as well as a large correlation between general intelligence and creative ability have been found (Frith et al. 2021).

### Objectives of the study

The present study includes the following objectives:

- To compare the intelligence scores of government and private school students
- To compare the creativity scores of government and private school students
- To compare the intelligence scores of male and female students
- To compare the creativity scores of male and female students
- To study the relationship between the intelligence and creativity of secondary school students.

### Hypotheses of the study

- There exists no significant difference in intelligence scores among students studying in private and government schools
- There exists no significant difference in creativity scores among students studying in private and government schools
- There exists no significant difference in intelligence scores among school students in relation to gender.
- There exists no significant difference in creativity scores among school students in relation to gender.
- There exists no significant relationship between creativity and intelligence scores of secondary school students.

### Delimitations

The study was delimited to class X school students of Punjab state (Jawahar Navodaya Vidyalaya, Patiala and Blossoms Senior Secondary School, Patiala).

### Research Methodology

Descriptive survey method was employed to collect data from the students.

### Sample of the study

A sample of 115 school students of class X were taken for the study. 53 Students of Jawahar Navodaya Vidyalaya and 62 students of Blossoms Senior Secondary School, Patiala participated in the study.

### Tools used

For the present study, following tools were used:

1. Thinking creativity (verbal) by Dr. Baqer Mehdi- The verbal test includes four subsets namely- consequences test, unusual uses test, similarity test and product improvement. Each of these four sub-tests cover the three dimensions of creative thinking ability: fluency, flexibility and originality.

- Group test of Mental ability by S.S.Jalota- It measures intelligence in terms of vocabulary, similars and opposites, number series, classifications, best answers, inferences and analogies. The maximum time limit of the test is 25 minutes only.

## Results and Conclusions

After the collection of data, scoring was done and the results were tabulated. Mean and SD scores were calculated and reported as under.

**Table 1: Intelligence scores of school students in relation to category of schools**

School category	N	Intelligence scores				
		Mean	SD	MD	S.Ed	t-value
Private	62	26.77	10.53	13.5	2.12	6.4*
Government	53	40.28	12.16			

\*significant at 0.01 level

Table 1 reveals that the mean and standard deviation of private school students is 26.77 and 10.53 while that of government school students is 40.28 and 12.16 respectively. This indicates that government school students scored higher on intelligence test as compared to private school students. The t-value of significant difference of intelligence scores among private and government schools is 6.4 which is significant at 0.01 level of significance. It can be concluded that there exists a significant difference in the intelligence scores of private and government school students. Thus, the null hypothesis "There exists no significant difference in intelligence scores among students studying in private and government schools." is rejected.

**Table 2: Creativity scores of school students in relation to category of schools**

School Type	N	Creativity scores				t-value
		Mean	SD	MD	SEd	
Private	62	35.63	12.08	50.4	3.16	15.03*
Govt.	53	86.03	21.2			

\*significant at 0.01 level

Table 2 reveals that the mean and standard deviation of private school students is 35.63 and 12.08 while that of government school students is 86.03 and 21.2 respectively. This indicates that government school students scored higher on creativity as compared to private school students. The t-value of significant difference in creativity scores among private and government school students is 15.03 which is significant at 0.01 level of significance. It can be concluded that there exists a significant difference in the creativity scores of private and government school students. Thus, the null hypothesis "There exists no significant difference in creativity scores among students studying in private and government schools." is rejected.



**Table 3 Intelligence sores of school students in relation to gender**

Gender	N	Intelligence scores				
		Mean	SD	MD	SEd	t-value
Girls	52	32.46	13.29	0.983	2.47	0.398 <sup>NS</sup>
Boys	63	33.44	13.09			

Table 3 reveals that the mean and standard deviation of girls is 32.46 and 13.29 while that of boys is 33.44 and 13.09. This indicates that the girls and boys scored almost equally on intelligence test. The t-value of significant difference is 0.398 which is not significant. It can be concluded that there exists no significant difference in intelligence among male and female students. Thus, the null hypothesis stating “There exists no significant difference in intelligence scores among school students in relation to gender.” is accepted.

**Table 4 Creativity scores of school students in relation to gender**

Gender	N	Creativity				t-value
		Mean	SD	MD	SEd	
Girls	52	63.82	29.2	8.13	5.65	1.43 <sup>NS</sup>
Boys	63	55.68	31.2			

Table 4 reveals the mean and standard deviation of girls is 63.82 and 29.2 while that of boys is 55.68 and 31.2. This indicates that the girls scored higher on the creativity test as compared to boys. The calculated t-value came out to be 1.43 which is not significant. It can be concluded that there exists no significant difference in creativity among male and female students. Thus, the null hypothesis stating “There exists no significant difference in creativity scores among school students in relation to gender.” is accepted.

**Table 5 Correlation coefficient (r-value) between intelligence and creativity of school students**

Variables	N	r value	Remark
Intelligence	115	0.645*	Moderate correlation
Creativity	115		

\*significant at 0.01 level

From table 5, it is clearly evident that the co-efficient of correlation between intelligence and creativity is 0.645 which is significant at 0.01 level of significance. It can be concluded that there exists a moderate positive correlation between intelligence and creativity scores of school students. Thus, the null hypothesis stating “There exists no significant relationship between creativity and intelligence scores of school students.” is rejected.

## Discussion of the results

The present study was conducted among the secondary school students of government and private schools in Patiala. From the present study, it can be concluded that private and government school students differ significantly on intelligence and creativity scores. The students of government school performed better on intelligence and creativity tests as compared to the students of private school. The findings of the study also reveal that male and female students do not differ significantly on intelligence and creativity scores. While the male and female students have performed equally well on the intelligence test, the female students have performed slightly better than male students on the creativity test. It has been further revealed that there exists a strong correlation between intelligence and creativity scores of school students.

## Educational Implications

The study shows that each and every child has some degree of creativity. Parents and Teachers should encourage a child to communicate his or her ideas freely. Various tools should be devised that could help a teacher or a parent to recognize the mental and creative abilities of a child. This would enable a congenial atmosphere at school as well as at home so that a child can think divergently and create something new. Further research work is required in this area to study the relationship between intelligence and creativity in relation to different variables and cultures.

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