

Achievement In Chemistry in Relation to Parenting Style of Higher Secondary Students

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ABSTRACT

In this study, an attempt has been made to study the achievement in chemistry in relation to parenting style of higher secondary students. The Achievement in Chemistry Test (ACT) and Parenting Styles Scale (PSS) are constructed and validated by the investigator, were used to collect the data from a sample of 680 higher secondary students studying in Cuddalore District of Tamilnadu State in India. The survey method had been followed and simple random sampling technique was used in administration of the research tools. The result of the analysis reveals that the average level of Achievement in Chemistry and Parenting Style of Higher Secondary Students, there is significant difference in the gender and locality of the school of Higher Secondary Students with respect to their Achievement in Chemistry and Parenting Style, there is significant and positive relationship between Achievement in Chemistry and Parenting Style of Higher Secondary School Students.

Keywords: *Achievement in Chemistry, Parenting Styles and Higher Secondary Students*

Chemistry is one of the oldest subjects with which human beings have been familiar with for centuries. Chemistry is the subject that deals with the elements and probes the properties of the elements – composition, structure, chemical bonds the electrons and other sources of energy. The academic achievement of higher secondary students includes their achievement in all subjects such as Languages, Science, Mathematics, Social Studies, etc. Research studies on academic achievement indicate the influence of students socio-personal factors, family and parental characteristics, nature and type of school or educational institution, cognitive aspects, affective factors, learning style, personality characteristics, etc. In the present study, Academic achievement in chemistry is being described as the learning outcome of higher secondary students, in Chemistry as a part of academic achievement.

Baumrind (1991) defined parenting styles as the level to which parents deliberately promote uniqueness, self-directive, and self-declaration by being adjusted, sympathetic and accepting to offspring's unique requirements and demands. Darling and Steinberg (1993) defined parenting style as a collection of feelings toward the youngster that are communicated to the youngster and that, taken mutually to form an emotional environment in which the parent's actions are communicated.

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Need and Importance of the Study

Chemistry is considered as an important subject in the school curriculum as many professional and applied courses, directly or indirectly uses the knowledge of Chemistry. Moreover, the present age is the era of science and more number of peoples are being employed in scientific pursuits which require knowledge of Chemistry. Chemistry education is also necessary because of its immense value in the students' individual life as well as in society.

One of the important issues that affects an individual's learning is parental attitude towards child. Parenting style (attitude and their behaviours) performed while upbringing children have a significant impact on children's future behaviour as well as on their scholastic achievement. It has been seen that parents encourage their children to be independent while they keep controlling their actions.

REVIEW OF LITERATURE

Sandhyarani Chikkapapanna and Ann Mariam Moncy (2024) conducted a study on parenting style and its correlates: perceived among school going adolescents. But for the present study, the researchers have adopted two types of parenting styles, such as authoritative and authoritarian parenting styles. To test the variables, the researcher had selected a school in Kerala, interviewed around 121 respondents studying in high secondary school. The findings showed that there is no significant difference between authoritative and authoritarian parenting styles with the gender. But the mean and standard deviation scores reveal that most of the children felt their parenting style was authoritative rather than authoritarian.

Pramila Tanwar (2020) conducted a study compass on achievement of students in studying Chemistry in higher secondary schools of Delhi NCR. The sample consists of 200 students of Government and private schools. "Chemistry Achievement Test" has been used for the study developed by Dr. Pramila Tanwar. The researcher used 2 sample t-test to analyse the data. Major cant difference between the finding of the study corroborates a significant difference between the Achievement test in chemistry among the students of government and private schools.

Operational Definitions of the Study

- **Achievement in Chemistry**
For the present study Achievement in Chemistry is considered as the total scores obtained by an individual in the test conducted by the investigator in chemistry from the selected units of chemistry text book prescribed for standard XI covering the category of objectives.
- **Parenting Styles**
Parenting styles refers to the various methods that parents employ to raise their kids, including aspects like psychological control, behavioral control, and parental support. Parenting styles are a crucial area of research because they have a significant impact on child development and behavior.

Objectives of the Study

- To study the level of Achievement in Chemistry of Higher Secondary Students.
- To study the level of Parenting Styles of Higher Secondary Students.

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- To study the significant difference, if any in the Achievement in Chemistry of Higher Secondary Students based on gender.
- To study the significant difference, if any in the Achievement in Chemistry of Higher Secondary Students based on locality of the school.
- To study the significant difference, if any in the Parenting Styles of Higher Secondary Students based on gender.
- To study the significant difference, if any in the Parenting Styles of Higher Secondary Students based on locality of the school.
- To study the relationship between Achievement in Chemistry and Parenting Styles of Higher Secondary Students.

Hypotheses of the Study

- The level of Achievement in Chemistry of Higher Secondary Students is low.
- The level of Parenting Styles of Higher Secondary Students is low.
- There is no significant difference in the Achievement in Chemistry of Higher Secondary Students based on gender.
- There is no significant difference in the Achievement in Chemistry of Higher Secondary Students based on locality of the school.
- There is no significant difference in the Parenting Styles of Higher Secondary Students based on gender.
- There is no significant difference in the Parenting Styles of Higher Secondary Students based on locality of the school.
- There is no significant relationship between Achievement in Chemistry and Parenting Styles of Higher Secondary Students.

METHOD OF THE STUDY AND SAMPLE USED

The normative survey method was adopted in the present study. In order to collect the required data, Achievement in Chemistry Test (ACT) and Parenting Styles Scale (PSS) are constructed and validated by the investigator. Simple random sampling technique has been employed to collect the data from 680 Higher Secondary Students studying in government, aided and private schools of Cuddalore district.

Analysis of Data and Interpretation

The data collected were descriptively analyzed by employing the following statistical techniques:

- 1. Descriptive Analyses**
 - i. Measures of central tendency (Mean)
 - ii. Measures of variability (Standard Deviation)
- 2. Differential Analyses ('t' test and 'F' test) and**
- 3. Co-relational Analyses (Karl Pearson Product Moment Correlation)**

Descriptive Analysis

Result of Hypothesis 1

The level of Achievement in Chemistry of Higher Secondary Students is low.

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Table 1 Mean and Standard Deviation for the Achievement in Chemistry Scores of Higher Secondary Students

Variable	N	Mean	SD
Achievement in Chemistry	680	29.47	5.36

From table-1, it is observed that the calculated mean and standard deviation for the Achievement in Chemistry scores of the entire sample were found to be 29.47 and 5.36 respectively. One can get a maximum score of 43 on Achievement in Chemistry tool. The mean score lies between the average value range (25-34), so the framed hypothesis (1) is rejected and it is concluded that the level of Higher Secondary Students Achievement in Chemistry is average.

Result of Hypothesis 2

The level of Parenting Styles of Higher Secondary Students is low.

Table 2 Mean and Standard Deviation for the Parenting Styles Scores of Higher Secondary Students

Variable	N	Mean	SD
Parenting Styles	680	113.45	17.94

From table-2, it is observed that the calculated mean and standard deviation for the Parenting Styles scores of the entire sample were found to be 113.45 and 17.94 respectively. One can get a maximum score of 150 on Parenting Styles tool. The mean score lies between the average value range (90-121), so the framed hypothesis (2) is rejected and it is concluded that the level of Parenting Styles of Higher Secondary Students is average.

Differential Analysis

Result of Hypothesis 3

There is no significant difference in the Achievement in Chemistry of higher secondary school students based on gender.

Table 3 Mean Difference of Achievement in Chemistry Scores of Higher Secondary Students with regard to Gender

Variable	Gender	N	Mean	SD	't' Value	Level of Significance at 0.05 Level
Achievement in Chemistry	Male	344	28.21	4.01	4.22	Significant
	Female	336	33.84	5.88		

Table-3 shows that the computed 't' value for the mean academic Achievement in Chemistry scores between male and female Higher Secondary Students [$t_{(680)} = 4.22 > p$] is significant. Hence, the framed null hypothesis 3 is rejected and it is concluded that there is a significant difference in the Achievement in Chemistry of Higher Secondary Students based on gender. It is also inferred that female students are having more Achievement in Chemistry than the male students.

Result of Hypothesis 4

There is no significant difference in the Achievement in Chemistry of higher secondary school students based on locality of the school.

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Table 4 Mean Difference of Achievement in Chemistry Scores of Higher Secondary Students with regard to Gender

Variable	Locality of the School	N	Mean	SD	't' Value	Level of Significance at 0.05 Level
Achievement in Chemistry	Rural	292	27.89	4.09	3.77	Significant
	Urban	388	31.84	5.87		

Table-4 shows that the computed 't' value for the mean academic Achievement in Chemistry scores between rural and urban school Higher Secondary Students [$t_{(680)} = 3.77 > p$] is significant. Hence, the framed null hypothesis 4 is rejected and it is concluded that there is a significant difference in the Achievement in Chemistry of Higher Secondary Students based on locality of school. It is also inferred that urban school students are having more Achievement in Chemistry than the rural school students.

Result of Hypothesis 5

There is no significant difference in the Parenting Styles of higher secondary school students based on gender.

Table 5 Mean Difference of Parenting Styles Scores of Higher Secondary Students with regard to Gender

Variable	Gender	N	Mean	SD	't' Value	Level of Significance at 0.05 Level
Parenting Styles	Male	344	112.89	17.94	3.18	Significant
	Female	336	117.42	19.01		

Table-5 shows that the computed 't' value for the mean academic Parenting Styles scores between male and female Higher Secondary Students [$t_{(680)} = 3.18 > p$] is significant. Hence, the framed null hypothesis 5 is rejected and it is concluded that there is a significant difference in the Parenting Styles of Higher Secondary Students based on gender. It is also inferred that female students are having more Parenting Styles than the male students.

Result of Hypothesis 6

There is no significant difference in the Parenting Styles of higher secondary school students based on locality of the school.

Table 6 Mean Difference of Parenting Styles Scores of Higher Secondary Students with regard to Gender

Variable	Locality of the School	N	Mean	SD	't' Value	Level of Significance at 0.05 Level
Parenting Styles	Rural	292	111.93	17.57	2.99	Significant
	Urban	388	115.36	18.02		

Table-6 shows that the computed 't' value for the mean academic Parenting Styles scores between rural and urban school Higher Secondary Students [$t_{(680)} = 2.99 > p$] is significant. Hence, the framed null hypothesis 6 is rejected and it is concluded that there is a significant

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difference in the Parenting Styles of Higher Secondary Students based on locality of school. It is also inferred that urban school students are having more Parenting Styles than the rural school students.

Correlation Analysis

Result of Hypothesis 7

There is no significant relationship between Achievement in Chemistry and Parenting Styles of Higher Secondary Students.

Table 7 Showing the Correlation Values between Achievement in Chemistry and Parenting Styles of Higher Secondary Students

Variables	N	'r' value	Level of Significance at 0.01 level
Achievement in Chemistry and Parenting Styles	680	0.511	Significant

Table-7 shows that, the co-efficient of correlation between Achievement in Chemistry and Parenting Styles is found to be [N=680, r=0.511 at 0.01 level] which indicates that there is a positive correlation between Achievement in Chemistry and Parenting Styles. Therefore, hypothesis 7 is rejected and it is concluded that there is positive and significant relationship between Achievement in Chemistry and Parenting Styles of Higher Secondary Students.

Findings of the Study

- The level of Higher Secondary Students Achievement in Chemistry is average.
- The level of Higher Secondary Students Parenting Styles is average.
- There is a significant difference in the Achievement in Chemistry of Higher Secondary Students based on gender.
- There is a significant difference in the Achievement in Chemistry of Higher Secondary Students based on locality of the school.
- There is a significant difference in the Parenting Styles of Higher Secondary Students based on gender.
- There is a significant difference in the Parenting Styles of Higher Secondary Students based on locality of the school.
- There is positive and significant relationship between Achievement in Chemistry and Parenting Styles of Higher Secondary Students.

CONCLUSION

In the present study of the correlation between Achievement in Chemistry and Parenting Styles of Higher Secondary Students, findings revealed that the average level of Achievement in Chemistry and Parenting Styles, there is significant difference in the gender and locality of the school of Higher Secondary Students with respect to their Achievement in Chemistry and Parenting Styles, there is significant and positive relationship between Achievement in Chemistry and Parenting Styles of Higher Secondary Students.

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Conflict of Interest

The author(s) declared no conflict of interest.

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