

A STUDY ON PERCEPTION ABOUT "LIGHT" AND ACHIEVEMENT IN SCIENCE OF SECONDARY SCHOOL STUDENTS IN THANJAVUR DISTRICT

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ABSTRACT

The study on perception about 'light' and achievement in science of high school students in Thanjavur District was carried out based on the normative survey results. A sample of 100 students in high schools of Thanjavur District was selected using cluster sampling technique. The tools used are scale of perception about 'light' and achievement test in science. The results reported that achievement of students in 'light' can be improved by enhancing their perception skills.

Key words: Education, Perception, Achievement

Introduction

'Light' is a vital source and medium and is necessary in every walk of human life. The students should know about the source and origin of 'light' and its application in varied fields. Hence, the investigators have undertaken the present study.

Need and Significance of the Study

'Light' is a form of energy. We get 'light' from Sun, Stars and other sources. 'Light' is essential for our daily life. Plants prepare food by using 'light' through a phenomenon called photosynthesis.¹ The students need to know the various concepts of 'light' as part of their science learning. Achievement in science can help the students for their future studies. Similar studies have been carried out by researchers.² Therefore this study is necessary for improving the teaching techniques of secondary school students.

Definition of Key terms

Perception: It refers to a person's basic knowledge and understanding of 'light' and its application in day-to-day life.

Achievement: It encompasses students' ability and performance. Here it refers to marks scored by the students in the achievement test.

Hypotheses of the Study

There is no significant difference between

- the boys and girls studying in High Schools in their perception about 'light'.
- the High School students studying in rural and urban schools in their perception about 'light'.
- the high-school students studying in government and private schools in their perception about 'light'.

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- the high school students studying in co-education and non co-education schools in their perception about 'light'.
- the high school students studying in English medium and Tamil medium in their perception about 'light'.
- the boys and girls studying in High schools in their achievement in Science.
- the high school students studying in Rural and Urban Schools in their achievement in Science.
- the high school students studying in government and private schools in their achievement in science.
- the high school students studying in co-education and non co-education schools in their achievement in science.
- the high school students studying in English medium and Tamil medium in their achievement in science.

Method

The study is based on the normative survey method. The method concerns with the present phenomena in terms of conditions, practices, beliefs, processes relations and trends. It is a descriptive survey or trend survey. By this method, three types of information is collected: 1) what exists, 2) what we want, and 3) how to get there.³

Cluster Sampling Technique

Here the total population is divided into a number of relatively small sub-divisions which are themselves clusters of still smaller units. Some of the clusters were randomly selected for inclusion in the overall sample.⁴

Variables in the study

The variables involved in this study are perception and achievement. This study attempts to investigate these variables with respect to Gender, Subject, Management, Nature of school and Locality.

Sample and Tools

A sample of 100 students in High Schools in Thanjavur District was selected using cluster sampling technique. Scale of perception about 'light' was developed and validated by the investigators. 'Achievement test in science' was developed and validated by the investigators.

Data Analysis

1. Perception and Gender

Gender	N (Number)	M (Mean)	SD	't' values
Boys	39	31.299	5.248	1.098
Girls	61	30.793	4.025	NS*

NS =Not Significant

The Calculated 't' value is less than the table value of 't' (1.99) at 0.05 level of significance. Therefore, the two groups do not differ significantly in their perception about 'light'.

2. Perception and Locality

Locality	N	M	SD	't' Value
Rural	49	30.888	4.395	0.5544
Urban	51	31.130	4.985	NS

The calculated 't' value is less than the table value of 't' (1.99) at 0.05 level of significance. Therefore, the two groups do not differ significantly in their perception about 'light'.

3. Perception and Management

Management	N	M	SD	't' Value
Government	47	30.094	3.942	3.98
Private	53	31.748	4.968	-

The Calculated 't' value is greater than the table 't' value (1.99) at 0.05 level of significance. Therefore, the two groups differ significantly in the perception about 'light'.

4. Perception and Nature of School

Nature of School	N	M	SD	't' Value
Co-Education	58	30.904	4.233	0.5620
Non Co-Education	42	31.151	4.954	NS

The calculated 't' value is less than the table value of 't' (1.99) at 0.05 level of significance. Therefore, the two groups do not differ significantly in their perception about 'light'.

5. Perception and Medium of instruction

Medium	N	M	SD	't' Value
English	39	31.445	5.221	1.7618
Tamil	61	30.642	4.074	NS

The calculated 't' value is less than the table value of 't' (1.99) at 0.05 level of significance. Therefore, the two groups do not differ significantly in their perception about 'light'.

1. Achievement and Gender

Gender	N	M	SD	't' Value
Boys	39	17.864	10.151	3.5862
Girls	61	23.031	20.694	-

The calculated 't' value is greater than the table 't' value (1.99) at 0.05 level of significance. Therefore, the groups differ significantly in their achievement in 'light'.

2. Achievement and Locality

Locality	N	M	SD	't' Value
Rural	49	21.285	10.954	1.6918
Urban	51	19.530	11.438	NS

The calculated 't' value is less than the 't' value (1.99) at 0.05 level of significance. So, the groups do not differ significantly in their achievement in 'light'.

3. Achievement and Management

Management	N	Mean	SD	't' Value
Government	47	17.495	9.782	2.3841
Private	53	23.922	11.937	-

The calculated 't' value is greater than the table 't' value (1.99) at 0.05 level of significance. So, the two groups differ significantly in their achievement in 'light'.

4. Achievement and Nature of School

Nature of School	N	M	SD	't' Value
Co-Education	58	19.783	10.554	1.4807
Non Co-Education	42	21.395	12.214	NS

The calculated 't' value is less than the table 't' value (1.99) at 0.05 of significance. So, the groups do not differ significantly in their achievement in 'light'.

5. Achievement and Medium of instruction

Medium	N	M	SD	't' Value
English	39	21.07	12.27	1.006
Tamil	61	19.96	10.54	NS

The calculated 't' value is less than the table 't' value (1.99) at 0.05 of significance. So, the group does not differ significantly in their achievement in 'light'.

Testing Hypothesis

- There is no significant difference between the high school boys and girls in their perception about 'light'.
- There is no significant difference between the high school students studying in Rural and Urban schools in their perception about 'light'.
- There is a significant difference between the high school students studying in Government and Private schools in their perception about 'light'.

- There is no significant difference between the high school students studying in co-education and non co-education schools in their perception about 'light'.
- There is no significant difference between the high school students studying in English medium and Tamil medium schools in their perception about 'light'.
- There is a significant difference in the achievement in 'light' between the High school boys and girls.
- There is no significant difference in the achievement in 'light' between the high school students studying in Rural schools and Urban schools.
- There is a significant difference in the achievement in 'light' between the High school students studying in Government and Private schools.
- There is no significant difference in the achievement in 'light' between the High school students studying in co-education and non co-education schools.
- There is no significant difference between the High schools students studying in English medium and Tamil medium schools in their achievement in 'light'.

Findings of the Study

- The boys and girls are in the same level in their perception about 'light'.
- The students in the rural and urban schools are in the same level in their perception about 'light'.
- The students in the private schools are at a higher level than students in the Government schools in their perception about 'light'.
- The students in the Co-Education and Non Co-Education schools are in the same level in their perception about 'light'.
- The English medium and Tamil medium students are in the same level in their perception about 'light'.
- The girls are at a higher level than boys in their achievement in science.
- The students in the Rural and Urban schools are in the same level in their achievement in science.
- The students in private schools are at a higher level than students in Government schools in their achievement in science.
- The students in the Co-Education and Non Co-Education schools are in the same level in their achievement in science.
- The students of English medium and Tamil medium schools are at the same level in their achievement in science.

Delimitations of the study

- Only students studying in 9th Standard Class in High school were taken for the study.
- The geographical area of the study was also restricted to some selected High school in Thanjavur District.

Recommendations

- Exposing the primary school students to the practical working of 'light' experiments.
- In the middle school level, 'light' topics could be taught by trained by science graduate teachers.
- Enhancing the syllabus regarding 'light'.
- In the high school level more 'light' experiments should be conducted and more practical exposure is needed.

Scope for further study

- To improve the infrastructure and providing more equipments in the science laboratories.
- To provide more science Journals and books in the libraries of the high school students.
- To encourage the students to utilize the library books to the full extent.
- To conduct frequent seminars, workshops, symposium and in service training to the teaching faculty.

Conclusion

The above study reveals that the achievement of students in learning on "light" can be improved by enhancing their perception. We can improve the awareness of students by enhancing the syllabus regarding 'light' and by exposing the students to the practical working of 'light' experiments.

¹ Standard IX Science Textbook, Tamil Nadu Text Book Corporation, 2005-06.

² Aswal, G.S. 2001. Intelligent as Correlate of Achievement in Mathematics across different levels of SES, *Indian Educational Abstract*. 2(1)50; J.W. Best & J.V. Khan, 2005. *Research in Education (IX ed)*. New Delhi; Prentice Hall of India Private Ltd.; R. Bhuvanewari, R. & Suresh, T. 2004. Relationship between Spatial Ability and Achievement in Mathematics and Science among High School Children. *Indian Educational Abstracts*, 5(1):11; Garret, H.E. 1985. *Statistics in Psychology and Education (XI ed)*. Bombay, Vakils, Feffor and Simons Ltd; Mohanasundaram, K. & Kumaran, D. 2001. Web-Based Instructions: An Innovative Teaching Strategy. *University News*. 39(47): 8-11; Mohanasundaram, K. 2005. *New Technologies in Physical Science Teaching*. Mannargudi: Mohan Publishers; Subrata Saha. 2007. Gender, Attitude to Mathematics, Cognitive Style and Achievement in Mathematics. *Experiments in Education*, 35(6):127-130.

³ Lokesh Koul, 1990. *Methodology of Education Research*. New Delhi: Vikas Publishing House Pvt. Ltd.

⁴ Kothari, C.R. 1990. *Research Methodology (Methods and Techniques)*. New Delhi: Wiswa Prakashan.