



# MENTAL HEALTH AND ATTITUDE TOWARDS SCIENCE AS CORRELATES OF ACHIEVEMENT IN BIOLOGY OF SECONDARY SCHOOL PUPILS OF MALAPPURAM DISTRICT

**MAYA. P.V.**

Research Scholar, Department of Education, Annamalai University

**DR. N.L.N. JAYANTHI**

Professor, Department of Education, Annamalai University.

## ABSTRACT

*The purpose of this paper is to investigate the relationship of Mental Health and attitude towards Science on Achievement in Biology. It was conducted on a representative sample of 650 pupils. The data was collected from Malayalam Medium pupils of IX standard drawn from 16 schools of Malappuram District. All the needed data were collected using standardized tools. Samples were selected on the basis of stratified random sampling technique. Due representation was given to Sex of the pupil (Male and Female), Locale (Rural or Urban) and Type of Management (Government and Private). The result revealed the significant relation ship between Mental Health and Achievement in Biology, and Attitude towards science and Achievement in Biology. Significant difference shown in Mental Health among Locale and type of Management. Locale and type of management has no significant difference in their attitude towards science where as Gender has significant difference in their attitude towards science.*

Key words: Mental Health, Attitude Towards Science, Achievement in Biology, Secondary School Pupils.

## INTRODUCTION

Education modifies the behaviour of the child. Teaching is one of the instruments of education and its special function is to impart knowledge , understanding and skill. In teaching process the educator must understand the nature, interest, capacities and limitations of the child. Learning, which is one of the most important aspects of schooling, is influenced by a variety of elements such as interest, attitude, motivation, mental health, family environment, and social background.

One of the most important factor that promotes learning is “mental health” and it refers to a sound and healthy mind. Hereditary factors, physical factors, social factors, and satisfaction of fundamental needs are all

important elements of mental health and adjustment. Mental Health is a condition which permits the optimal development, physical, intellectual and emotional of the individual so far this is compatible with that of the other individual (Maslow, 1978). For the present study mental health comprises certain constructs such as sense of security, regularity of habit, positive attitude towards self. Mental health and success in learning are very closely related. There is a complex cause and effect relationship between them. Mental health is essential for effective learning.

Science has become a compulsory subject in the school curriculum, every system of school education, right from elementary stage, because of its role and multifarious values gifted to the individual as well as to the society. One of the main goals of science education is to improve students' attitude towards science. It is defined as an opinion or position taken with respect to a psychological object in the field of science. (Moor 1970). The use of science as the object or stimulus of these feelings delineates a set of attitude known as "attitude towards science". In the present study attitude towards science refers to the emotionally toned ideas directed towards or against science to realize, enjoy and appreciate the achievement of science. So it is highly essential that a positive attitude towards science is to be inculcated in children at an early stage.

Formal education is imparted in educational institutions through the study of various subjects and its central focus is on academic achievement. A good academic record of students is an index of an effective educational system. Biology is one of the major subjects among the science curriculum. It deals with the living things and their relationship with physical environment. Knowledge of biology has enabled man to change his environment. "Achievement in Biology" refers to proficiency of performance of pupils in a given skill or body of knowledge related to biology as a subject of study which can be measured by a standardized achievement test. The present system of instruction is based on predetermined objectives. The degree of realization of objectives can be achieved by conducting achievement test. Academic achievement is of paramount importance in the present educational scenario. A good academic record of students is an index of an effective educational system. Academic achievement is influenced by a good number of factors. Achievement in biology is the cumulative effect of several variables.

It is assumed that the mental health of children and their attitude towards science have great influence in their academic achievement, that is achievement in biology, a major branch of science. On reviewing the related literature, it is found that not much significant studies have been taken place in establishing the role of mental health and attitude towards science for fostering the achievement in biology. Hence, an attempt is made here to study in the hope that it will contribute to the betterment of educational practices.

## **OBJECTIVES OF THE STUDY**

1. To find out whether there exists any significant relationship between Mental Health and Achievement in Biology of Secondary School Pupils for the total sample and relevant sub samples based on Gender, Locale and Type of Management.
2. To find out whether there exists any significant relationship between Attitude towards Science and Achievement in Biology of Secondary School pupils for the total sample and relevant sub samples based

on Gender, Locale and Type of Management.

3. To find out whether there exists any significant difference in the mean scores of Mental Health of Secondary School Pupils on the basis of relevant sub samples i.e. Gender, Locale and Type of Management.
4. To find out whether there exists any significant difference in the mean scores of Attitude towards Science of Secondary School Pupils on the basis of relevant sub samples i.e. Gender, Locale and Type of Management.
5. To find out whether there exists any significant difference in the mean scores of Achievement in Biology of Secondary School Pupils on the basis of relevant sub samples i.e. Gender, Locale and Type of Management.

### **HYPOTHESES OF THE STUDY**

1. There will be significant relationship between Mental Health and Achievement in Biology of Secondary School Pupils for the total sample and relevant sub samples based on Gender, Locale and Type of Management.
2. There will be significant relationship between Attitude towards Science and Achievement in Biology of Secondary School Pupils for the total sample and relevant sub samples based on Gender, Locale and Type of Management.
3. There will be significant difference in the mean scores of Mental Health of Secondary School Pupils for the relevant sub samples based on Gender, Locale and Type of Management.
4. There will be significant difference in the mean scores of Attitude towards Science of Secondary School Pupils for the relevant sub samples based on Gender, Locale and Type of Management.
5. There will be significant difference in the mean scores of Achievement in Biology of Secondary School Pupils for the relevant sub samples .

### **METHODOLOGY**

#### **Method adopted**

Normative survey method was used to conduct the study.

#### **Sample**

The sample of the study was comprised of 650 pupils of standard IX from 16 schools of Malappuram District. Samples were drawn by stratified random sampling method, giving due representation to factors like Gender, Locale and Type of Management.

#### **Tools Used**

The investigator used the following tools for measuring the variables for the present study.

- i. Mental Health Status Scale (Usha, Anilkumar and Remmya -1999)
- ii Scale of Attitude towards Science ( Sumangala and Sujatha-1994)

iii Achievement Test in Biology (Sreelatha and Maya-2009)

### Statistical techniques used for the study.

- i. Pearson's Product Moment coefficient of correlation
- ii. Test of significance of coefficient of correlation.
- iii. Test of significance of difference between mean scores.

### Variables of the study

Independent variables: Mental Health, Attitude towards Science

Dependent variable: Achievement in Biology

### Demographic variables

Gender ,Locale, Type of Management:

### DESCRIPTIVE ANALYSIS

#### 1. Preliminary analysis

As the first step of analysis the important statistical constants such as mean, median, mode and standard deviation of select independent and dependent variables viz. 'Mental Health', 'Attitude towards Science' and 'Achievement in Biology' were determined for the total sample. Details of statistical constants are presented in Table: 1

**Table 1**  
**Statistical constants of the independent and dependent variables for the total sample**

Variables	Mean	Median	Mode	Standard Deviation
Mental Health	65.210	66	66	9.636
Attitude towards Science	109.234	110	111	15.385
Achievement in Biology	26.468	26	22	8.903

Statistical constants for all the variables in Table. 1 have been calculated for the total sample of size N=628. Table reveals that Mean, median and mode of each variable coincide approximately. From this it can be concluded that distribution is approximately normal for all the three variables.

#### 2. CORRELATION ANALYSIS

The method used to calculate the coefficient of correlation was Person's Product Moment Coefficient of Correlation 'r'. The obtained correlation coefficient 'r' and the significance of 'r' both at 0.05 and 0.01 level of significance were worked out and presented in the following table.

Table. 2

**Test of Significance of Coefficient of Correlation between  
Mental Health and Achievement in Biology for Total Sample and Relevant Sub samples**

Sl. No:	Nature of Sub samples	Size of the Sample (N)	Coefficient of Correlation	Critical Ratio	Whether Significant at 5% level	Whether Significant at 1% level
1	Boys	335	0.191804 Negligible Positive	3.4999	Significant	Significant
2	Girls	293	0.32297 Low Positive	5.50846	Significant	Significant
3	Rural	485	0.21905 Low Positive	4.8138	Significant	Significant
4	Urban	143	0.46733 Substantial Positive	5.5449	Significant	Significant
5	Government	259	0.36339 Low Positive	5.8240	Significant	Significant
6	Private	369	0.227328 Low Positive	4.3541	Significant	Significant
7	Total Sample	628	0.26998 Low Positive	6.7545	Significant	Significant

The result of correlation analysis reveals that the independent variable, Mental Health has significant relationship with the dependent variable, Achievement in Biology, for the total sample and selected sub samples.. The correlation between Mental Health and Achievement in Biology is positive and substantial in Urban School Pupils. For the total sample, Rural School Pupils, Girls, Government School Pupils and Private School Pupils the correlation is positive and low where as in Boys the correlation between the variables is positive and negligible.

**Table 3  
Test of Significance of Coefficient of  
Correlation between Attitude towards Science and  
Achievement in Biology for the Total Sample and Relevant Sub samples**

Sl. No:	Nature of Sub samples	Size of the Sample (N)	Coefficient of Correlation (r)	Critical Ratio	Whether Significant at 5% level	Whether Significant at 1% level
1	Boys	335	0.4237 Substantial Positive	7.7297	Significant	Significant
2	Girls	293	0.39642 Low Positive	6.7605	Significant	Significant
3	Rural	485	0.42279 Substantial Positive	9.2900	Significant	Significant
4	Urban	143	0.48815 Substantial Positive	5.7915	Significant	Significant
5	Govt.	259	0.38361 Low Positive	6.1479	Significant	Significant
6	Private	369	0.47143	9.0279	Significant	Significant

			Substantial Positive			
7	Total Sample	628	0.433306 Substantial Positive	10.9257	Significant	Significant

The result of test of significance of coefficient of correlation between Attitude towards Science and Achievement in Biology shows that there is a significant relationship between the variables for the total samples and selected sub samples. The correlation is positive and substantial in the case of total sample, Urban School Pupils, Rural School Pupils, Boys and Private School Pupils. Where as in the case of Girls and Government School Pupils the correlation is positive and low.

### 3. MEAN DIFFERENCE ANALYSIS

**Table 4**  
**Mean difference of independent variables and dependent variable for the sub samples based on Gender, Locale and Type of Management**

Variable	Sub-sample		Size	Mean	Standard deviation	Critical Ratio
Mental Health (Independent variable )	Gender	Boys	335	63.95821	9.2029	3.4899**
		Girls	293	66.6416	9.9580	
	Locale	Rural	485	64.28041	9.2533	4.2751**
		Urban	143	68.3636	10.2576	
	Type of Management	Government	259	66.2471	10.1171	2.2305*
		Private	369	64.4823	9.2286	
		Girls	293	28.1924	8.3565	
	Locale	Rural	485	26.4380	9.1415	0.1978
		Urban	143	26.5944	8.04322	
	Type of Management	Government	259	25.4224	8.3052	-2.5215*
Private		369	27.20109	9.2399		
Attitude towards Science (Independent variable )	Gender	Boys	335	106.3522	15.6181	5.1505**
		Girls	293	112.5411	14.4819	
	Locale	Rural	485	109.5599	14.5631	-0.8718
		Urban	143	108.1329	17.9047	
	Type of Management	Government	259	109.7375	14.9256	0.6931
Private	369	108.8804	15.7117			
Achievement in Biology (Dependent variable )	Gender	Boys	335	24.9701	9.08608	4.6284**

\*\* Indicates 0.01 level of significance

\*indicates 0.05 level of significance

The result of 't' test reveals that there is significant difference among Gender, Locale and Type of Management in their Mental Health.

The result of the 't' test shows that there is significant difference among Gender in their Attitude towards Science. Girls show more favourable Attitude towards Science than Boys. There is no significant difference among Locale and Type of Management in their Attitude towards Science.

The result of the 't' test shows that there is significant difference among Gender and Type of Management in their Achievement in Biology. Girls and Private School Pupils show high Achievement in Biology than Boys and Government School Pupils. There is no significant difference among 'locale' in their Achievement in Biology.

### EDUCATIONAL IMPLICATIONS

It is clearly observed that Mental Health and Attitude towards Science are greatly influencing the Achievement in Biology. Mental Health is an important affective variable which can influence educational process. The child is the agent of his own learning. Each child is to be helped to attain maximum development in dealing with others both at school and home. A mentally healthy child only can perceive the things easily and clearly. Training must be given for developing emotional maturity in children. This is possible by means of showing affection, recognition, protection and devotion in hearing the child both by parent and teachers. This helps the child to be free from negativism. Thus the child's Mental Health and there by the achievement can be enhanced by a suitable curriculum effective and appropriate instructional strategies. This is also possible with the co-operation of parents and utilization of professional mental health services.

The study revealed that Attitude towards Science has great influence on Achievement in Biology. The teachers should have favourable Attitudes towards Science and the teachers can try to inculcate positive Attitude towards Science in children. There should be a favourable attitude of a student for his good achievement.. So the curriculum should be constructed in such a way that it will improve the attitude of students towards science subjects especially in Biology. Thus a successful educational system can enhance the level of achievement of the students and also their overall educational standard.

### CONCLUSIONS

Present study revealed the significant relationship between Mental Health and Achievement in Biology and Attitude towards Science and Achievement in Biology for Secondary School Pupils. Significant difference showed in Mental Health among the sub samples Locale and Type of Management. Sub sample Locale and Type of Management has no significant difference in their Attitude towards Science where as Gender has significant difference in their Attitude towards Science. Sub sample Locale has no significant difference in their Achievement in Biology where as Gender and Type of Management has significant difference in their Achievement in Biology.

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