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Research Paper

Relationship Between Achievement in Biology and Home Environment of Higher Secondary Students

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ABSTRACT

This study aimed to investigated the relationship between achievement in biology and home environment of higher secondary students. The study was conducted in the Cuddalore district of Tamil Nadu state. A descriptive survey method was employed, and a sample of 784 higher secondary students was selected using a simple random sampling technique. Achievement in Biology Test constructed and validated by the Manivannan andDr. S. Kalaivani (2025) and Home Environment Scale (HES) developed by Aaliya Aktar & Shail Bala Saxena (2013). It was found that the Achievement in Biology is average and Home Environment is high of higher secondary students. It is also found that there is significant difference between male and female higher secondary students with respect to their achievement in biology and home environment, there is significant difference between rural and urban resident higher secondary students with respect to their achievement in biology and home environment. A significant and positive correlation was found between the achievement in biology and home environment of higher secondary students.

Keywords: *Achievement in Biology, Home Environment, Gender, Student Residence and Higher Secondary Students*

Biology is the branch of science in which the curriculum is being continuously changed. For acquired New knowledge and emerging content have been introduced and have an impact on our Life.

For the achievement in biology, student has to demlobed their congnitive abilities. With the help of learning experience provided by the teachers. For this, the development of scientific temper is necessary.

Today Science is not only conceived as a systemized body of knowledge. But scientific method and scientific attitude are also supposed to be its important component for the help of achievement in biology.

Biology is one of the subject that has a meaningful conceptual scheme, it should be taught suitable by developing the concept among the student. The biology teaching has begun to shift

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its focus from teacher centric approach to student centric approach from knowledge-based teaching learning to understanding and discovery based teaching leaving process.

At the higher secondary level, Biology has many concept which differ from are another either's Number or extent or values.

The term "home environment" describes the items, situations, and forces that a child encounters at home and how they affect him or her physically, cognitively, and emotionally. It also corresponds to the influences, conditions, and forces that exist in the environment where children and their families live, and which might affect their nature, behaviour, growth, development, and maturity.

Need and Significance of the Study

Achievement in biology is important because it reflects student learning and can be used to evaluate teaching methods. High achievement is linked to intrinsic motivation, better study habits, and a deeper understanding of concepts. At a broader level, the achievements of the science of biology are crucial for advancements in medicine, agriculture, and biotechnology, which improve human quality of life.

The home is regarded as the best environment for the young child. The home should produce and provide affectionate and happy life in which the fundamental needs of the children and adults are given due consideration and in which desirable behavioural patterns of the young are designed and inculcated. The scholastic achievement for learning outcome that a student gains in his school is known as academic achievement.

Statement of the Problem

Relationship Between Achievement in Biology and Home Environment of Higher Secondary Students.

Delimitations of the problem

The present study was delimited to 742 higher secondary students of Cuddalore District.

Operational Definitions

- **Achievement in Biology:** Scores obtained by the student on the achievement test developed by the investigator on the selected chapter of biology syllabus proscribed by up board for class 11^{th} students.
- **Home Environment:** The psychological climate of the family in terms of cognitive, emotional, and social support provided to students, as well as interpersonal relations, attitudes, and aptitudes in the home, all of which influence every aspect of the students' lives, is referred to as the home environment.

Objectives of this Study

The main objectives of the study were as follows:

1. To study the level of Achievement in Biology of Higher Secondary Students.
2. To study the level of Home Environment of Higher Secondary Students.
3. To study the any significant difference in the Achievement in Biology of Higher Secondary Students with respect to their gender.
4. To study the any significant difference in the Achievement in Biology of Higher Secondary Students with respect to their student residence.

5. To study the any significant difference in the Home Environment of Higher Secondary Students with respect to their gender.
6. To study the any significant difference in the Home Environment of Higher Secondary Students with respect to their student residence.
7. To study the any significant relationship between Achievement in Biology and Home Environment of Higher Secondary Students.

Hypotheses of the Study

1. The level of Achievement in Biology of Higher Secondary Students is low.
2. The level of Home Environment of Higher Secondary Students is low.
3. There is no significant difference in the Achievement in Biology of Higher Secondary Students with respect to their gender.
4. There is no significant difference in the Achievement in Biology of Higher Secondary Students with respect to their student residence.
5. There is no significant difference in the Home Environment of Higher Secondary Students with respect to their gender.
6. There is no significant difference in the Home Environment of Higher Secondary Students with respect to their student residence.
7. There is no significant relationship between Achievement in Biology and Home Environment of Higher Secondary Students.

METHODOLOGY

Normative survey method was used in study. Data collection was done from higher secondary students of Cuddalore district, by simple random sampling technique. The sample consist 742 higher secondary students.

Tools Used

Two psychological tests were used to collect the data; one was Achievement in Biology Test constructed and validated by the Manivannan and Dr. S. Kalaivani (2025) and Home Environment Scale (HES) developed by Aaliya Aktar & Shail Bala Saxena (2013).

Statistical Techniques

The data was analyzed by using Descriptive, Differential and Correlation Analyses was used to data.

ANALYSIS AND INTERPRETATION

Descriptive Analysis

Hypothesis 1

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

Table 1 Mean and Standard Deviation Scores for the Achievement in Biology

Variable	N	Mean	SD
Achievement in Biology	742	27.65	6.42

From table-1, the calculated mean and standard deviation for Achievement in Biology scores of the entire sample is found to be 27.65 and 6.42 respectively, the mean score lay in between (22-33). Hence, the framed hypothesis 1 is rejected and it is concluded that the level of Achievement in Biology is average of Higher Secondary Students.

Hypothesis 2
The level of Home Environment of Higher Secondary Students is low.

Table 2 Mean and Standard Deviation Scores for the Home Environment

Variable	N	Mean	SD
Home Environment	742	160.82	26.39

From table-2, the calculated mean and standard deviation for Home Environment scores of the entire sample is found to be 160.82 and 26.39 respectively, the highest score is(144 & above). Hence, the framed hypothesis 2 is rejected and it is concluded that the level of Home Environment is high of Higher Secondary Students.

Differential Analysis
Hypothesis 3
There is no significant difference in the Achievement in Biology of Higher Secondary Students with respected to their gender.

Table 3 't' test for Achievement in Biology Scores of Higher Secondary Students with respect to their Gender

Variable	Gender	N	Mean	SD	't' Value	Level of Significance at 0.05 level
Achievement in Biology	Male	347	25.74	5.29	3.65	Significant
	Female	395	29.24	7.12		

It is seen from the table-3 that the 't' value calculated is 3.65, which is higher than the table value 1.96 at 0.05 level of significance. Hence, the framed hypothesis 3 is rejected and it is concluded that there is significant difference between male and female Higher Secondary Students with respect to their Achievement in Biology. It is also inferred that female students are having more achievement in biology than the male students.

Hypothesis 4
There is no significant difference in the Achievement in Biology of Higher Secondary Students with respect to their student residence.

Table 4 't' test for Achievement in Biology Scores of Higher Secondary Students with respect to their Student Residence

Variable	Medium of Study	N	Mean	SD	't' Value	Level of Significance at 0.05 level
Achievement in Biology	Rural	302	25.88	5.80	3.41	Significant
	Urban	440	29.46	7.74		

It is seen from the table-4 that the 't' value calculated is 3.41, which is higher than the table value 1.96 at 0.05 level of significance. Hence, the framed hypothesis 4 is rejected and it is concluded that there is significant difference between rural and urban resident Higher Secondary Students with respect to their Achievement in Biology. It is also inferred that urban resident students are having more achievement in biology than the rural resident students.

Hypothesis 5
There is no significant difference in the Home Environment of Higher Secondary Students with respected to their gender.

Table 5 't' test for Home Environment Scores of Higher Secondary Students with respect to their Gender

Variable	Gender	N	Mean	SD	't' Value	Level of Significance at 0.05 level
Home Environment	Male	347	156.23	25.15	3.81	Significant
	Female	395	164.19	27.19		

It is seen from the table-5 that the 't' value calculated is 3.81, which is higher than the table value 1.96 at 0.05 level of significance. Hence, the framed hypothesis 5 is rejected and it is concluded that there is significant difference between male and female Higher Secondary Students with respect to their Home Environment. It is also inferred that female students are having more Home Environment than the male students.

Hypothesis 6
There is no significant difference in the Home Environment of Higher Secondary Students with respect to their medium of study.

Table 6 't' test for Home Environment Scores of Higher Secondary Students with respect to their Medium of Study

Variable	Medium of Study	N	Mean	SD	't' Value	Level of Significance at 0.05 level
Home Environment	Rural	302	159.25	26.48	2.37	Significant
	Urban	440	163.81	27.52		

It is seen from the table-6 that the 't' value calculated is 2.37, which is higher than the table value 1.96 at 0.05 level of significance. Hence, the framed hypothesis 6 is rejected and it is concluded that there is significant difference between rural and urban resident Higher Secondary Students with respect to their Home Environment. It is also inferred that urban resident students are having more Home Environment than the rural resident students.

Correlation Analysis
Hypothesis 7
There is no significant relationship between Achievement in Biology and Home Environment of Higher Secondary Students.

Table 7 Co-Efficient of Correlation between Achievement in Biology and Home Environment

Variables	N	'r' Value	Level of Significance
Achievement in Biology and Home Environment	742	0.506**	Significant

***. Correlation at 0.01 level (2-tailed)*

From the table-7, the obtained coefficient of correlation (r) between Achievement in Biology and Home Environment of High Secondary Students is found to be 0.506 which is significant at 0.05 ($p<0.05$). Hence the above stated null hypothesis is rejected at 0.05 level of significance

and it is concluded that there is a significant and positive relationship between Achievement in Biology and Home Environment of Higher Secondary Students, that is, Higher Secondary Students who are having more sense of Home Environment have better Achievement in Biology.

Findings of the Study

- The Achievement in Biology is average of Higher Secondary Students.
- The Home Environment is average of Higher Secondary Students.
- There is significant difference between male and female higher secondary students with respect to their achievement in biology.
- There is significant difference between rural and urban resident of higher secondary students with respect to their achievement in biology.
- There is significant difference between male and female higher secondary students with respect to their Home Environment.
- There is significant difference between rural and urban resident of Higher Secondary Students with respect to their Home Environment.
- There is a significant and positive relationship between Achievement in Biology and Home Environment of Higher Secondary Students.

CONCLUSION

The present study was conducted on a sample of 742 higher secondary students of district Cuddalore of Tamil Nadu State with the purpose of studying the Achievement in Biology of higher secondary students in relation to Home Environment. Based on the findings of the study, it can be concluded that the Achievement in Biology is average and Home Environment is high. Furthermore, on the basis of results from correlation analysis, it is concluded that Achievement in Biology is significantly and positively correlated with Home Environment.

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Conflict of Interest
The author(s) declared no conflict of interest.

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