A study of effect of intelligence, creativity and socio-economic status on academic achievement of students studying in Secondary Schools

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Abstract: The present study is conducted to identify intelligent and creative learners and to find out the effect of intelligence, creativity and socio-economic status of learners on their academic achievement. Some samples are selected for the study and research tools are administered to collect data. It is found that there is no significant effect or contribution of intelligence, creativity and socio-economic status, taken individual or together, on academic achievement. Talents are human resources and care is to be taken that these talents are preserved and nourished properly for betterment of individuals as well as for betterment of society.

Keywords: intelligence; creativity; socio-economic status; test of significance; achievement; effect etc.

1. INTRODUCTION :

Intelligence and creativity are two mental abilities which are essential part of thought process. Intelligence is the ability to interpret information and solve problems. Creativity is divergent thinking ability that enables learners to create something new and original or to rearrange and reinterpret existing knowledge and information in new fashions. Socio-economic status is the assessment of learner's social, cultural and educational background of parents and family members of learners.

Highly creative persons can bring about revolutionary changes in life in the light of advancement. Highly intelligent persons possess the ability to solve difficult tasks and manage different situational problems. It is generally taken for granted that, learners who score good marks in examinations are intelligent. But some researchers say that learners, who are not good in academic achievement, may also be intelligent. These pupils manifest intellectual behaviour in versatile fields, rather than paying attention only to score high marks in examinations. Similarly, it is expected that creative learners possesses some minimum level of intelligence. So, they should be good in academic achievement. But some researchers say that creative learners have high divergent thinking abilities, they concentrate deeply in search of new innovations and possess less academic interests. Socio-economic status is an important factor that affects learner's creative and intellectual manifestation abilities. Learner's academic success as well as exhibition of skills and talents depends highly on their cultural and homely environment.

2. OBJECTIVES OF THE STUDY :

The present study includes the following objectives –
a) To identify intelligence and creativity levels of learners.
b) To assess socio-economic status of learners.
c) To find out the academic achievement level of learners.
d) To study the effect or contribution of intelligence on academic achievement of learners.
e) To study the effect of creativity on academic achievement of learners.
f) To study the effect of socio-economic status on academic achievement of learners.
g) To study the effect of intelligence and creativity, taken together, on academic achievement of learners.
h) To study the effect of intelligence and socio-economic status, taken together, on academic achievement of learners.
i) To study the effect of creativity and socio-economic status, taken together, on academic achievement of learners.
j) To study the effect of intelligence, creativity and socio-economic status, taken together, on academic achievement of learners.
k) To bring about awareness about prevention of wastage of human talents.
l) To set up curriculum that will promote expression of intellectual behaviour and manifestation of creative talents.

3. RESEARCH METHODOLOGY:

Students of 9th standard studying in different Schools are considered as population of the study. Some Secondary Schools are selected from rural, urban, semi-rural and semi-urban area of Burdwan district and 200 students studying in 9th standard are selected randomly as samples of the study.

Cattell's Culture Fair Scale II is selected to assess intelligent quotient of students. Self-standardized creativity questionnaire and achievement test questionnaire was prepared and administered to assess creativity and academic achievement of learners. The self-standardized tests are highly reliable (reliability of creativity test questionnaire is 0.88 and that of achievement test questionnaire is 0.83). The content and construct validity of the tests are also verified by pedagogical experts. Modified form of Kuppuswamy's socio-economic status scale (economic criteria modified by Mishra and Singh,2003) is used to assess socio-economic status of the learners.

4. ANALYSIS AND INTERPRETATION OF DATA:

Different tools are selected, prepared and administered to collect data from students who are considered as samples. Some hypotheses are set up to analyse and interpret collected data. The analysis and interpretation of these hypotheses are as follows-

Hypothesis H_o1 : There is no significant effect of intelligence on achievement of students studying in Secondary Schools.

For testing this hypothesis, the value of regression coefficient, intercept and their level of significance is found out. The required table is as follows-

Table 1

Measures	Regression coefficient	Standard error	t-value	Test of significance of regression coefficient (at 0.01level)
Intelligence	0.12	0.051	2.35	Not-significant
Intercept	39.61	4.48	8.84	Significant

Obtained t-value of regression coefficient of intelligence scores is less than critical value of t, at 0.01 level of significance for 198 degrees of freedom. So, the regression coefficient value of intelligence term in the regression equation is insignificant. So, regression equation cannot be framed. Thus, it can be said that, effect of intelligence scores on achievement test scores of the students studying in Secondary Schools is not significant. Thus, hypothesis *Ho1 is retained.*

Hypothesis H_o2: There is no significant effect of creativity on achievement of students studying in Secondary Schools.
For testing this hypothesis, the value of regression coefficient, intercept and their level of significance is found out. The required table is as follows-

Table 2

Measures	Regression coefficient	Standard error	t-value	Test of significance of regression coefficient (at 0.01 level)
Creativity	0.080	0.041	1.95	Not-significant
Intercept	46.72	2.12	22.03	Significant

Obtained t-value of regression coefficient of creativity term scores is less than critical value of t, at 0.01 level of significance for 198 degrees of freedom. So, the regression coefficient value of creativity term in the regression equation is insignificant. So, regression equation cannot be framed. Thus, it can be said that, there is no significant effect of creativity scores on achievement scores of the students studying in Secondary Schools. Thus, hypothesis *Ho2 is retained.*

Hypothesis H_o3: There is no significant effect of socio-economic status scores on achievement of students studying in Secondary Schools.
For testing this hypothesis, the value of regression coefficient, intercept and their level of significance is found out. The required table is as follows-

Table 3

Measures	Regression coefficient	Standard error	t-value	Test of significance of regression coefficient (at 0.01 level)
Socio-economic status	0.29	0.14	2.07	Not-significant
Intercept	47.63	1.88	25.33	Significant

Obtained t-value of regression coefficient of socio-economic status is less than critical value of t, at 0.01 level of significance for 198 degrees of freedom. So, the regression coefficient value of socio-economic status term in the

regression equation is insignificant. So, regression equation cannot be framed. Thus, it can be said that, there is no significant effect of socio-economic status scores on achievement. Thus, hypothesis *Ho3 is retained.*

Hypothesis H₀4: There is no significant effect intelligence and creativity on achievement of students studying in Secondary Schools.
For testing this hypothesis, the value of regression coefficients, intercept and their level of significance is found out. The required table is as follows-

Table 4

Measures	Regression coefficient	Standard error	t-value	Test of significance of regression coefficient (at 0.01 level)
Intelligence	0.101	0.04	2.525	Not-significant
Creativity	0.075	0.045	1.666	Not-significant
Intercept	31.54	4.78	6.59	Significant

Obtained t-value of regression coefficient of intelligence term is less than critical value of t, at 0.01 level of significance for 197 degrees of freedom. So, the regression coefficient value of intelligence term in the regression equation is insignificant. So, regression equation, if framed, will not include the intelligence term.

Obtained t-value of regression coefficient of creativity term is less than critical value of t, at 0.01 level of significance for 197 degrees of freedom. So, the regression coefficient value of creativity term in the regression equation is insignificant. So, regression equation, if framed, will not include the creativity term.

Since both the terms cannot be included, so regression equation cannot be framed in this case. That is, there is no significant effect of intelligence and creativity, taken together, on achievement scores of the students studying in Secondary Schools. Thus, it can be said that *hypothesis Ho4 is retained.*

Hypothesis H₀5: There is no significant effect of intelligence and socio-economic status scores on achievement of students studying in Secondary Schools.
For testing this hypothesis, the value of regression coefficients, intercept and their level of significance is found out. The required table is as follows-

Table 5

Measures	Regression coefficient	Standard error	t-value	Test of significance of regression coefficient (at 0.01 level)
Intelligence	0.083	0.047	1.76	Not-significant
Socio-economic status	0.194	0.13	1.492	Not-significant
Intercept	39.43	5.01	7.87	Significant

Obtained t-value of regression coefficient of intelligence term is less than critical value of t, at 0.01 level of significance for 197 degrees of freedom. So, the regression coefficient value of intelligence term in the regression equation is insignificant. So, regression equation, if framed, will not include the intelligence term.

Obtained t-value of regression coefficient of socio-economic status term is less than critical value of t, at 0.01 level of significance for 197 degrees of freedom. So, the regression coefficient value of socio-economic status term in the regression equation is insignificant. So, regression equation, if framed, will not include the socio-economic status term.

Since both the terms cannot be included, so regression equation cannot be framed in this case. That is, there is no significant effect of intelligence and socio-economic status, taken together, on achievement scores of students studying in Secondary Schools. Thus, it can be said that *hypothesis Ho5 is retained.*

Hypothesis H₀6: There is no significant effect of creativity and socio-economic status scores on achievement of students studying in Secondary Schools.
For testing this hypothesis, the value of regression coefficients, intercept and their level of significance is found out. The required table is as follows-

Table 6

Measures	Regression coefficient	Standard error	t-value	Test of significance of regression coefficient (at 0.01 level)

Socio-economic status	0.260	0.140	1.85	Not-significant
Creativity	0.077	0.049	1.57	Not-significant
Intercept	44.09	2.72	16.20	Significant

Obtained t-value of regression coefficient of creativity term is less than critical value of t, at 0.01 level of significance for 197 degrees of freedom. So, the regression coefficient value of creativity term in the regression equation is insignificant. So, regression equation, if framed, will not include the creativity term.

Obtained t-value of regression coefficient of socio-economic status term is less than critical value of t, at 0.01 level of significance for 197 degrees of freedom. So, the regression coefficient value of socio-economic status term in the regression equation is insignificant. So, regression equation, if framed, will not include the socio-economic status term.

Since both the terms cannot be included, so regression equation cannot be framed in this case. That is, there is no significant effect of creativity scores and socio-economic status scores taken together on achievement scores. Thus, it can be said that *hypothesis Ho6 is retained.*

Hypothesis H$_o$7: There is no significant effect of intelligence, creativity and socio-economic status on achievement of students studying in Secondary Schools.

For testing this hypothesis, the value of regression coefficients, intercept and their level of significance is found out. The required table is as follows-

Table 7

Measures	Regression coefficient	Standard error	t-value	Test of significance of regression coefficient (at 0.01 level)
Intelligence	0.087	0.043	2.02	Not-significant
Creativity	0.065	0.039	1.66	Not-significant
Socio-economic status	0.261	0.131	1.99	Not-significant
Intercept	33.70	4.63	7.27	Significant

Obtained t-value of regression coefficient of intelligence term is less than critical value of t, at 0.01 level of significance for 196 degrees of freedom. So, the regression coefficient value of intelligence term in the regression equation is insignificant. So, regression equation, if framed, will not include the intelligence term.

Obtained t-value of regression coefficient of intelligence term is less than critical value of t, at 0.01 level of significance for 196 degrees of freedom. So, the regression coefficient value of creativity term in the regression equation is insignificant. So, regression equation, if framed, will not include the creativity term.

Obtained t-value of regression coefficient of socio-economic status term is less than critical value of t, at 0.01 level of significance for 196 degrees of freedom. So, the regression coefficient value of socio-economic status term in the regression equation is insignificant. So, regression equation, if framed, will not include the socio-economic status term.

Since all the terms cannot be included, so regression equation cannot be framed in this case. That is, there is no significant effect of intelligence, creativity and socio-economic status scores, taken together, on achievement scores of students studying in Secondary Schools. Thus, it can be said that *hypothesis Ho7 is retained.*

5. SIGNIFICANCE OF THE STUDY:

The present study is conducted to find out whether there is significant effect of intelligence, creativity and socio-economic status on achievement of learners. Intelligence and creativity are mental abilities which are to be identified and students of high intelligence and high creativity are to be guided and advised in such a way that their talents do not get wasted. Here, lies the importance of the study. Proper social as well as School environment will enable manifestation of creative as well as intellectual talents of learners. Care should be taken that proper curriculum is selected in Schools, teaching methods should be appropriate and teacher's behaviour and supervision should be friendly enough so that learners feel free to express their talents which will be beneficial for themselves as well as for the society.

6. DELIMITATIONS OF THE STUDY :

The present study has the following delimitations-
a) Only few samples are taken into consideration in the present study. More number of samples can give better results.
b) Only a few Schools are selected by purposive random sampling method of Burdwan district. It would be better if different Schools from different districts can be taken into consideration.

c) Only Bengali medium Schools are selected in the present study. Besides this, English medium and Hindi medium Schools could be included.

d) Only 9th standard students are taken as samples. Better results will be obtained by making more in-depth studies, that is, by selecting students studying in different classes as samples.

7. FINDINGS AND DISCUSSIONS :

Regression equations are to be framed to find out the effect of independent variables on dependent variable. In the present study, intelligence, creativity and socio-economic status are independent variables whereas academic achievement is the dependent variable. Through analysis of data, we find that, the regression coefficients in all cases are insignificant. So, regression equations cannot be framed. Thus, it can be said that, there is no significant effect, taken individually or together, of independent variables on dependent variable.

From these findings, we can say that, learners who are highly intelligent or highly creative may or may not be good in academic performance. This result is similar to result obtained by Ghazi, et.al (2011) who conducted a study on relation between student's intelligence and academic achievement and found the effect of intelligence on academic achievement is very weak or almost nil. Some researches (Behroozi, 1997, Edwards,1965, Mayhon,1966,Nori,2002,Tanpraphat,1976) showed that creativity has no effect on academic achievement in any significant way. Rather and Sharma (2015) examined the impact of socio-economic status on achievement grades. It was found that no significant effect exists among urban and rural students in their academic performance.

8. CONCLUSION :

Creative and intelligent learners are valuable resources of our society. Development and progress of society will take place on preservation and nourishment of human talents. The present study reveals that intelligent or creative learners or learners from good socio-economic status background may or may not be good in academic achievement. They manifest their talents in different ways. Use of computer assisted instructions, innovative methods, exploration of brainstorming ideas can make learning joyful and effective for the learners. So, care is to be taken that they are directed in proper way so that their talents can be utilized for betterment of society.

Different children are born and brought up in families of different socio-economic culture. Heredity and environment plays very important role in development of fundamental intellectual abilities, ideas, concepts, innovations etc. It is the responsibility of parents, family members at home as well as teachers in School, to provide suitable stimulating environment to students to facilitate their intellectual and creative outputs. However, the present study has some delimitations. More detailed research work can give more accurate results which can be generalized and which will be useful to predict learner's skills and abilities and better future outcomes.

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