

General Intelligence of Undergraduate Students in Relation to Their Academic Achievement

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Abstract: The present study focuses on general intelligence test among undergraduate students of Aizawl city in relation to academic achievement with respect to gender and stream of study. The sample consists of 172 undergraduate students (Science and Commerce stream) with 85 female and 87 male, which were selected by stratified random sampling technique from different colleges within Aizawl city. Test of General Intelligence for College Students developed by Dr. K.S. Misra and Dr. S.K. Pal was used for data collection. T-test and Pearson product-moment correlation coefficient were used for data analysis. The study revealed that female and male undergraduate students did not differ significantly while commerce students differ significantly than the science students. The student's general intelligence and their academic achievement has indifferent or negligible relationship.

Index Terms: *general intelligence, undergraduate students, academic achievement, gender, stream of study*

I. INTRODUCTION

Intelligence is a key to know how individuals differ from one another. It provides an understanding of how people adapt their behavior according to the environment they live in. Binet defines intelligence as 'the ability to judge well, understand well, and reason well'.

Intelligence is the mental abilities of a person to learn from experience, adapt to new situations, understand and handle abstract concepts and use knowledge to manipulate one's environment. In general terms, intelligence is the ability to learn about, learn from, understand, and interact with one's environment (Human Intelligence Psychology, Sternberg). Mangal (2007) has defined intelligence as a sort of mental energy, in the form of mental or cognitive abilities, available with an individual which enable him to handle his environment in terms of adaptation to face novel situations as effectively as possible.

II. Rationale of the Study

Intelligence testing is being used for numerous purposes. It gives an idea regarding the status of intelligence and reasons for the cause of it. But it is important to know that intelligence testing does not measure the amount of knowledge a person has already gained, it only measures the ability to learn, think and make judgments which will help us in our daily life. One of the most obvious effects of general intelligence is in the realm of academic performance. Research has shown that there is a strong association between general mental ability and academic achievement, but it doesn't act on its own (Cherry,2023).

The Oxford Dictionary explains intelligence as 'the power of perceiving, learning, understanding and knowing.' So, it is important to know whether the undergraduate students possess these skills and whether general intelligence has an impact on the academic achievement of undergraduate students of Mizoram.

III. Literature Review

Mittal (2017) studied the general intelligence level of degree college students. It also compares the general intelligence of students in terms of the type of management of the college (govt./private), locality of the college (urban/rural), the stream in which students study (science/arts) and the gender (male/female). Test of General Intelligence for College Students by Misra and Pal was employed to conduct the study. T-test was used to analyse the data. The results of the study are: (a) Significant difference exists in the general intelligence of govt. and private college students, govt. college students scoring higher than the private college students. (b) There is significant difference in the general intelligence of urban and rural college students, urban college students showing higher score than their rural counterparts. (c) Science students show higher general intelligence than the arts students. (d) Male and female students do not differ significantly on general intelligence scores.

Gloria and Vadhera (2020) studied the young adults who are pursuing their college degrees. A comparison is sought on the impact of general intelligence on the academic achievement of students of the three academic streams namely, Arts, Science, and Commerce. Findings reveal that general intelligence has a significant impact on academic achievement.

Naderi, Rohani, Aizan and Jamaluddin (2010) examine if a relationship exists between intelligence and academic achievement and if the relationship differs between males and females. Cumulative grade point average (CGPA) was used to select the participants. Intelligence was measured using the Catell Culture fair Intelligence Test. Pearson Correlation analysis indicated that aspects of intelligence were not related to academic achievement for both males and females. [

IV. Objectives of the Study

Objectives of the study are as follows:

- 1) To assess the General Intelligence of undergraduate students (Science and Commerce streams) of Aizawl city.
- 2) To compare the General Intelligence of Science and Commerce undergraduate students of Aizawl city.
- 3) To compare the General Intelligence of female and male undergraduate students of Aizawl city.
- 4) To study the relationship between General Intelligence and Academic Achievement of undergraduate students of Aizawl city.

V. Hypotheses of the Study

Hypotheses of the Study are as follows:

- 1) There is significant difference in the General Intelligence of Science and Commerce undergraduate students of Aizawl city.
- 2) There is significant difference in the General Intelligence of female and male undergraduate students of Aizawl city.

VI. Null Hypotheses of the Study

Null Hypotheses of the Study are as follows:

- 1) There is no significant difference in the General Intelligence of Science and Commerce undergraduate students of Aizawl city.
- 2) There is no significant difference in the General Intelligence of female and male undergraduate students of Aizawl city.

VII. Population

All the undergraduate students from different colleges in Aizawl city are the population of the study.

VIII. Sample and Sampling

The present study is conducted on a sample of 172 undergraduate students of Science and Commerce streams. Stratified random sampling technique was adopted. The sample consisted of 85 female and 87 male undergraduate students.

IX. Delimitation

The samples were confined to only Science and Commerce undergraduate students of Aizawl city.

X. Tools used for the Study

Latest end semester/board exam results and Test of General Intelligence for College Students developed by Dr. K.S. Misra and Dr. S.K. Pal was used for data collection.

XI. Procedure

The investigator visited the different colleges for data collection.

XII. Analysis of the Data

12.1. General Intelligence of undergraduate students of Aizawl city

Table 1: Standard score of General Intelligence of Undergraduate Students

Range	UG Students	IQ
Below 11	17	Below 63
11- 20	84	63-79
21-30	61	81-97
31-40	10	99-116
Total	172	

From table 1, we can know that there are 17 students whose IQ were below 63, 84 students whose IQ were between 63-79, 61 students whose IQ were between 81-97 and 10 students whose IQ were between 99-116. Majority students scored between 11-20 marks i.e. IQ= 63-79.

12.2. General Intelligence of Science and Commerce undergraduate students of Aizawl city.

Table 2: Comparison of General Intelligence (Stream of Study)

Dimensions of GI	Science Students	Commerce Students
Verbal Facility Ability	2.65	3.36
Analytical Thinking Ability	3.35	3.78
Classification Ability	2.16	2.85
Numerical Reasoning Ability	3.05	6.60
Symbolic Transformation Ability	1.96	2.38
Syllogistic Reasoning Ability	2.75	4.55
Total	15.92 (26.53%)	26.53 (44.22%)

Table 2 shows that among the different dimensions of General Intelligence, Science students scored best in the ‘Analytical Thinking Ability’ test in which they score 3.35 on average and scored least in the ‘Symbolic Transformation Ability’ test in which they score only 1.96 on average while Commerce students scored best in the ‘Numerical Reasoning Ability’ test in

which they score 6.60 on average and scored least in the “Symbolic Transformation Ability’ test in which they score 2.38 on average.

Table 3: Standard score of General Intelligence (Stream of Study)

Range	Science	Commerce	Total	IQ
Below 11	14	3	17	Below 63
11- 20	67	17	84	63-79
21-30	15	46	61	81-97
31-40	-	10	10	99-116
Total	96	76	172	

From table 3, we can know that there are 14 science students and 3 commerce students whose IQ were below 63, 67 science students and 17 commerce students whose IQ were between 63-79, 15 science students and 46 commerce students whose IQ were between 81-97 and 10 commerce students whose IQ were between 99-116. Majority of students scored between 11-20 marks i.e. IQ= 63-79.

Table 4: Comparison of General Intelligence based on stream of study

Gender	No. of Students	Mean	Standard Deviation	Standard Error of Difference	t-value	Significance level
Science	96	15.93	5.01	0.5	8.28	significant
Commerce	76	23.55	6.69			

Table 4 indicates the General Intelligence of Science and Commerce undergraduate students of Aizawl city. There are 96 Science students and 76 Commerce students. Their mean is 15.93 and 23.55 and their Standard Deviation was found to be 5.01 and 6.69 respectively. The critical t-value was found to be 8.28, which greater than the critical value of t at 0.01 level is 2.61 and hence is significant. Therefore, the null hypothesis no 1 “There is no significant difference in the General Intelligence of Science and Commerce undergraduate students of Aizawl city.” is rejected and hypothesis no 1 “There is significant difference in the General Intelligence of Science and Commerce undergraduate students of Aizawl city.” is accepted.

12.3 General Intelligence of female and male undergraduate students of Aizawl city.

Table 5: Comparison of General Intelligence (Gender)

Dimensions of GI	Female Students	Male Students
Verbal Facility Ability	2.88	3.05
Analytical Thinking Ability	3.43	3.65
Classification Ability	2.47	2.47
Numerical Reasoning Ability	4.18	5.04
Symbolic Transformation Ability	2.34	1.95
Syllogistic Reasoning Ability	3.28	3.80
Total	15.7 (26.16%)	16.91(28.18%)

Table 5 shows that among the different dimensions of General Intelligence, Female students scored best in the ‘Numerical Reasoning Ability’ test in which they score 4.18 on average and scored least in the ‘Symbolic Transformation Ability’ test in which they score only 2.34 on average. Male students also scored best in the ‘Numerical Reasoning Ability’ test in which they score 5.04 on average and scored least in the “Symbolic Transformation Ability’ test in which they score 1.95 on average.

Table 6: Standard score of General Intelligence (Gender)

Range	Female	Male	Total	IQ
Below 11	11	7	18	Below 63
11- 20	44	40	84	63-79
21-30	30	31	61	81-97
31-40	1	9	10	99-116
Total	85	87	172	

From table 6, we can know that there are 11 female students and 7 male students whose IQ were below 63, 44 female students and 40 male students whose IQ were between 63-79, 30 female students and 31 male students whose IQ were between 81-97 and 1 female student and 9 male students whose IQ were between 99-116. Majority of students scored between 11-20 marks i.e. IQ= 63-79.

Table 7: Comparison of General Intelligence based on gender

Gender	No. of Students	Mean	Standard Deviation	Standard Error of Difference	t-value	Significance level
Female	85	18.6	6.76	0.5	1.31	Not significant
Male	87	19.98	7.05			

Table 7 indicates the General Intelligence of Female and Male undergraduate students of Aizawl city. There are 85 Female students and 87 Male students. Their mean is 18.6 and 19.98 and their Standard Deviation was found to be 6.76 and 7.05 respectively. The critical t-value was found to be 1.31, which greater than the critical value of t at 0.05 level i.e. 1.96 and hence is not significant. Therefore, the null hypothesis no 2 ”There is no significant difference in the General Intelligence of Female and Male undergraduate students of Aizawl city.” is accepted while the hypothesis no 2 “There is significant difference in the General Intelligence of Female and Male undergraduate students of Aizawl city.” is rejected.

12.4 Relationship between General Intelligence and Academic Achievement of undergraduate students of Aizawl city.

Academic Achievement of the undergraduate students of Aizawl city were measured from their lastest semester or board exam results.

Table 8: Academic Achievement of undergraduate students

Academic Achievement Level	Score Range	No.of Students	Percentage
Distinction	75 and above	36	20.93%
First Division	60-75	106	61.63%
Second Division	50-60	17	9.88%
Third Division	33-50	2	1.16%
Fail	33 and below	11	6.40%
	Total	172	100.00%

From table 8, we can know that 36 (20.93%) students passed in Distinction (75 and above), 106 (61.63%) students passed in First Division (60-75), 17 (9.88%) students passed in Second Division (50-60), 2 (1.16%) students passed in Third Division (33-50) and 11 (6.40%) students failed (33 and below).

To find out the relationship between General Intelligence and Academic Achievement of undergraduate students of Aizawl city, the scores of both General Intelligence and Academic Achievement of each student were analyzed using Pearson Product Moment Correlation.

Table 9: Relationship between General Intelligence and Academic Achievement

Variables	N	Correlation
General Intelligence	172	0.04
Academic Achievement	172	

he correlational test result from Table 9 shows that the correlational coefficient is 0.04. The correlation value falls under negligible correlation which means the student's general intelligence and their academic achievement was found to be very low having indifferent or negligible relationship.

13 Results and Conclusion

1. There are 17 students whose IQ were below 63, 84 students whose IQ were between 63-79, 61 students whose IQ were between 81-97 and 10 students whose IQ were between 99-116. Majority students scored between 11-20 marks i.e. IQ= 63-79.
2. "There is no significant difference in the General Intelligence of Science and Commerce undergraduate students of Aizawl city." is rejected. Commerce students have higher IQ than the Science Students.
3. "There is no significant difference in the General Intelligence of Female and Male undergraduate students of Aizawl city." is accepted.
4. 36 (20.93%) students passed in Distinction (75 and above), 106 (61.63%) students passed in First Division (60-75), 17 (9.88%) students passed in Second Division (50-60), 2 (1.16%) students passed in Third Division (33-50) and 11 (6.40%) students failed (33 and below)
5. The student's general intelligence and their academic achievement were found to be very low having indifferent or negligible relationship.

In view of the findings, we come to conclude that the Intelligent Quotient (IQ) of the students were low. Majority of the students score between 11-20 marks i.e. 63-79 IQ. So, they need to improve in all the dimensions of the intelligence test. Science students should try to improve their Intelligence test by doing intelligence related exercises and not just concentrate on bookish knowledge. From the finding of the relationship between general intelligence and academic achievement, we can conclude that at the higher education level the influence of General Intelligence is diminished which indicates the existence of other variables which also influence academic achievement.

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