

## STUDY ON ACHIEVEMENT OF HIGHER SECONDARY SCHOOL BIOLOGY STUDENTS

T. Arul\* & Dr. G. Pazhanivelu\*\*

### ABSTRACT

*In developed societies, academic achievement plays an important role in every person's life. Academic achievement represents performance outcomes that indicate the extent to which a person has accomplished specific goals that were the focus of activities in instructional environments, specifically in school, college, and university. In the present study, the population comprises of 1200 higher secondary school biology group students, both boys and girls, studying in different secondary schools of Cauvery delta districts of Tamil Nadu state. A simple stratified random sampling technique is used for the purpose of data collection. The tools used for the present study were academic achievement tool in biology for higher secondary school students developed by Investigator and Research Guide (2016). To analyze and interpretation of the data, the statistical techniques: Mean, SD, and t-test has been used. The present study shows that there is no significant difference found in the academic achievement of higher secondary school biology students in relation to their Gender, Locality of Residence, Locality of School, Medium of Instruction, Type of Family, Income and Parents Educational Qualification.*

**Keywords :** *Academic Achievement, Higher Secondary School Biology Student , Gender, Locality of Residence, Locality of School, Medium of Instruction, Type of Family Income, Parents Educational Qualification.*

### INTRODUCTION

Human life can be glorified only through education. Educationalists believed in the inner potentialities, capacities and inherent qualities of a child. The work of education is to make the child aware of his inner powers. The main task of education is to develop the child to the fullest extent. Thus, education is a process of overall development. Without the help of education, man cannot achieve his success and development. Education, on one hand, develops full personality of an individual by making him intelligent, learned, bold, courage, strong and good at character apart from its contribution to the growth and development of the society in particular and nation in general. Education alone is the medium to transfer the spiritual values, moral ideals, aspiration of the nation and its cultural heritage from one generation to another, in order that they can be preserved, purified and utilize the ideas of the people into higher achievements. Not only an individual but also the society is immensely benefited with the choice of attainments through education.

### SIGNIFICANCE OF THE STUDY

Science is an organized system for the rigorous study of the natural world. It involves the application of the scientific method to problems formulated by trained minds in particular discipline. Biology is a branch of science. Biology or Life science has made rapid progress. Advancements in several fields of Science and Technology have provided the tools to understand life processes. As humanity faces several problems related to population growth, environmental degradation, energy crisis, epidemic diseases, food production and species extinctions the challenges faced by the biologists in finding appropriate solutions to such issues has become his or her sacred duty. Thus the future remedial measures for ensuring human survival and biosphere safeguarding shall require a vast army of personnel with a sound knowledge of Biology. Hence the scope for future biologists is ever growing.

With a view to achieving the above mentioned effect, the researcher is keen on studying problems that is associated with

\*Assistant Professor, Marudupandiyar College of Education, Vallam, Thanjavur (Tamil Nadu)

\*\*Associate Professor, Department of Education, Tamil University, Thanjavur (Tamil Nadu)

achievement adjustment and parental encouragement of the students of districts of Thanjavur, Thiruvarur and Nagappattinam locality. Adjustment is a lifelong process which tries to find harmony with one's environment. The conflict of adjustment is related to arriving a balanced state between demand and the fulfillment. The concept of achievement means to accomplish or complete or gain something by effort, skill and courage. It gives confidence, satisfaction and motivation. The next feature, parent encouragement gains significance because in current trend parents are losing importance and left uncared.

Children spend most of their time with their parents. They play a vital role in the education of children. Researcher has taken a great deal to explore the level of adjustment, achievement, parental encouragement to make biology education more relevant and valid.

#### OBJECTIVES OF THE STUDY

1. To find out if there is any significant difference between boys and girls of higher secondary school biology students in their achievement.
2. To find out if there is any significant difference between higher secondary school biology students residing at rural and urban locality in their achievement.
3. To find out if there is any significant difference between the biology students who study in the rural and urban higher secondary schools in their achievement.
4. To find out if there is any significant difference between Tamil medium and English medium biology students of higher secondary school in their achievement.
5. To find out if there is any significant difference in the achievement of higher secondary school biology students who hail from nuclear and joint family.
6. To find out if there is any significant difference between higher secondary school whose annual income is below `50,000/- biology students and whose annual income is above `50,000/- in their achievement.
7. To find out if there is any significant difference among the Government, Government Aided and Self-finance higher secondary school

biology students in their achievement.

8. To find out if there is any significant difference between in the achievement of higher secondary school biology students who have literate and illiterate fathers.
9. To find out if there is any significant difference between in the achievement of higher secondary school biology students who have literate and illiterate mothers.

#### NULL HYPOTHESES OF THE STUDY

1. There is no significant difference between boys and girls of higher secondary school biology students in their achievement.
2. There is no significant difference between the higher secondary school biology students residing in rural and urban locality in their achievement.
3. There is no significant difference between the biology students who study in the rural and urban higher secondary schools in their achievement.
4. There is no significant difference between Tamil medium and English medium of higher secondary school biology students in their achievement.
5. There is no significant difference in the achievement of higher secondary school biology students who hail from nuclear and joint family.
6. There is no significant difference between family annual income below `50,000/- and family annual income above `50,000/- of higher secondary school biology students in their achievement.
7. There is no significant difference among the Government, Government Aided and Self-finance higher secondary school biology students in their achievement.
8. There is no significant difference between the achievement of higher secondary school biology students who have literate and illiterate father.
9. There is no significant difference in the achievement between the higher secondary school biology students who have literate and illiterate mother.

## METHODOLOGY

The investigator has adopted the survey method of research to study of adjustment and achievement relates to biology students at higher secondary schools in Thanjavur, Thiruvarur and Nagappattinam districts of Tamil Nadu state.

The investigator used stratified random sampling technique for selecting the sample from the population. It means the entire population is divided into a number of homogenous groups or types or classes to get more accurate representation. The stratification was done on the basis of gender, locality of the students, locality of the school, medium of instruction, type of the school management, family annual income, father's educational status and mother's educational status. The sample consists of 1,200 higher secondary school biology students.

The tool used for the present study were academic achievement tool in biology for higher secondary school students developed by investigator and research guide (2016). In the present study was consist of differential analysis i.e 't' test, ANOVA, and karl pearson's product moment co-efficient of correlation were the statistical techniques used for analyzing the data.

## ANALYSIS AND FINDINGS

Findings based on the hypotheses followed by data analyses are given below:

### ANALYSIS AND FINDINGS 1:

**TABLE 1 : Difference between boys and girls of higher secondary school biology students in their achievement**

Variable	Boys (N = 533)		Girls (N = 667)		Calculated 't' value	Remarks
	Mean	SD	Mean	SD		
Achievement	26.58	9.447	29.14	8.169	5.039	S

(At 5 % level of significance for 1198 df, the table value of 't' is 1.96)

**FINDING 1:** It is understood from the above table-1 that there is a significant difference between boys and girls of higher secondary school biology students in their achievement, as the calculated 't' value 5.039 is greater than the table value 1.96 at 5 per cent level of significance.

While comparing the mean scores, the biology girl's students of higher secondary schools are better in their achievement than the biology boy's students of higher secondary schools. Hence the null hypothesis is rejected.

### ANALYSIS AND FINDINGS 2:

**TABLE 2 : Difference between the students residing at rural and urban locality in their adjustment**

Variable	Rural students (N = 717)		Urban students (N = 483)		Calculated 't' value	Remarks
	Mean	SD	Mean	SD		
Achievement	27.11	8.866	29.33	8.66	4.301	S

**FINDING 2 :** It is inferred from the above table - 2 there is significant difference between the biology students residing at rural and urban locality in their achievement, as the calculated 't' value 4.301 is greater than the table value 1.96 at 5 per cent level of significance. While comparing the mean scores, the students residing at urban locality are better in their achievement than the students residing at rural locality. Hence the null hypothesis is rejected.

### ANALYSIS AND FINDINGS 3:

**TABLE :3 Difference between the biology students studying in rural and urban higher secondary schools in their achievement**

Variable	Rural schools (N = 645)		Urban schools (N = 555)		Calculated 't' value	Remarks
	Mean	SD	Mean	SD		
Emotional adjustment	27.67	10.032	28.40	7.222	1.433	NS

(At 5 % level of significance for 998 df, the table value of 't' is 1.96)

**FINDING 3:** It is inferred from the above table - 3 that there is no significant different between the biology students studying in the rural and urban locality of schools in their achievement, since the calculated 't' value 1.433 is less than the table value 1.96 at 5 per cent level of significance. While comparing the mean scores, the rural schools based biology students are better in their achievement than the urban school based biology students. Hence the null hypothesis is accepted.

**ANALYSIS AND FINDINGS 4:**

**TABLE 4 :Difference between Tamil medium and English medium of higher secondary school biology students in their achievement.**

Variable	Tamil medium (N= 836)		English medium (N= 364)		Calculated 't' value	Remarks
	Mean	SD	Mean	SD		
Achievement	26.54	8.267	31.38	9.218	8.993	S

(At 5 % level of significance for 1198 df, the table value of 't' is 1.96)

**FINDING 4:** It is inferred from the above table - 4 that there is significant difference between Tamil medium and English medium of higher secondary school biology students in their achievement, as the calculated 't' value 8.993 is greater than the table value 1.96 at 5 per cent level of significance. While comparing the mean scores, the English medium higher secondary school biology are better in their achievement than the Tamil medium higher secondary school biology students. Hence the null hypothesis is rejected.

**ANALYSIS AND FINDINGS 5:**

**TABLE 5: Difference in the a achievement of higher secondary school biology students who have nuclear and joint family background**

Variable	Nuclear family (N= 967)		Joint family (N= 233)		Calculated 't' value	Remarks
	Mean	SD	Mean	SD		
Achievement	28.17	8.841	23.30	8.862	1.349	NS

(At 5 % level of significance for 1198 df, the table value of 't' is 1.96)

**FINDING 5:** It is inferred from the above table – 5 that there is no significant difference between nuclear family and joint family of higher secondary school biology students in their achievement, since the calculated 't' value 1.349 is less than the table value 1.96 at 5 per cent level of significance. While comparing the mean scores, the higher secondary school biology students from nuclear family are better in their achievement than higher secondary school biology students from joint family. Hence the null hypothesis is accepted.

**ANALYSIS AND FINDINGS 6:**

**TABLE 6: Difference in the achievement of higher secondary school biology students with family annual income below `50,000 and above `50,000.**

Variable	Below `50,000 (N= 912)		Above `50,000 (N= 288)		Calculated 't' value	Remarks
	Mean	SD	Mean	SD		
Achievement	27.62	8.650	29.22	9.363	2.672	S

(At 5 % level of significance for 998 df, the table value of 't' is 1.96)

**FINDING 6:** It is inferred from the above table - 6 that there is significant difference between family annual income below `50,000 and family annual income above `50,000 of higher secondary school biology students in their achievement, since the calculated 't' value 2.672 is greater than the table value 1.96 at 5 per cent level of significance. While comparing the mean scores, the higher secondary school biology students whose family annual income is above `50,000 are better in their achievement than the higher secondary school biology students whose family annual income is below `50,000. Hence the null hypothesis is rejected.

**ANALYSIS AND FINDINGS 7:**

**TABLE 7: Difference among government, government aided and self-finance higher secondary school biology students in their achievement.**

Variable	Source of variation	Sum of squares	Mean square value	df	Calculated 'F' value	Remarks
Achievement	Between groups	9076.05	4538.29	2	64.050	S
	Within groups	84808.80	70.851	1197		

(At 5 % level of significance for 1197 df, the table value of 'F' is 2.99)

**FINDING 7:** From the above table -7 it is inferred that there is a significant difference among the government, government aided and self-finance higher secondary school biology students in their achievement, since the calculated 'F' value 64.050 is greater than the table value 2.99 at 5 per cent level of significance.

While comparing the mean scores of

government (25.48), government aided (27.82) and self-finance (32.09) higher secondary school biology students in their achievement, among these self-finance higher secondary school biology students are better in their achievement.

#### ANALYSIS AND FINDINGS 8:

**TABLE 8: Difference in the adjustment of higher secondary school biology students who have literate and illiterate father**

Variable	Literate father (N = 621)		Illiterate father (N = 579)		Calculated 't' value	Remarks
	Mean	SD	Mean	SD		
Achievement	28.77	8.830	27.192	8.802	3.107	S

(At 5 % level of significance for 1198 df, the table value of 't' is 1.96)

**FINDING 8:** It is inferred from the above table -8 that there is no significant difference in the achievement of higher secondary school biology students who have literate and illiterate father, as the calculated 't' value 3.107 is greater than the table value 1.96 at 5 per cent level of significance. Hence the null hypothesis is rejected.

While comparing the mean scores, the higher secondary school biology student who have literate father are better in their achievement than the higher secondary school biology students who have illiterate father.

#### ANALYSIS AND FINDINGS 9:

**TABLE 9: Difference in the adjustment of higher secondary school biology students who have literate and illiterate mother**

Variable	Literate mother (N = 497)		Illiterate mother (N = 703)		Calculated 't' value	Remarks
	Mean	SD	Mean	SD		
Achievement	28.44	8.850	27.70	8.84	1.429	NS

(At 5 % level of significance for 1198 df, the table value of 't' is 1.96)

**FINDING 9:** It is inferred from the above table -9 that there is no significant difference in the achievement of higher secondary school biology students whose mothers are literate and illiterate, as the calculated 't' value 1.429 is greater than the table value 1.96 at 5 per cent level of significance. Hence the null hypothesis is accepted.

While comparing the mean scores, the higher secondary school biology student whose mother is literate are better in their achievement than the higher secondary school biology students whose mother is illiterate.

#### RESULTS AND DISCUSSIONS

1. The 't' test results reveal that there is a significant difference between boys and girls of higher secondary school biology students in their achievement. The biology girls of higher secondary schools are better in their academic achievement than the biology boys of higher secondary schools. This may be due to the fact that the girls put more hard work in their academic activities. Girls are more read than boys. Reading skills is a basis for all learning activities. Boys are highly interested in playing but girls in studying. Girls spend more time on home work. On an average girl spend five and half hours in a week. This may reflect that the biology girls are having more academic achievements.

2. The 't' test results reveal that there is a significant difference between the higher secondary course biology students residing at rural and urban locality in their academic achievement. The urban based biology students are better in their achievement than the rural based biology students. This may be due to the fact that the urban biology students are more in educating themselves unlike before, where they only knew what happened around them in the rural setting. Also much of the distractions in big cities are not present in rural environments.

3. The 't' test results reveal that there is no significant difference between the biology students who study in rural and urban locality of schools in their achievement. The students studying in the urban schools are better in their achievement than the students studying in the rural based school biology students. This may be due to the fact that the urban localities of biology students of higher secondary schools participate in extracurricular activities, co curricular activities, special class, sufficient teachers. In addition they schools have a good infrastructure with water facility, electricity, learning space and hygienic environmental conditions. This aids the

students the students to active their expected academic results.

4. The 't' test results reveal that there is a significant difference between Tamil medium and English medium higher secondary school biology students in their achievement. The English medium higher secondary school biology students are better in their achievement than the Tamil medium higher secondary school biology students. This may be due to the fact that the students may be getting more knowledge and abilities from off campus programmes conducted by schools. Furthermore, the English medium students are more active, cooperative and adjustable.

5. The 't' test results reveal that there is no significant difference between higher secondary school biology students who have nuclear and joint family background in their academic achievement. The higher secondary school biology students who have nuclear family background are better in their academic achievement than the higher secondary school biology students who have joint family background. This may be due to the fact that the nuclear family environment helps the higher secondary school biology students to gain good academic performance. The nuclear family is as a result of no external interference that in most cases has caused unnecessary disruption in completion of homework as the structure offers friendly environment. The parents were found to offer moral, holistic and basic support as well as motivating their children to excel in their academics. The parents are concerned with academic progress of their children as they are close to children thereby understanding their strength and weakness in academic performance. Children in nuclear family enjoy parental support financially, socially and physical help from their parents. Besides, the students hailing nuclear family is energetic and active in all aspects of life, and eventually become adjustable in nature.

6. The 't' test results reveal that there is no significant difference between higher secondary school biology students with family annual income below `50,000 and family annual income above `50,000 in their academic achievement.

The higher secondary school biology students with family annual income above `50,000 are better in their academic achievement than the higher secondary school biology students with family annual income below `50,000. This may be due to the fact that the higher secondary biology students with family annual income above `50,000 may get tuition and special coaching for importing their academic results and they easily get favorable higher education without any financial crisis. The income level of parent's impacts the academic achievements of the students. Parents have a critical role to play in improving the academic achievements in providing the moral, financial and material support needed for their children and to encourage them to perform academically at school.

7. The 'F' test results show that there is a significant difference among government, govt. aided and self-financed higher secondary school biology students in their academic achievement. The self-financed higher secondary school biology students are better in their achievement. This may be due to the fact that self-financed schools offer more facilities for effective learning as bait to attract more admissions into their institution.

8. The 't' test reveals that there is no significant difference in the academic achievement of higher secondary school biology students to have literate and illiterate fathers. The higher secondary school biology students who have illiterate father are better in their achievement than the higher secondary school biology students who have literate father. This is because of the fact that most of the biology students are having educated father in their families. In this regard the father's socio educational status is helpful towards the achievement of higher secondary school biology students.

9. The 't' test reveals that there is no significant difference in the achievement of higher secondary school biology students whose mother are literate and illiterate. The higher secondary school biology students whose mothers are literate are better in their academic achievement than the higher secondary school biology students whose mothers are illiterate.

This may be due to the fact that the literate mothers are help

Andrade, Jackic and Mary, Jon (2001), Cognitive Psychology, London: Bios Scientific Publishers.

Anderson, G & Arsenault, N. (1998), Fundamental of Educational Research, Taylor & Francis, London and New York.

### REFERENCES

Aggarwal, Y.C. (2002), Educational Research: An Introduction, Arya Book Dept., New Delhi.

Aggarwal, Y.P (1998), Statistical Methods: Concept, Application and Computation, Sterling Publishing Limited, New Delhi.