International Journal of Research (IJR)

p-ISSN: 2348-6848
e-ISSN: 2348-795X
Vol. 9 Issue 03
March 2022

RELATIONSHIP BETWEEN ACADEMIC ACHIEVEMENT IN CHEMISTRY AND FAMILY ENVIRONMENT OF HIGHER SECONDARY SCHOOL STUDENTS

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Abstract

In this study, an attempt has been made to study the relationship between academic achievement in chemistry and family environment of higher secondary school students. The Academic achievement in chemistry Test (AACT) constructed and validated by the investigator and Family Environment Scale by Bhatia and Chadha (2015) were used to collect the data from a sample of 600 higher secondary school 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. It is concluded that the average level of academic achievement in chemistry and family environment of higher secondary school students, there is significant difference in the gender and type of management of higher secondary school students with respect to their academic achievement in chemistry and family environment, there is significant and positive relationship between academic achievement in chemistry and family environment of higher secondary school students.

***Key Words**: Academic Achievement in Chemistry, Family Environment and Higher Secondary School Students*

1. Introduction

Academic achievement is the important end-product of academic endeavours at all levels of education. 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.

p-ISSN: 2348-6848
e-ISSN: 2348-795X
Vol. 9 Issue 03
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According to Coleman, family carries responsibility for the welfare of its members from cradle to grave. According to Tewari, Merbhatt and Kumar family environment is a socializing agent which has strong influence on child's life. Goldstein defines family as the cradle in which the future is born and a nursery in which new democratic social order is being fashioned.

2. Need and Importance of the Study

In the present Indian education academic achievement seems to be the focuses. This is the main factor that decides the future of the student. In view of its great importance, a large number of studies were conducted on the factors which are influence the academic achievement of the students. Also the family environment of the student plays a vital role in a student's life. Home is the socio-biological unit that exerts the great influence on the development and perpetuation of the student's behavior. Thus the factor of have great influence in academic achievement of the students which stimulated the investigator to undertake the research problem.

3. Review of Literature

Pramila Tanwar (2020) conducted a study compasses 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.

Jaikumar and Muthumanickam (2020) attempted has been made to study the family environment of higher secondary school students. Harpeet (1993) family environment scales have been administered to a random sample of 600 higher secondary school students. It is found that there is a significant difference between male and female students who are in the first and second birth order and third and above birth order on their family environment. There is no significant difference between joint family and nuclear family students on their family environment.

4. Operational Definitions of the Study

Academic 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.

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e-ISSN: 2348-795X
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Family Environment

Family environment relates to the quality and quantity of the cognitive, emotional and social support available to the child with in the family. It means the psychological environment of family as perceived by adolescents. In this study refers to the emotional intelligence scale conducted by the investigator among higher secondary school students.

5. Objectives of the Study

1. To study the level of academic achievement in chemistry of higher secondary school students.
2. To study the level of family environment of higher secondary school students.
3. To study the significant difference, if any in the academic achievement in chemistry of higher secondary school students based on gender.
4. To study the significant difference, if any in the academic achievement in chemistry of higher secondary school students based on type of management.
5. To study the significant difference, if any in the family environment of higher secondary school students based on gender.
6. To study the significant difference, if any in the family environment of higher secondary school students based on type of management.
7. To study the relationship between academic achievement in chemistry and family environment of higher secondary school students.

6. Hypotheses of the Study

1. The level of academic achievement in chemistry of higher secondary school students is low.
2. The level of family environment of higher secondary school students is low.
3. There is no significant difference in the academic achievement in chemistry of higher secondary school students based on gender.
4. There is no significant difference in the academic achievement in chemistry of higher secondary school students based on type of management.
5. There is no significant difference in the family environment of higher secondary school students based on gender.
6. There is no significant difference in the family environment of higher secondary school students based on type of management.
7. There is no significant relationship between academic achievement in chemistry and family environment of higher secondary school students.

7 Method of the Study and Sample Used

The normative survey method was adopted in the present study. In order to collect the required data, Academic achievement in chemistry Test (AACT) constructed and validated by the investigator and Family Environment Scale (FES) Bhatia and Chadha (2015). Simple random sampling technique has been employed to collect the data from 600 higher secondary school students studying in government, aided and private schools of Cuddalore district.

8. Analysis of Data and Interpretation

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

1. Descriptive Analyses (Mean and Standard Deviation)
2. Differential Analyses ('t' test and 'F' test) and
3. Co-relational Analyses ('r' value)

Descriptive Analysis

Result of Hypothesis 1

The level of academic achievement in chemistry of higher secondary school students is low.

Table 1

Mean and Standard Deviation for the Academic achievement in chemistry Scores of Higher Secondary School Students

Variable	N	Mean	SD
Academic achievement in chemistry	600	23.48	5.59

From table-1, it is observed that the calculated mean and standard deviation for the academic achievement in chemistry scores of the entire sample were found to be 23.48 and 5.59 respectively. One can get a maximum score of 30 on academic achievement in chemistry tool. The mean score lies between the average value range (19-28), so the framed hypothesis (1) is rejected and it is concluded that the level of higher secondary school students academic achievement in chemistry is average.

Result of Hypothesis 2

The level of mental health of higher secondary school students is low.

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Table 2

Mean and Standard Deviation for the Family Environment Scores of Higher Secondary School Students

Variable	N	Mean	SD
Mental Health	600	264.32	35.07

From table-2, it is observed that the calculated mean and standard deviation for the family environment scores of the entire sample were found to be 264.32 and 35.07 respectively. One can get a maximum score of 345 on family environment scale. The mean score lies between the average value range (224-310), so the framed hypothesis (2) is rejected and it is concluded that the level of family environment of higher secondary school students is average.

Differential Analysis

Result of Hypothesis 3

There is no significant difference in the academic achievement in chemistry of higher secondary school students based on gender.

Table 3

Mean Difference of Academic achievement in chemistry Scores of Higher Secondary School Students with regard to Gender

Variable	Gender	N	Mean	SD	't' Value	Level of Significance at 0.05 Level
Academic achievement in chemistry	Male	304	22.94	5.98	4.74	Significant
	Female	296	27.04	6.94		

Table-3 shows that the computed't' value for the mean academic achievement in chemistry scores between male and female higher secondary school students [$t_{(600)} = 4.74 > p$] is significant. Hence, the framed null hypothesis 3 is rejected and it is concluded that there is a significant difference in the academic achievement in chemistry based on gender of higher secondary school students. It is also inferred that female students are having more academic achievement in chemistry than the male students.

Result of Hypothesis 4

There is no significant difference in the academic achievement in chemistry of higher secondary school students based type of management.

Table 4

ANOVA results for Achievement in Chemistry Scores of Higher Secondary School Students with regard to Type of Management

Variable	Source of Variation	Sum of Squares	df	Mean Square	'F' Value	Level of Significance at 0.05 Level
Achievement in Chemistry	Between Groups	544.173	2	272.087	7.21	Significant
	Within Groups	7357.500	597	81.324		
	Total	7901.673	599			

From Table-4, ANOVA results show that the computed 'F' value [$F_{(2,597)} = 7.21 > P$ at 0.05] is significant. Hence, the framed null hypothesis 4 is rejected and it is concluded that there is a significant difference in achievement in chemistry based on type of management of higher secondary school students.

Result of Hypothesis 5

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

Table 5

Mean Difference of Family Environment Scores of Higher Secondary School Students with regard to Gender

Variable	Gender	N	Mean	SD	't' Value	Level of Significance at 0.05 Level
Family Environment	Male	304	263.72	35.48	2.56	Significant
	Female	296	267.93	36.22		

Table-5 shows that the computed't' value for the mean family environment scores between male and female higher secondary school students [$t_{(600)} = 2.56 > p$] is significant. Hence, the framed null hypothesis 8(a) is rejected and it is concluded that there is a significant difference in the family environment based on gender of higher secondary school students. It is also inferred that female students are having more family environment than the male students.

Result of Hypothesis 6

There is no significant difference in the family environment of higher secondary school students based on type of management.

Table 6

ANOVA results for Family Environment Scores of Higher Secondary School Students with regard to Type of Management

Variable	Source of Variation	Sum of Squares	df	Mean Square	'F' Value	Level of Significance at 0.05 Level
Family Environment	Between Groups	4571.853	2	2258.927	9.77	Significant
	Within Groups	138017.720	597	231.185		
	Total	142535.573	599			

From Table-6, ANOVA results show that the computed 'F' value [$F_{(2,597)} = 9.77 > P$ at 0.05] is significant. Hence, the framed null hypothesis 8(d) is rejected and it is concluded that there is a significant difference in family environment based on type of management of higher secondary school students.

Correlation Analysis

Result of Hypothesis 7

There is no significant relationship between achievement in chemistry and family environment of higher secondary school students.

Table-7

Showing the Correlation Values between Achievement in Chemistry and Family Environment of Higher Secondary School Students based on Entire Sample

Variables	N	'r' value	Level of Significance
Achievement in Chemistry and Family Environment	600	0.716**	Significant

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Table-7, shows that, the co-efficient of correlation between achievement in chemistry and family environment is found to be [N=600, r=0.716 at 0.01 level] which indicates that there is a positive correlation between achievement in chemistry and family environment. Therefore, hypothesis 9 is rejected and it is concluded that there is positive and significant relationship between achievement in chemistry and family environment of higher secondary school students.

9. Findings of the Study

- The level of higher secondary school students academic achievement in chemistry is average.
- The level of higher secondary school students family environment is average.

p-ISSN: 2348-6848
e-ISSN: 2348-795X
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- There is a significant difference in the academic achievement in chemistry based on gender of higher secondary school students.
- There is a significant difference in the academic achievement in chemistry based on type of management of higher secondary school students.
- There is a significant difference in the family environment based on gender of higher secondary school students.
- There is a significant difference in the family environment based on type of management of higher secondary school students.
- There is positive and significant relationship between academic achievement in chemistry and family environment of higher secondary school students.

10. Conclusion

In the present study of the relationship between academic achievement in chemistry and family environment of higher secondary school students, findings revealed that the average level of academic achievement in chemistry and family environment, there is significant difference in the gender and type of management of higher secondary school students with respect to their academic achievement in chemistry and family environment, there is significant and positive relationship between academic achievement in chemistry and family environment of higher secondary school students.

11. References

Agarwal, J.C. (2002), Theory and Principles of Education, Shipra Publications, New Delhi.

Agarwal, Y.P. (1986). Statistical Methods Concepts, Application and Computation, Delhi: Sterling Publishers.

Allen L. Edwards (1946). Statistical analysis for students in psychology and education, New York : Rinehart & Company inc.,

Allen L. Edwards (1956). Statistical methods for the behavioral sciences, New York : Holt, Rinehart and Winston.

Allen L. Edwards (1960). Statistical analysis, New York: Holt Rinehart and Winston.

Freeman, W. H. (1976). An introduction to linear regression and correlation, San Francisco,

Guilford, J.P. (1939). General psychology. New York, NY: D. Van Nostrand Company, Inc.

Henry E, Garret, (2008), Statistics in Psychology and Education", Surjeet Pubishing House, Delhi.

Kundu, C.L. & Tutoo, D.N. (1991), Educational Psychology, Sterling Publishers Private Limited, New Delhi.

p-ISSN: 2348-6848
e-ISSN: 2348-795X
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Nangaiyarkarasi S. (2019). Mental Health among High and Higher Secondary School Students. *Indian Journal of Public Health Research & Development*, *10*(2), 41-44.

Pramila, T (2020). A Study on Achievement in Chemistry at Higher Secondary Stage. *Indian Journal of Applied Research*, DOI:10.36106/ijar/6216450.

Jaikumar & Muthumanickam (2020). Family Environment of Higher Secondary School Students. *International Journal of Recent Scientific Research*, 2, 42-44.