# Influence of Emotional Intelligence on Achievement in Chemistry among Higher Secondary Students

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**ABSTRACT**
Education is a powerful medium of empowering an individual. Many factors influence the academic achievement of students at all levels. Emotional intelligence plays a crucial role in one's life and helps him / her to think more creatively and solve problems. This study is carried out to find out the influence of emotional intelligence on achievement in chemistry among higher secondary students. A stratified random sample of 500 first year higher secondary students has been involved in the study. Survey method was adopted by the investigators. Correlation and Multivariate Analysis was used to find out the significant influence of emotional intelligence on achievement in chemistry. The study indicates the existence of significant positive relationship between emotional intelligence and achievement in chemistry of higher secondary students. Further it also highlights the effect of self-motivation, emotional stability and self-awareness factors of emotional intelligence on achievement in chemistry of higher secondary students.

## INTRODUCTION
Education is the key to individual and social development. Similarly, emotions also play an important role in determining the personality characteristics of an individual. Generally, emotions can be categorized into: 'positive emotions' and 'negative emotions'. Emotional intelligence allows the humans to think more creativity and use emotions to solve problems. To Daniel Goleman (1995), emotional intelligence appears to be an important set of psychological abilities that requires be successful in one's life. He also remarks that high emotional intelligence is essential if one has to be a productive member of the society. Therefore it is presumed thatS academic success of students depends upon their emotional intelligence.

## NEED FOR THE STUDY
Especially education at higher secondary level is the most important and a turning point in the life of students in our country as the total score gained by them in the higher secondary examinations form the basis for their future education and other vocations. To concentrate on their study and come out with flying colours in the academic field, the higher secondary students need to be emotionally well balanced and adjusted. Hence, the need for a study to know the influence of emotional intelligence of higher secondary students on achievement in chemistry is emerged.

## STATEMENT OF THE PROBLEM
The present study is stated as "INFLUENCE OF EMOTIONAL INTELLIGENCE ON ACHIEVEMENT IN CHEMISTRY AMONG HIGHER SECONDARY STUDENTS".

## OBJECTIVES OF THE STUDY
The investigators framed the following specific objectives related to the present study:

1. To find out the significant relationship between emotional intelligence and achievement in chemistry of higher secondary students.
2. To find out the predictive efficiency of overall emotional intelligence and its factors on achievement in chemistry of higher secondary students.

## HYPOTHESES OF THE STUDY
The investigators formulated the following hypotheses pertaining to the present study:

1. There is no significant correlation between achievement in chemistry and emotional intelligence of higher secondary students.
2. The overall emotional intelligence and its factors do not contribute for achievement in chemistry of higher secondary students.

## METHOD OF STUDY
In the present study, the investigators have adopted normative survey method.

## POPULATION AND SAMPLE OF THE STUDY
Students pursuing plus one course during the academic year 2012-13 constituted the population of the study. The present study involves 500 (250 boys and 250 girls) first year higher secondary students studying in various schools located in and around Dindigul District of Tamil Nadu. Stratified random sampling technique was used to collect the data.

## TOOLS USED
The investigators of the present study used the following tools for data collection.

1. Students profile developed by the Investigators.
2. Emotional Intelligence Scale constructed and standardized by Anukool Hyde, Sanjyot Pethe and Upinder Dhar (2002)
3. Achievement Test in Chemistry constructed and validated by the investigators.

## STATISTICAL TECHNIQUES USED
For the analysis of the data, Correlation and Multivariate Analysis were used.

## 1. CORRELATION ANALYSIS
### HYPOTHESIS – 1
Null Hypothesis – There is no significant correlation between Achievements in

Chemistry and Emotional Intelligence of higher secondary Students.

**Table – 1 Pearson Correlation Coefficient between Achievements in Chemistry and Emotional Intelligence of higher secondary Students**

| Factors of Emotional Intelligence | Achievement in Chemistry |
| --- | --- |
| Self – Awareness | 0.148* |
| Empathy | 0.342* |
| Self – Motivation | 0.363* |
| Emotional Stability | 0.316* |
| Managing Relations | 0.327* |
| Integrity | 0.146* |

| Self – Development | 0.194* |
|---|---|
| Value Orientation | 0.301* |
| Commitment | 0.079 |
| Altruistic Behaviour | 0.224* |
| Overall Emotional Intelligence | 0.343* |

**Note: * Denotes Significant at 5% level**

From the above table it is observed that there exists significant positive slight level of correlation (r=0.343) between achievement in chemistry and overall emotional intelligence of higher secondary students. Hence the null hypothesis is rejected at 5% level. Therefore, it is inferred that there exists significantly positive correlation between achievement in chemistry and overall emotional intelligence of higher secondary students. Further, significant positive correlation is noted between achievement in chemistry and all factors of emotional intelligence of higher secondary students except the factor of commitment. In which, the factor of self - motivation is having slight level of positive correlation (r=0.363) with achievement in chemistry, whereas negligible positive correlation (r=0.146) is noted between the factor of integrity and achievement in chemistry

## 2. MULTIVARIATE ANALYSIS
REGRESSION ANALYSIS OF ACHIEVEMENT IN CHEMISTRY ON EMOTIONAL INTELLIGENCE

In this study, the Dependent Variable is Achievement in Chemistry, Independent Variables is the Factors of Emotional Intelligence. The results of the analysis are given below.

| | |
|---|---|
| Dependent Variable | : Achievement in Chemistry (Y) |
| Independent Variables | : Factors of Emotional Intelligence |

1. Self - Awareness ($X_1$)
2. Empathy (X2)
3. Self - Motivation (X3)
4. Emotional Stability (X4)
5. Managing Relations (X5)
6. Integrity (X6)
7. Self - Development (X7)
8. Value Orientation (X8)
9. Commitment (X9)
10. Altruistic Behaviour (X10)

| | |
|---|---|
| Multiple R Value | : 0.487 |
| R Square Value | : 0.287 |

**Table -2   Multiple Regression Analysis of Achievement in Chemistry on Factors of Emotional Intelligence of higher secondary students.**

| Variables | Standardized co-efficient (β) |
|---|---|
| Self - Awareness ($X_1$) | 0.217* |
| Empathy($X_2$) | 0.158* |
| Self - Motivation ($X_3$) | 0.258* |
| Emotional Stability ($X_4$) | 0.243* |
| Managing relations ($X_5$) | 0.156* |
| Integrity ($X_6$) | 0.116* |
| Self - Development ($X_7$) | 0.098 |
| Value orientation ($X_8$) | 0.098 |
| Commitment ($X_9$) | 0.159* |
| Altruistic Behaviour ($X_{10}$) | 0.055 |
| Constant | 0.249 |

**Note: * Denotes Significant at 5 % level.**

The multiple correlation coefficient is 0.487 measures the degree of relationship between the actual values and the predicted values of achievement in chemistry. Because the predicted values are obtained as a linear combination of Self - Awareness (X1), Empathy (X2), Self - Motivation (X3), Emotional Stability (X4), Managing Relations (X5), Integrity (X6), Self - Development (X7), Value Orientation (X8), Commitment (X9), and Altruistic Behaviour (X10). The coefficient value of 0.487 indicates that the relationship between achievement in chemistry and the factors of emotional intelligence is quite strong and positive.

The Coefficient of Determination R-square measures the goodness-of-fit of the estimated Sample Regression Plane (SRP) in terms of the proportion of the variation in the dependent variables explained by the fitted sample regression equation. Thus, the value of R square is 0.237 simply means that about 23.70% of the variation in achievement in chemistry is explained by the estimated SRP that uses the ten factors of emotional intelligence and R square value is significant at 5 % level.

The multiple regression equation is

$$Y= 0.249 + 0.217 X_1 + 0.158 X_2 + 0.258 X_3 + 0.243 X_4 + 0.156 X_5 + 0.116 X_6$$

$$+ 0.098 X_7 + 0.098 X_8 + 0.159 X_9 + 0.055 X_{10}$$

Even though almost all the factors of emotional intelligence contributes to achievement in chemistry of higher secondary students except the factors of Self - Development (X7), Value Orientation (X8) and Altruistic Behaviour (X10), the Self - Motivation (X3), Emotional Stability (X4) and Self - Awareness (X1) factors contribute more for achievement in chemistry.

Since the coefficient of X3 is 0.258 represents the partial effect of Self - Motivation (X3) on Achievement in Chemistry holding other variables as constant. The estimated positive sign implies that such effect is positive that achievement in chemistry score would increase by 0.258 for every unit increase in Self - Motivation (X3) and this coefficient value is significant at 5% level.

Since the coefficient of X4 is 0.243 represents the partial effect of Emotional Stability (X4) on Achievement in Chemistry holding other variables as constant. The estimated positive sign implies that such effect is positive that achievement in chemistry score would increase by 0.243 for every unit increase in Emotional Stability (X4) and this coefficient value is significant at 5% level.

Since the coefficient of X1 is 0.217 represents the partial effect of Self - Awareness(X1) on Achievement in Chemistry holding other variables as constant. The estimated positive sign implies that such effect is positive that achievement in chemistry score would increase by 0.217 for every unit increase in Self - Awareness (X1) and this coefficient value is significant at 5% level.

## DISCUSSION
The finding of the present study indicates the positive correlation between achievement in chemistry and emotional intelligence of higher secondary students. Which is concurrent with the studies of Satishkumar Kalhotra (2012); Sridevi & Lisha Parveen (2010); Umadevi (2009); and Vidal Rodeiro et al.(2012). However it does not corroborate with the findings of Vandana V. Jadhav & Ajakumar B. Pati(2010); Arul Lawrence, A.S. & Deepa, T. (2013); and Shaima Ahammed et al. (2011).

## RECOMMENDATIONS
At the school level adequate opportunities need to be provided to students to act emotionally balanced not only to develop their personality but also to get success in all walks of life. More particularly, special efforts need to be taken to make the students emotionally stable and also to concentrate on the academic activities to successfully get over from the academic difficulties at the school level. Further, the curricular and co-curricular programmes be reoriented to promote positive emotional behaviour to be successful in academic achievements.

**CONCLUSION**

Emotional intelligence is the prime factor that greatly influences the character, actions and academic achievement of students. However the present study has shown the positive correlation between emotional intelligence and achievement in chemistry, especially Self – Motivation, Emotional Stability and Self – Awareness factors of emotional intelligence significantly contributes for achievement in chemistry of higher secondary students.

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