

**THE RELATIONSHIP BETWEEN GENERAL INTELLIGENCE (GI)  
AND ACADEMIC ACHIEVEMENT (AA) IN COLLEGIATE STUDENTS**

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**Abstract :**

**Academic success is the most important achievement since it decides the student's future career and success in life. Many factors influence an individual's academic achievement (AA) and general intelligence (GI) is considered to be one of the most important factors. The subjects for the present study are 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.**

**Keywords:** General Intelligence, Academic Achievement

**1. INTRODUCTION**

Every learner aims to achieve the expected result in a provided course of education. Academic achievement is the impact of numerous factors. It represents performance outcomes that indicate the extent to which a person has accomplished specific goals which are the focus of activities in instructional environments, specifically in school, college, and university. It represents intellectual endeavors and thus, more or less, mirrors the intellectual capacity of a person. A student's intelligence was considered to be the main contributing factor on his academic performance since the beginning of the 20th century, and Intelligence test has been used effectively to predict

educational outcome especially at the time of the World War II, where researches were conducted to see whether soldiers with high intelligence perform better in the task provided than their counterpart with low intelligence. It was found that their intelligence very much has a good impact on the completion of their task. Since then, intelligence has been considered to be an effective predictor of students' academic performance. But with the introduction of other forms of intelligences from the last couple of decades, it was eventually realized that intelligence alone does not govern the academic achievement. In 1990 psychologists such as John D Mayer, Peter Salovey and Daniel Goleman in 1995 opened the eye of many educationist and psychologist, believing that IQ is no

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longer the main predictor of academic achievement, rather it is the outcome of many other forms of intelligence such as emotional, social, etc. and different capabilities a student possess. Studies have shown that cognitive abilities alone failed to predict the academic achievement of the students (Čavojová & Mikušková, 2015), however, despite the other important impacting factor of academic achievement, the role of students' general intelligence is still a vital contributor (Zax & Rees, 2002).

## 2. Review of Literature

The impact of a person's cognitive ability on his academic performance is no doubt undeniable. A 5-year prospective longitudinal study conducted by **Deary et al. (2007)** has found that general intelligence contributed to success on academic. A positive and high relationship exists between intelligence and academic achievement (**Lamare, 2010; Rosander, Backstrom & Stenberg, 2011; Dhull, 2012; Pallabi, 2016 and Kumar, 2019**). The more intelligent the students are the better their performance is (**Dandagal & Yarriswami, 2017**). Although there is a significant relationship between students' achievement and intelligence, the home environment and study habits also play an important role in the development of the academic achievement of students (**Ruckmani, 2017**). At the same time, the quality of students' performance moderated the relationship between general intelligence

and their GPA as well as the one between numerical intelligence and math grades (**Steinmayr, Ziegler & Trauble, 2010; Rajkumar & Hema, 2018**). **Mayes et al. (2009)** in their study found that IQ is the best single predictor of achievement. The various research findings discussed indicate the role that general intelligence plays in determining academic achievement among students, at the same time some studies claimed otherwise. Thus the rationale for undertaking the present study emerges out to be as follows:-

## 3. Rationale of the Study

The academic achievement of a student is the outcome of his overall personality, his personal goals, his study habits, and most of all, his educational prospects. Studies have shown that general intelligence played a great deal in this outcome, and has been proved to be different in every student. And this influence of general intelligence on academic achievement was also found to be different in relation to the stream of studies they choose. The studies conducted gave a call for research on this subject matter in the context of the Mizo population which is a close-knit society with a very rich culture. It is a society based on the value of selfless service to others and the people are much gregarious in nature. It is important to know whether general intelligence has an impact on the academic achievement of college students of Mizoram and that whether if these

differences are in accordance with the stream of study they selected. Thus it is crucial to take up a study to know if there is a relation between the students' academic achievement (AA) and their General Intelligence (GI) in all the three streams of study at college level.

#### 4. Objective of the Study:

1. To study the academic achievement of college students in arts, science, and commerce stream.
2. To study the general intelligence of college students in arts, science, and commerce streams.
3. To examine the relationship between academic achievement and general intelligence of college students in arts, science, and commerce streams.
4. To study the significance of difference between
  - a) The correlation of academic achievement and general intelligence in Arts and Science stream.
  - b) The correlation of academic achievement and general intelligence in Arts and Commerce stream.
  - c) The correlation of academic achievement and general intelligence in Commerce and Science stream.

#### 5. Hypotheses

1. There is a significant relationship between academic achievement and general intelligence of college students in arts, science, and commerce streams.

2. There is a significant difference between the correlation of academic achievement and general intelligence in Arts and Science stream.
3. There is a significant difference between the correlation of academic achievement and general intelligence in Arts and Commerce stream.
4. There is a significant difference between the correlation of academic achievement and general intelligence in Commerce and Science stream.

#### 6. Population and Sample of the Study

The target population of the study was all undergraduate students of different colleges affiliated to Mizoram University offering arts, science and commerce courses. The sample of the study consisted of 575 under-graduate students, arts (301), science (158) and commerce (116) streams of 5<sup>th</sup> and 6<sup>th</sup> semester from 14 colleges from 5 districts in Mizoram, viz. Aizawl, Lunglei, Champhai, Kolasib and Serchhip Districts.

#### 7. Sources of Data

The study has used both primary and secondary sources of data for the attainment of its objectives:

- a) Primary data relating to the level of students' general intelligence (GI) was personally collected by administering standardized intelligence test on college students.
- b) Secondary data relating to the academic achievement of the students' was collected from the examination department of

Mizoram University. For statistical analysis, the students' CGPA scores were converted to a composite score by multiplying it with hundred.

### 8. Tools of Data Collection

For the present study, the data on GI of the college students was collected by using "Test of General Intelligence" by Dr. K.S. Misra and Dr. S.K. Pal (2012). The test has 60 items, consisting of six sub-tests, viz. Word meaning, Analogy, Classification, Number Series, Code Transformation, and Syllogism.

### 9. Analysis of Data

The data was analyzed on the basis of general intelligence and academic achievement of the college students in relation to their academic stream using descriptive and inferential statistics.

#### 9.1. Descriptive Analysis

Table-1 presents the descriptive statistics of the academic achievement scores and general intelligence score of the college students from arts, science,

and commerce streams. Looking into section-1 of the table, where the possible range of scores on academic achievement is 0-1000. It is found that mean scores of science stream is highest among all three streams ( $Sc._{757.47} > Co._{681.95} > Ar._{647.73}$ ) and standard deviation is least in the commerce stream ( $Co._{59.24} < Ar._{64.06} < Sc._{65.50}$ ). This means that the variation of scores is more in science in comparison to the other two streams.

Section-2 of Table-1 reveals a descriptive statistics of the general intelligence scores of the College Students from Arts, Science, and Commerce streams. After the raw scores were converted into a normalized standard score IQ, the possible range of scores on general intelligence is 0-143. It is found that mean scores of commerce stream is highest among all the three streams ( $Co._{104} > Sc._{103} > Ar._{91.6}$ ) and Standard deviation is least in the commerce stream ( $Co._{9.18} < Sc._{9.88} < Ar._{10.56}$ ). This means

**Table-1**

**Descriptive Statistics Relating to Academic Achievement and General Intelligence of College Students from Arts, Science and Commerce Streams**

Measure	Section-1			Section-2		
	Academic Achievement			General Intelligence		
	Arts	Science	Commerce	Arts	Science	Commerce
Mean	647.73	757.47	681.95	91.6	103	104
Median	639.00	749.00	677.00	90	101	107
Mode	659.00	731	701	90	101	107
SD	64.06	65.50	59.24	10.56	9.88	9.18
Sk	0.79	0.40	0.52	0.81	0.347	-0.677
Ku	0.49	-0.28	0.44	0.79	-0.022	0.843
SE	3.69	5.21	5.50	0.609	0.78	0.85
N	301	158	116	301	158	116

**Table-2**  
**Relationship between Academic Achievement and General Intelligence of College Students from Arts, Science and Commerce Stream**

Variables	Mean	SD	SEM	r value	Df	Significance level
<b>Arts</b>						
Academic Achievement	647.73	64.06	3.69	0.277	299	Significant at both levels
General Intelligence	91.63	10.57	0.609			
<b>Science</b>						
Academic Achievement	757.46	65.49	5.21	0.25	156	Significant at both levels
General Intelligence	103.23	9.88	0.786			
<b>Commerce</b>						
Academic Achievement	681.95	59.24	5.5	0.26	114	Significant at both levels
General Intelligence	104.4	9.179	0.85			

that the variation of scores is more in arts students in comparison to the other two streams.

### 8.2. Inferential Analysis

A reference to Table-2 reveals that the r-value of 0.277 (df=299) in relation to the correlation between academic achievement and general intelligence of college students belonging to the arts stream, being more than the r critical value (0.113), is significant at both 0.05 and 0.01 level. Based on this finding it can be concluded that there is a significant relationship between the academic achievements of the art students with their general intelligence.

Table -2 also reveals that with regard to the students of science stream, their academic achievement and general intelligence do have a significant relationship, since the r-value 0.25(df=156) is more than the r critical value (0.159) even at 0.01 level of significance.

A positive relationship is found between the academic achievement and the general intelligence of commerce stream students (table-2). The r-value 0.26 (df=114) in relation to the correlation between academic achievement and general intelligence of college students belonging to commerce stream is significant at both 0.05 and 0.01 levels.

### 9. Findings and Implications of the Study

Based on the findings, a few conclusions can be drawn to answer the research questions of this study. Firstly, the findings suggest that college students of Mizoram have been found to exhibit good performance in their academic achievement. It is found that the mean score of science stream is highest among all three streams followed by commerce and then by arts stream. Secondly, the collegiate students of Mizoram have been found to hold an average level of general

intelligence. It is found that the mean scores of commerce stream is highest among all the three streams followed by science and then by arts. Lastly, a significant relationship was found between general intelligence and academic achievement among the students of all the three streams.

The findings of the study do confirm the main governing hypothesis that states that general intelligence has a positive impact on the academic achievement of the students. It implies that for the present context of Mizoram collegiate students, the positive impact of high general intelligence is translated into higher academic achievement i.e. there is a positive correlation between general intelligence and academic achievement of collegiate students. At the same time, there are differences in the general intelligence of the three streams where arts students seemed to be less intelligent than their counterparts.

#### 10. Conclusions

Academic achievement is a result of an infinite number of stimulating factors, and general intelligence is found to be one of the highest contributors. The findings of this study also imply that college students' general intelligence does contribute to a great extent to the students' examination marks. It is of no surprise that cognitive abilities such as numerical, vocabulary, logical reasoning, etc. have been contributing to the students' academic performance. Even though all the streams do have a positive relationship between

their GI and AA, the students belonging to the Arts stream do less well when compared to the students of Science and Commerce. It could be assumed that this could be the effect and influence of the problem-solving task that is dominating the science and commerce streams. It can also be said that the influence of general intelligence may have also taken place before they start their college schooling, and the students may have unconsciously chosen their streams according to their level of their intelligences. Thus it is important to have a frequent assessment of the students' level of general intelligence to improve students' cognitive ability and adapt to further teaching, which will then result in better academic achievement and thus, in turn, rectify the present education system.

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