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Influence of Home Environment on Achievement in Chemistry Among Higher Secondary Students

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ABSTRACT

Education is a powerful tool to empower an individual. Many factors influence the academic achievement of students at all levels. Home environment plays a significant role in educating a child being a bridge between the school and child. This study is carried out to find out the influence of home environment 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. Family Environment Scale constructed and standardized by Harpreet Bhatia and N.K. Chadha (1996). Survey method was adopted by the investigators. Correlation and Multivariate Analysis was used to find out the significant influence of home environment on achievement in chemistry. The study indicates the existence of significant positive relationship between the home environment and achievement in chemistry of higher secondary students. Further it also highlights Independence, Cohesion and Active Recreational Orientation Dimensions of Home Environment predicts the Achievement in Chemistry of higher secondary students.

KEYWORDS: Education, Home Environment, Achievement in Chemistry, Higher Secondary Students.

INTRODUCTION

Education to an individual is prerequisite to effectively perform the day to day life. Education, in fact, begins at home and the mother of a child is considered as the first teacher. Even to continue formal education, the home environment becomes an essential component. Home facilitates necessary provisions, planning and execution of educational system. Thus the family becomes an important agent of educating the individuals and also it ensures the success of education system.

NEED FOR THE STUDY

The success of an individual irrespective of his / her demands, aspirations and other achievements mostly depends upon the home environment of the individual. The educational system of any culture predominantly determined by the contribution of the family, a sub-system of the society. Unless the family completely co-operates with the stakeholders of education, steady progress of education both at the individual level and societal level is not possible. Hence the need for an empirical study is necessary to know the significant role of home in the academic performance of the students.

STATEMENT OF THE PROBLEM

The present study is stated as "**INFLUENCE OF HOME ENVIRONMENT 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 home environment and achievement in chemistry of higher secondary students.
2. To find out the predictive efficiency of overall home environment and its dimensions 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 home environment of higher secondary students.
2. The overall home environment and its dimensions 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. Family Environment Scale constructed and standardized by Harpreet Bhatia, and N.K. Chadha (1996)
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 Achievement in** Chemistry and Home Environment of higher secondary students.

Table – 1 Pearson Correlation Coefficient between Achievement in Chemistry and Home Environment of higher secondary students.

Dimensions of Home Environment	Achievement in Chemistry
Cohesion	0.392*
Expressiveness	0.614*
Conflict	0.585*
Acceptance	0.519*
Relationship Dimensions	0.582*
Independence	0.683*
Active Recreational Orientation	0.620*
Personal Growth Dimensions	0.691*
Organization	0.328*
Control	0.417*
System Maintenance Dimensions	0.436*
Overall Home Environment	0.633*

Note: * Denotes significant at 5% level

From the above table it is observed that there exists significant positive marked level of correlation (r=0.633) between the overall home environment and achievement in chemistry of higher secondary students. Hence the null hypothesis is rejected at 5% level. Therefore, it is inferred that there exists significant positive correlation between home environment and achievement in chemistry of higher secondary students. Further, it is noted that all factors of the three dimensions of home environment significantly correlated with achievement in chemistry of higher secondary students. In this case, marked level of positive correlation (r=0.691) is noted between personal growth dimensions of home environment and achievement in chemistry, and also between relationship dimensions and achievement in chemistry (r=0.582); however, substantial level of positive correlation (r=0.436) is noted in the case of system maintenance dimensions and achievement in chemistry. Among the factors of all the three dimensions of home environment, a marked level of positive correlation (r=0.683) is observed between the aspect of independence and achievement in chemistry and also a slight level of positive correlation (r=0.328) is noted between the aspect of organization and achievement in chemistry of higher secondary students.

2. MULTIVARIATE ANALYSIS

REGRESSION ANALYSIS OF ACHIEVEMENT IN CHEMISTRY ON HOME ENVIRONMENT

In this study, the Dependent Variable is Achievement in Chemistry, Independent Variable is the Dimensions of Home Environment. The result of the analysis is given below:

Dependent Variable : **Achievement in Chemistry (Y)**

Independent Variables **: Dimensions of Home Environment**

1. Cohesion (X_1)
2. Expressiveness (X_2)
3. Conflict (X_3)
4. Acceptance and Caring (X_4)
5. Independence (X_5)
6. Active Recreational Orientation (X_6)
7. Organization (X_7)
8. Control (X_8)

Multiple R Value : 0.717
R Square Value : 0.513

Table 2 Multiple Regression Analysis of Achievement in Chemistry on Dimensions of Home Environment of higher secondary students.

Variables	Standardized Co-efficient (β)
Cohesion (X_1)	0.304*
Expressiveness (X_2)	0.164*
Conflict (X_3)	0.155*
Acceptance and Caring (X_4)	0.067
Independence (X_5)	0.367*
Active Recreational Orientation (X_6)	0.214*
Organization (X_7)	0.024
Control (X_8)	0.034
Constant	5.234

Note: *Denotes significant at 5% level

The multiple correlation coefficient is 0.717 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 Cohesion (X_1), Expressiveness (X_2), Conflict (X_3), Acceptance and Caring (X_4), Independence (X_5), Active Recreational Orientation (X_6), Organization (X_7), Control (X_8). The coefficient value of 0.717 indicates that the relationship between achievement in chemistry and the eight independent variables 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 0.513 simply means that about 51.30% of the variation in achievement in chemistry is explained by the estimated SRP that uses the eight independent variables and R square value is significant at 5 % level.

The multiple regression equation is

$$Y= 5.234 + \mathbf{0.304\ X_1} + 0.164\ X_2 + 0.155\ X_3 + 0.067\ X_4 + \mathbf{0.367\ X_5} + \mathbf{0.214\ X_6} + 0.024\ X_7 + 0.034\ X_8$$

Even though almost all the dimensions of home environment contributes to achievement in chemistry of higher secondary students except the Acceptance and Caring (X_4), Organization (X_7), and Control (X_8). The Independence (X_5), Cohesion (X_1) Active Recreational Orientation (X_6) dimensions contributes more for achievement in chemistry.

Since the coefficient of X_5 is 0.367 represents the partial effect of Independence (X_5) 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 0.367 for every unit increase in Independence (X_5) and this coefficient value is significant at 5% level.

Since the coefficient of X_1 is 0.304 represents the partial effect of Cohesion (X_1) 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 0304 for every unit increase in Cohesion (X_1) and this coefficient value is significant at 5% level.

Since the coefficient of X_6 is 0.214 represents the partial effect of Active Recreational Orientation (X_6) 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 0.214 for every unit increase in Active Recreational Orientation (X_6) and this coefficient value is significant at 5% level.

DISCUSSION

The findings of the present study indicates the positive correlation between home environment and achievement in chemistry of higher secondary students. The study is supported by the findings of Shevatekar Sharada Vasant (2012); Anita N. Chawla(2012); Aradhana Mani (2012); Gireesh Kumar(2005); and Henry M. Codjoe (2007). But the findings of Bibi & Sadananthan (2009); and Ibtesam Halawah (2006) did not support it.

RECOMMENDATIONS

As there is positive relationship exists between the home environment and academic achievement of students, the family members need to ensure a favourable atmosphere at home by extending all possible support to children and school for the academic success at all levels. The family needs to realize its role in bridging the gap between the child and school.

CONCLUSION

The present investigation reveals the significant positive relationship between the home environment and academic achievement of students. Even though all the factors of home environment dimensions determines the academic success in chemistry subject, especially the Independence factor of Personal Growth Dimensions of home environment significantly contributes the academic success of students.

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