

## Psychological Factors Associated with High and Low Achievement in Physics Among XII Standard Students of Villupuram District in Tamilnadu

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**Abstract:** Scientific is related to the more thinking and knowledge of science relevant information. Comparison of the students in scientific aptitude, attitude, lactation (rural, urban), type of school (government, private), gender (boys, girls) students of high and low achieving students of class XII th standard physics subject in Villupuram district. There is no significance difference in scientific aptitude and attitude, lactation (rural, urban), type of school (government, private), gender (boys, girls) students of high and low achievement. The samples are collected from 240 students, among the samples 120 are boys and remaining girls in two educational blocks. Treatment of the data calculation from mean, standard deviation, significance difference, ANOVA. According to the calculation urban students have more psychology factor than the rural students. Private schools students have more achievement in physics subject than the government schools students. Girl's students have more achievement than the boys students.

### I. INTRODUCTION

Physics is the study of matter, energy and their interactions - is an international enterprise, which plays a key role in the future progress of humankind. The support of physics education and research in all countries is important because:

1. Physics is an exciting intellectual adventure that inspires young people and expands the frontiers of our knowledge about nature.
2. Physics generates fundamental knowledge needed for the future technological advances that will continue to drive the economic engines of the world.
3. Physics contributes to the technological infrastructure and provides trained personnel needed to take advantage of scientific advances and discoveries.
4. Physics is an important element in the education of chemists, engineers and computer scientists, as well as practitioners of the other physical and biomedical sciences.
5. Physics extends and enhances our understanding of other disciplines, such as the earth, agricultural, chemical, biological, and environmental sciences, plus astrophysics and cosmology - subjects of substantial importance to all peoples of the world.
6. Physics improves our quality of life by providing the basic understanding necessary for developing new instrumentation and techniques for medical applications, such as computer tomography, magnetic resonance imaging, positron emission tomography, ultrasonic imaging, and laser surgery.

In summary, for all these reasons, physics is an essential part of the educational system and of an advanced society. We therefore urge all governments to seek advice from physicists and other scientists on matters of science policy, and to be supportive of the science of Physics.

Physics is second only to mathematics in the purity of its principles. Physics describes how the natural world works through applied mathematical formulas. It deals with the

fundamental forces of the universe and how they interact with matter looking at everything from galaxies and planets to atoms and quarks and everything in between. All other natural sciences stem from physics. Chemistry is essentially applied physics and biology is essentially applied chemistry. Physics theory is responsible for the breakthroughs in electronics that precipitate advances in modern computers and electronic media.

The source center of educational psychological counseling and guidance. Psychological test are continuously added, so that the available test cover most of the important areas of concern such as intelligence, ability, aptitude, attitude, interest value, personality and achievement etc.,

Therefore if we have achieved quality in education it is necessary that we take psychological factors associated high and low achievements in physics.

### II. OBJECTIVES OF THE STUDY

- 1) To study the scientific aptitude of high and low achieving students of class XII th standard physics students in Villupuram district.
- 2) To study the locality of the schools difference between scientific aptitude of high and low achieving students of class XII th standard physics students in Villupuram district.
- 3) To study the type of the schools difference between scientific aptitude of high and low achieving students of class XII th standard physics students in Villupuram district.
- 4) To study the difference gender between scientific aptitude of high and low achieving students of class XII th standard physics students in Villupuram district.
- 5) To study the scientific attitude of high and low achieving students of class XII th standard physics students in Villupuram district.

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- 6) To study the locality of the schools difference between scientific attitude of high and low achieving students of class XII th standard physics students in Villupuram district.
- 7) To study the type of the schools difference between scientific attitude of high and low achieving students of class XII th standard physics students in Villupuram district.
- 8) To study the difference gender between scientific attitude of high and low achieving students of class XII th standard physics students in Villupuram district.

**III. HYPOTHESES**

- 1) There is no significant difference in scientific aptitude of high and low achieving physics students of XII th standard physics students in Villupuram district
- 2) There is no significant difference between localities in scientific aptitude of high and low achieving students of class XII th standard physics students in Villupuram district.
- 3) There is no significant difference between types of the schools in scientific aptitude of high and low achieving students of class XII th standard physics students in Villupuram district.
- 4) There is no significant gender difference between scientific aptitude of high and low achieving students of class XII th standard physics students in Villupuram district.
- 5) There is no significant difference in scientific attitude of high and low achieving physics students of XII th standard physics students in Villupuram district
- 6) There is no significant difference between localities in scientific attitude of high and low achieving students of class XII th standard physics students in Villupuram district.
- 7) There is no significant difference between types of the schools in scientific attitude of high and low achieving students of class XII th standard physics students in Villupuram district.
- 8) There is no significant gender difference between scientific attitude of high and low achieving students of class XII th standard physics students in Villupuram district.

**IV. SAMPLE**

The investigator visited the higher secondary schools at two blocks (Sankarapuram, Kallaikurichi.) In Villupuram district which are near to his native place and selected four schools in rural and urban areas. In those schools one school each from urban area and rural area of Sanakapuram town and Kallaikurichi town. From all these schools the investigator selected 240 students (120 students from urban schools and 120 students from rural schools) selected for the achievement test and by using non-probability sampling technique.

Among 240 students, 120 students were boys and girls of urban area and 120 were boys and girls of rural area.

The diagrammatic representation of sample size shown in figure. Sample (240)

		Achievement	
		High	Low
Locality	Urban	15	15
	Rural	15	15
Type of the school	Government	15	15
	Private	15	15
Gender	Boys	60	60
	Girls	60	60

**Hypotheses –I** Evident from the Table –I that the obtained ‘F’-Value of 8.618 is significant at the 0.05 level implying that aptitude has significant influences on achievement. As the ‘F’-value is significant the first hypotheses, which is predicted aptitude would significantly influence the achievement of higher secondary school students is accepted

Table –I(a) Mean and SD of Aptitude.

		Aptitude	
		Mean	SD
Achievement	Low	1.77	0.425
	High	1.91	0.280

Table –I(b) ANOVA for Aptitude.

Sources of variance	Sum of squares	DF	Mean Square	F-Value	Significance
Aptitude	0.864	1	0.864	8.618	0.004*

\*:Significant at the 0.05 level.

**Hypothesis – II** Evident from the Table –II that the obtained ‘F’-Value of 10.154 is significant at the 0.05 level implying that aptitude and attitude has significant influences on achievement. As the ‘F’-value is significant the second hypothesis, which predicted that locality difference would not significant influence the achievement of higher secondary school students, is rejected the hypothesis.

Table –II(a) Mean and SD of Locality

		Aptitude	
		Mean	SD
Locality	Urban	1.88	0.332
	Rural	1.59	0.452

Table –II(b) ANOVA for Locality

Sources of variance	Sum of squares	DF	Mean Square	F-Value	Significance
Locality	2.455	1	2.455	10.154	4.96*

\*:Significant at the 0.05 levels.

**Hypothesis – III** Evident from the Table –III that the obtained ‘F’-Value of 10.154 is significant at the 0.05 level implying that type of schools has significant influences on achievement. As the ‘F’-value is significant the third hypothesis, which predicted type of schools would not be the significant influence the achievement of higher secondary school students, so rejected the hypothesis.

Table –III(a) Mean, SD of Type of Schools

		Aptitude	
		Mean	SD
School	Private	1.92	0.264
	Government	1.82	0.367

Table –III(b) ANOVA for Type of Schools

Sources of variance	Sum of squares	DF	Mean Square	F-Value	Significance
School	2.455	1	2.455	10.154	4.96*

\*.Significant at the 0.05 level.

**Hypothesis – IV** Evident from the Table –IV that the obtained ‘F’-value of 36.374 is significant at the 0.05 level implying the gender differences has significant influences on achievement. As the ‘F’-value is significant the fourth hypothesis, which predicted gender difference has would not be the significant influence the achievement of higher secondary school students, so rejected the hypothesis.

Table –IV(a) Mean, SD of Gender

		Aptitude	
		Mean	SD
Gender	Boys	1.83	0.374
	Girls	1.93	0.250

Table –IV(b) ANOVA for Gender

Sources of variance	Sum of squares	DF	Mean Square	F-Value	Significance
Gender	7.954	1	7.954	36.374	2.84*

\*.Significant at the 0.05 level.

**Hypothesis – V** Evident from the Table –V that the obtained ‘F’-Value of 4.021 is significant at the 0.05 level implying that attitude has significant influences on achievement. As the ‘F’-value is significant the fifth hypotheses, which is predicted aptitude would significantly influence the achievement of higher secondary school students is accepted.

Table –V. (a) Mean and SD of Aptitude.

		Attitude	
		Mean	SD
Achievement	Low	1.56	0.502
	High	1.70	0.461

Table –V(b) ANOVA for Attitude.

Sources of variance	Sum of squares	DF	Mean Square	F-Value	Significance
Attitude	0.799	1	0.799	4.021	0.042*

\*.Significant at the 0.05 level.

**Hypothesis – VI** Evident from the Table –II that the obtained ‘F’-Value of 10.154 is significant at the 0.05 level implying that attitude has significant influences on achievement. As the ‘F’-value is significant the sixth hypothesis, which predicted that locality difference would not significant influence the achievement of higher secondary school students, is rejected the hypothesis.

Table –VI(a) Mean and SD of Locality

		Attitude	
		Mean	SD
Locality	Urban	1.78	0.414
	Rural	1.55	0.500

Table –VI(b) ANOVA for locality

Sources of variance	Sum of squares	DF	Mean Square	F-Value	Significance
Locality	2.455	1	2.455	10.154	4.96*

\*.Significant at the 0.05 levels.

**Hypothesis – V II** Evident from the Table –III that the obtained ‘F’-Value of 10.154 is significant at the 0.05 level implying that type of schools has significant influences on achievement. As the ‘F’-value is significant the seventh hypothesis, which predicted type of schools would not be the significant influence the achievement of higher secondary school students, so rejected the hypothesis.

Table –VII(a) Mean, SD of Type of Schools

		Attitude	
		Mean	SD
School	Private	1.73	0.444
	Government	1.60	0.501

Table –VII(b) ANOVA for Type of schools

Sources of variance	Sum of squares	DF	Mean Square	F-Value	Significance
School	2.455	1	2.455	10.154	4.96*

\*.Significant at the 0.05 level.

**Hypothesis – V III** Evident from the Table –VIII that the obtained ‘F’-value of 36.374 is significant at the 0.05 level implying the gender differences has significant influences on achievement. As the ‘F’-value is significant the eighth hypothesis, which predicted gender difference has would not be the significant influence the achievement of higher secondary school students, so rejected the hypothesis.

Table –VIII(a) Mean, SD of Gender

		Attitude	
		Mean	SD
Gender	Boys	1.63	0.486
	Girls	1.71	0.456

Table –VIII(b) ANOVA for Gender

Sources of variance	Sum of squares	DF	Mean Square	F-Value	Significance
Gender	7.954	1	7.954	36.374	2.84*

\*.Significant at the 0.05 level.

Table-IX Summaries the table values of Mean, SD

		Aptitude		Attitude	
		Mean	SD	Mean	SD
Achievement	Low	1.77	0.425	1.56	0.502
	High	1.91	0.280	1.70	0.461
Locality	Urban	1.88	0.332	1.78	0.414
	Rural	1.59	0.452	1.55	0.500
Type of school	Private	1.92	0.264	1.73	0.444
	Government	1.82	0.367	1.60	0.501
Gender	Boys	1.83	0.374	1.63	0.486
	Girls	1.93	0.250	1.71	0.456

Table-VI Summarizes the table values of ANOVA

Sources of variance	Sum of squares	DF	Mean Square	F-Value	Significance
Aptitude	0.864	1	0.864	8.618	0.004*
Attitude	0.799	1	0.799	4.021	0.042*
Locality	2.455	1	2.455	10.154	4.96*
School	2.455	1	2.455	10.154	4.96*
Gender	7.954	1	7.954	36.374	2.84*

\*Significant at the 0.05 levels

## V. CONCLUSION

The present study to explore a some psychological aspects (Aptitude, Attitude). There is no significance difference in scientific aptitude and attitude the to compression of the locality (Rural, Urban) of schools, type of schools (Government, Private) and gender (Girls. Boys) of students the urban students have more psychology factor than the rural students. Private schools students have more achievement in physics subject than the government schools students. Girl's students have more achievement than the boy's students.

## VI. REFERENCES

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