General and Emotional Intelligence in Relation to Academic Achievement of Pre-service Teachers

Dr. Pramod Kumar Sahu
Assistant Professor (Guest)
Deptt. of Psychology
V.S.J. College Rajnagar, Madhubani

To colleges of teacher Education. To collect data Group Intelligence Test by M.C. Joshi (1956) and Emotional Intelligence by Dr. V. K. Rai (208) were used. Average percentages in all examination of pre-service teachers were considered as their academic achievement. Including descriptive statistics two-way analysis of variance and regression analysis ere used to analysed data. Present study revealed that significant differences were among pre-service teachers with low, average and high general intelligence on academic achievement in favour of higher scores. Similarly, significant differences were found among pre-service teachers with low, average and high emotion intelligence on academic achievement in favour of higher scores. Interaction between general and emotional effect on academic achievement was also found significant. But after controlling one variable to see effect of other variable on academic achievement, It as found that both variable affect academic achievement of pre-service teachers.

Introduction : Academic achievement is basic requirement for getting education from primary level to university level. It is ability and performance in school or college or university curriculum. It is multidimensional and related to human growth and cognitive, emotional, social and physical development of learner. I is analyzed in from of numerical of grade regarding knowledge gain during teaching learning process. It is associated with internal and external components like social, cognitive and emotional. This means that these components are personal, social and institutional that is linked to learner learning performance (Garbanzo, 2007). Generally, intelligence is one of the psychological factors considered as the strongest predictor of scholastic achievement. However, in the last decades, se3veral non-cognitive intelligence theories like social intelligence, multiple intelligence, moral intelligence, cultural intelligence, emotional intelligence and spiritual intelligence comes out in the light of researches and recognized by educationists, psychologists and other working in the field of education, psychology and sociology. Taking above views in mid investigator decided to study academic achievement of pre-service teachers in relation to general and emotional intelligence.

Related Literature

Studies Related to Intelligence and Academic Achievement :. The purpose of this study was to find out differences between student teachers of three universities of Punjab on intelligence, teaching attitude, achievement. As a sample 525 student-teachers were selected from 9 education collages of Punjab University., Guru Nanak Dev University, and Punjabi University or Punjab. A significant difference was found in the intelligence level and B.Ed. marks of the students of the three universities where as there was not a significant difference in the teaching attitude and graduation marks of the student-teachers. Das (2017) conducted a study of relationship between meta-cognitive ability and academic achievement of B.Ed. students. A sample of 30 B.Ed students were selected randomly from six teacher training colleges of Kamrup district of Assam. Meta cognitive Inventory, constructed and standardized by Punita Govil was used to collect data. Significant and positive relationship was found between Meta cognitive ability and academic achievement of B.Ed students Naderi et al. (2009) investigated intelligence, creativity and gender a predictors of academic achievement among undegraduate students. On hundred and fifty-three (105 male and 48 female) Iranian undergraduate students in Mlaysiam were selected as a sample. Findings of this study indicates that intelligence and creativity can explain 1% of variance on academic achievements of undergraduate students which is very unexpected. Garg and Sharma (2016) studied intelligence as predictors of academic performance among undergraduate among undergraduate students. Sample of this study consist of total 08 undergraduate students (55 males and 53 females). Revens' Standard Progressive Matrices and Positive and Negative Affect Schedule were used for data collection. Grade Point Average (CGPA) was taken as academic achievement of students. Significant and positive relationship was found between intelligence and academic performance of undergraduate students. Rajkumar and Hema (2018) assessed influence of general intelligence on performance in Mathematics of undergraduate students.

Studies Related to Emotional Intelligence and Academic Achievement:

Some studies are given in this section. Mohanasundaram (2004) conducted a study on emotional intelligence and achievement of teacher trainees at primary level at Government College of Education, Thanjaur. The study revealed that men and women teacher trainees did not differ in their EI. This study revealed significant but low positive correlation between emotional intelligence and overall academic achievement of teacher trainees. Significant but low positive correlation was also found between EI and achievement in educational science subjects. Drew (2007) studied the relationship between emotional intelligence and student teacher performance of the University of Nebraska -Lincoln, USA. This study revealed that ED and college

supervisors assessments of performance of student teachers were correlated positively significantly. However, significant relationship was not found between cooperating teacher data and student-teacher perspective on performance and emotional intelligence. Positive and significant associations of total emotional quotient (E   Q) scores and scores for the intrapersonal, interpersonal, and general mod were found with two or more individual aspects of student teachers performance while, stress management and adaptability scores were not found statistically significant relationships with total or any aspect of student teachers performance. Upadhyaya (2013) studied relationship between emotional intelligence and academic achievement among student-teachers. The findings of the study revealed that emotional intelligence is positively related to academic achievement (theory & practice) and student-teachers with high emotional intelligence scored better in theory and practical examination than the student-teachers with low emotional intelligence. Narasgoda & Ganihar (2014) studied emotional intelligence and academic achievement of student-teachers of Colleges of Education affiliated to Rani Channamma University, Belgaum. The findings of the study revealed that all dimensions of emotional intelligence i.e., self - awareness, empathy, self-motivation, emotional stability, managing relations, integrity, self-development, value orientation and commitment with academic achievement of student-teacher. Wurf and Croft-Piggin (2014) studied prediction of the academic achievement of first year, pre-service teachers on the basis of ATAR, student engagement, motivation and emotional intelligence. Eighty-three regionally enrolled pre-service teachers at a large multi-campus university were selected for this study. A significant, positive correlation was found between pre-service teacher emotional intelligence and their GPA; however, emotion intelligence did not add significant contribution in presence of ATAR,
student engagement, motivation. Gupta and Hemlta (2015) studied academic achievement of B.Ed. students relation to their emotional intelligence. This study was conducted on a sample 600 (30 male and 300 female) B.Ed. students of colleges of M.J.P. Rohilkhnd University. Finding of this study indicates that significant correlation exist between emotional intelligence and academic achievement of B.Ed. students. Sharma, Mangal and Nagar (2016) investigated impact of emotional intelligence on academic achievement of teacher trainees. As a sample 100 graduates teacher trainees batch of 2014-2015 pursuing B.Ed. were selected from Lingaya's University. High significant and positive correlation was found between emotional intelligence and academic achievement of teacher trainees. Significant and positive relationship of emotional intelligence dimensions, like inter-personal awareness, intra-personal awareness, inter-personal management and intra-personal management were found with academic achievement of teacher trainees. Bahubali and Reddy (2017) investigated emotional intelligence and academic achievement of B.Ed. teacher trainees. For present study 120 B.Ed. teacher trainees were

selected randomly as a sample from B.Ed. colleges affiliated to Bangalore University. Data were statistically analyzed by using Karl Person Product-Moment coefficient of correlation and test.

Objective

1.   To find out differences among of pre-service teachers with low,   average   and   high emotional intelligence on their academic   achievement.

2.   To find out difference among of pre-service teachers with low, average   and   high general intelligence on their academic achievement.

3.   To find out interaction effect between general intelligence and   emotional intelligence n academic achievement of pre-service teachers.

4.   To find out contribution of general and emotional intelligence on   academic achievement of pre-service teachers.

Hypotheses

1.   There is no significant difference among of pre-service teaches with   low,   average and high emotional intelligence n their academic   achievement.

2.   There is no significant difference among of pre-service teachers with   low,   average and high general intelligence on their academic   achievement.

3.   There is no significant interaction effect between general intelligence   and emotional intelligence on academic achievement of pre-service   teachers.

4.   There is no significant contribution of general and emotional   intelligence   on academic achievement of pre-service teachers.

Methodology : Five hundred pre-service teachers were selected using simple random sampling from Noida and Greater Noida Colleges of teacher Education. To college data Group Intelligence Test by M.C. Joshi (1956) and Emotional Intelligence by Dr. V.K. Rai (2008) were used. Average percentages in all examinations of pre-service teachers were considered a their academic achievement.

Results and Discussion : To find out main and interaction effect of general intelligence and emotional intelligence on academic achievement of pre-service teachers on academic

achievement, two-way analysis of variance was used. Summary of two-way analysis of variance presented in Table-1.

Summary of Two-way analysis of variance for main effect of general intelligence and emotional intelligence and interaction effect between both on academic achievement of pre-service teachers

Source of Variation	Sum of Squares	DF	Mena Square	F	probability
Main Effects	214.842	4	528.710	24.076	.000
Intelligence (I)	1255.566	2	627.783	28.587	.000
Emotional Intelligence (EI)	190.575	2	95.287	4.339	.014
2-Way Interactions	349.855	4	87.464	3.983	.003
I X EI	349.855	4	87.464	3.983	.003
Explained	2827.075	8	353.384	16.092	.000
Residual	10782.397	491	21.960		
Total	13609.472	499	27.273		

Intelligence and Academic Achievement : Tale-1 shows that F ration for difference among pre-service teachers with low, average and high general intelligence n academic achievement is 24-076. Probability of F ratio is 0.000 which is much less than 0.01 this means that significant different exist among pre-service teachers with low, average and high general intelligence on their academic achievement. In other words general intelligence significantly influences academic achievement of pre-service teachers.

Therefore, null hypothesis that "There is no significant difference among of pre-service teachers with low, average and high general intelligence on their academic achievement", is rejected

Emotional Intelligence and Academic Achievement: F ration for difference among pre-service teachers with low, average and high emotional intelligence on their academic achievement is 28.587. Probability of this F ratio is 0.000 which is much less than 0.01 This finding indicates that significant exist among pre-service teachers with low, average and high emotional intelligence on their academic achievement. Mohanasundaram (2004) found significant but low positive correlation between emotional intelligence and overall academic achievement of teacher trainees. Drew (2007) found that EI and college supervisors assessments of performance of

student teachers were correlated positively and significantly. Upadhyaya (2013) found that emotional intelligence is positively related to academic achievement (theory & practice) of student teachers. Student-teachers with high emotional intelligence scored better in theory and practical examination than the student-teachers with low emotional intelligence. Narasgouda & Ganihar (2014) found that all dimensions of emotional intelligence i.e., self - awareness, empathy, self-motivation, emotional stability, managing relations, integrity, self-development, value orientation and commitment with academic achievement of student-teachers. Wurf and Crot-Piggin (2014) found significant and positive correlation between pre-service teachers' emotional intelligence and their GPA. Gupta and Hemlata (2015) found that significant correlation exist between emotional intelligence and academic achievement of B.Ed. students. Sharma, Mangal and Nagar (2016) found high significant and positive correlation between emotional intelligence and academic achievement of teacher trainees. Bahubali and Reddy (2017) also found that emotional intelligence correlated significantly and positively with the academic achievement for both male and female, and total sample of B.Ed. students. Therefore, null hypothesis that "There is no significant difference among of pre-service teachers with low, average and high emotional intelligence on their academic achievement" is rejected.

Interaction between General and Emotional Intelligence on Academic on Academic Achievement

Table-1 also shows that F ratio for interaction between general intelligence and emotional intelligence on academic achievement of pre-service teachers is 0.014 which is less than 0.05. means that interaction effect between general intelligence and emotional intelligence on academic achievement of pre-teachers is significant.

Therefore null hypothesis that "there is no significant interaction effect between general intelligence and emotional intelligence on academic achievement of pre-service teachers", is rejected.

It is clear from above that all hypothesis are rejected. Rejection of hypothesis related to interaction effect showing that main effects of general and emotional intelligence on academic achievement of pre-service teachers are clouded. This means that investigator cannot say strongly that both independent variable play significant role in academic achievement of pre-service teachers. In such case it is necessary to calculate t-test between low, average and high general intelligence separately for pre-service teachers with low, average and high emotional intelligence on academic achievement. Similarly, calculation of t-test between low, average and

high emotional intelligence separately for pre-service teachers with low, average and high general intelligence on academic is necessary. Results of such t-test are presented in Table-2. Since critical ration for different degree of freedom was not available in books and other resources, therefore investigator calculated critical ratio of t for different df using formula TINV (p,d) in Microsoft Excel program. Where p is probability (i.e. 0.05 or 0.01)and d is degree of freedom. Results are presented in Table-2.

Table-2

Summary of t-test for differences between three levels (low, average and high) of intelligence separately for three levels (low, average and high) of emotional intelligence and vice versa

	Level	Statistics	Intelligence			t for Intelligence	Groups
			Low	Average	High		
Emotional Intelligence	Low	N	72	48	17	4.823	Low vs. Average
		Mean	58.678	64.519	64.379	3.401	Low vs. High
		S.D.	6.465	6.415	4.556	0.082	Average vs. High
	Average	N	79	91	53	3.798	Low vs. Average
		Mean	61.684	65.453	65.995	3.926	Low vs. Average
		S.D.	6.449	6.388	5.641	0.508	Average vs. High
	High	N	19	40	81	2.875	Low vs. Average
		Mean	62.57	68.230	71.243	4.196	Low vs. High
		S.D.	7.422	6.705	8.162	2.225	Average vs. High
t-ratio for difference between Emotional Intelligence Groups			2.236	0.812	1.058	Low vs. Average	
			2.236	2.616	3.325	Low vs. High	
			.517	2.240	4.055	Average vs. High	

Table-2 show that difference between pre-service teachers with low and average, low and high, and average and high general intelligence on academic achievement for low emotional intelligence are 4.823, 3.41 and 0.082. First two t ratio are significant at 0.01 level for 18 and 87 degree of freedom, while their t ratio is not significant at .05 level. For average emotional intelligence difference between pre-service teachers with low and average, low and high, and average and high general intelligence on academic achievement are 3.798, 3.926 and 0.5.8. This means those first two t ratios are significant at 0.01 level for 198 and 130 degree of freedom while third t ratio for 142 df is not significant at 0.05 level. Similarly, for high emotional intelligence t ratio for difference between pre-service teachers with low and average, low and high, and average and high are 2.875, 4.196 and 2.005 There findings indicate that first two t ratios are significant at 0.01 level for 57 and 98 df while third t ratios is significant at 0.05 level for 19 df.

Table-3

Summery of calculation of critical ratio of t for different degree of freedom for differences between low, average and high general and emotional intelligence

Level of Significance	Degree of Freedom and Critical t-value								
	For difference between level of General Intelligence for three levels of Emotional Intelligence								
	118	8	63	168	130	142	57	98	119
0.05	1.980	1.988	1.988	1.974	1.978	1.977	2.002	1.984	1.980
0.01	2.618	2.634	2.656	2.605	2.614	2.611	2.665	2.627	2.618

For low general intelligence t ratio for difference between pre-service teachers with low and average, low and high, and average and high emotional intelligence on academic achievement are 2.838, 2.236 and 0.517. this means that first two t ratios are significant at 0.01 and 0.05 level for 149 and 89 df. Third t ratio is not significant at 0.05 level for 96 df. For average general intelligence t ratios for difference between pre-service teachers with low and average, low and high, and average and high are 0.812, 2.616 and 2.240. First ratio is not significant for 137 df at 0.05 level while second and third t ratios are significant at 0.05 level for 86 and 129 df. Similarly for high general intelligence t ratios for difference between pre-service teachers with low and average, low and high, and average and high are 1.058, 3.325 and 4.055. These results indicate that first t ratio is not significant at 0.05 level for 68 df while second and third t ratio is significant at 0.01 level for 96 and 132 df.

Contribution of General and Emotional Intelligence on Academic Achievement

To find out contribution of general and emotional intelligence on academic achievement step wise regression analysis was used. Results are presented in Table-4.

Table-4 shows that step wise regression analysis consider general intelligence at first step. This means that general intelligence more associated with academic achievement than emotional intelligence. Value of adjusted R2 is 0.18027 which shows that 18.027% variance contributed by general intelligence on academic achievement of pre-service teachers. At second step along with intelligence, emotional intelligence was significantly considered be step wise regression analysis. Adjusted R2 for both variables (general and emotional intelligence) is 0.23104 hat means 23.104% of variance contributed by both variables on academic achievement of pre-service teachers.

Table-4

Summary of step wise regression analysis for prediction of academic achievement on the basis of general and emotional intelligence.

Step	Constant	R	R2	Adjusted R2	Beta	Variable in Equation	Probability
1	56.847157	.42652	.18192	18027	.426516	General Intelligence	0.0000
2	53.548522	.48386	.23412	.23104	.328802	General Intelligence	
					.248508	Emotional Intelligence	

Conclusions : On the basis of findings following conclusions can be drown:

1.   Emotional intelligence significantly affects academic achievement of   pre-service teachers.

2.   General intelligence significantly affects academic achievement of pre-   service teachers.

3.   Interaction between general and emotional intelligence on academic   achievement is significant

4.   General intelligence and emotional intelligence are jointly contributing   23.104%   of variance on academic achievement of pre-service study   teachers.

Educational Implication : In present study significant differences were found among pre-service teachers with low, average and high general intelligence and emotional intelligence on their academic achievement. Therefore, it is responsibility of teacher educators to provide cognitive problem and emotional related activities to pre-service teachers for development of their intelligence and emotional intelligence. Seminar on local and national level should be organized to develop intellectual and emotional intelligence in pre-service teachers and thereby school students.

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