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SCIENTIFIC APTITUDE OF HIGH SCHOOL STUDENTS IN CHENNAI DISTRICT

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Abstract

Scientific aptitude plays a major role in deep understanding the concepts of science subject. It is a special intellectual ability to comprehend scientific facts and knowledge Students and parents see learning science as a status symbol. Scientific aptitude is a critical component of improving student scientific learning. As a result, the researcher advised researching the scientific ability of Chennai district. The survey included 200 high school students from both urban and rural schools in the educational district of Tamil Nadu. It was decided to employ stratified random sampling. The SAS, which was built by the investigator, was used to gather data. The findings and outcomes are described. Students in High School, Scientific Aptitude

Keyword: Scientific Aptitude, High school, Students.

Introduction

Education helps in the systematization of information and the realization of life's values, and it works tirelessly to progress of the society. It develops the individual who can make significant contributions to science and technology. Scientific aptitude is the result of a complex interplay of inherited and environmental factors that result in predispositions or talents (Mishra,2020). We often come across persons who possess unique qualities or potentialities that allow them to excel in scientific subjects (Manickavasagan,2019). Scientific aptitude is a test that assesses a person's natural abilities. It also shows the impact of education on the development of higher-order cognitive abilities (Vadivu,Sridhar and Kumar,2016). It is a gadget that is used to determine a person's probable capacity to execute a certain sort of specializedactivity (Manichander and Brindhamani,2014). Some pupils may exceed others in scientific subjects and abilities connected to them in schools. Students with scientific aptitude are those who, in addition to their overall intellect, have a special talent or aptitude for science courses (Lalmuanzuali

et.al,2019).The term scientific aptitude refers to a number of factors, including scientific knowledge (which has a strong correlation with student learning).

Literature Review

Balasundaram and Muthuchamy (2022) conducted a study on relationship between study practices and scientific aptitude of higher secondary science students. In this study adopted a descriptive method with normative survey technique. A sample of 215 higher secondary plus one students was selected as sample for this study by using a simple random sample technique. The data was analyzed by using descriptive, differential and correlation analysis. The results of the study shows that significant positive correlation between scientific aptitude and study practices of Higher Secondary students. The higher secondary boys and girls do not differ significantly in respect of their scientific aptitude and their study practices in different learning environment.

Patel (2019) looked at secondary school pupils' scientific ability in relation to a number of characteristics. Gender, location, and standard were all factors in the research. A total of 3154 kids were chosen from Gujarat's secondary schools. Boys have higher scientific aptitude than girls, according to Mishra (2020), and urban pupils have more scientific aptitude than rural students.

Roy and Goel (2018) researched secondary school students' scientific aptitude and attitude, concluding that scientific abilities should be shown among students for better living.

According to Manickavasagan(2019), parents, teachers, curriculum reformers, and policymakers should focus on the development of scientific aptitude and the creation of an adequate learning environment in order to improve science success among higher secondary students.

Kalaivani (2018) looked at the differences in gender success in chemistry and scientific aptitude among XI students in upper secondary school. Interms of scientific aptitude, male and female pupils varied. The Scientific Aptitude Test for Secondary Students was developed and verified by Vadivu, Sridhar, and Kumar (2016). The authors said that there are new potential studies for future investigation in the selected area, namely scientific aptitude tests and academic stress in school pupils.

Manichander and Brindhamani (2014) investigated the Academic Achievement and Scientific Aptitude in Science among students in Tamilnadu's Perambalur district's Standard X pupils. Students in urban schools have a greater Scientific Aptitude than students in rural schools. In comparison to male pupils, female students have a greater Scientific Aptitude

Need for the Study

Scientific aptitude can be considered as a specific skill that enables the students to reach the desired degree of accomplishment in science in general and its specialisation in particular. Knowing about scientific aptitude, it is worthy meaning how this variable affects the teaching and learning process in the field of science and technology. It is also critical that scientific aptitude be developed in the appropriate way in order to improve science education among higher secondary students. Hence the students that are motivated are more likely to do well in their academic activities by means of their healthy

study practices at schools and be reviewed at home. There are number of factors that can influence a student's desire to succeed in schools. While scientific aptitude is one of the variables that support students study practices in learning science. Therefore, it is felt need to investigate the study practices on science in relation to their scientific aptitude among higher secondary students.

Methodology of the Study

High school students from the state of Tamilnadu made up the study's population. Students in classes IX and X learning Science in 8 different schools of educational districts in Tamilnadu, chosen as sample (N=200). The data was collected from both urban and rural schools, and the sample included both boys and girls. For the selection of the schools, stratified and random sampling procedures were utilised. The research used an investigator-developed Scientific Aptitude scale. Basic Vocabulary, Numerical Ability, Scientific Information, and Reasoning were the dimensions of the test whichconstitute350 items. The correct answer received one mark, while the incorrect answer received zero mark. The highest possible score is 350, while the lowest possible score is 0 points. After receiving appropriate approval from the subject and the authorities, the instrument was given to the sample. For statistical analysis, the mean, standard deviation, t-test, and ANOVA were computed.

Objectives of the Study

- To estimate the Scientific Aptitude of High School students in Chennai District.
- To assess the level of Scientific Aptitude of High School students on the basis of gender.
- To identify the Scientific Aptitude of High School students in context of their class studied.
- To identify the Scientific Aptitude of High School students in context to their Gender.
- To identify the Scientific Aptitude of High School students in context of their Locale.
- To identify the Scientific Aptitude of High School students in context of their types of school

Tools used

Scientific Aptitude scale (2022) constructed and validated by Balasundaram & Muthuchamy. This scale consist of four dimensions namely**,** Basic Vocabulary, Numerical Ability, Scientific Information, and Reasoning were the dimensions of the test which constitute 350 items. The correct answer received one mark, while the incorrect answer received zero mark. The highest possible score is 350, while the lowest possible score is 0 points.

Hypothesis: 1

In terms of reasoning aptitude, numerical ability, scientific information, scientific vocabulary, and scientific aptitude, there is no substantial difference between IX and X standard pupils.

Scientific Aptitude and its dimensions	IX (N= 100) Mean	SD	X (N = 100) Mean	SD	Calculated Value of 't'	Remarks at 5% level
Reasoning Aptitude	40.36	3.78	42.78	3.89	0.860	NS
Numerical Ability	33.76	3.95	30.81	3.49	0.172	NS
Scientific Information	36.42	3.60	36.4	3.67	0.551	NS
Scientific Vocabulary	32.40	3.68	31.28	3.61	0.421	NS
Scientific Aptitude	275.30	17.974	284.80	17.857	0.422	NS

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

Hypothesis: 2

In terms of reasoning aptitude, numerical ability, scientific information, scientific vocabulary, and scientific aptitude, there is no substantial difference between boys and girls.

Table 2 Difference Between Boys and Girls in their Scientific Aptitude

Scientific Aptitude and its dimensions	Boys (N= 98) Mean	SD	Girls (N = 102) Mean	SD	Calculated Value of 't'	Remarks at 5% level
Reasoning Aptitude	40.45	3.628	41.65	3.841	0.870	NS
Numerical Ability	31.77	3.465	32.81	3.656	0.171	NS
Scientific Information	31.51	3.659	31.39	3.706	0.511	NS
Scientific Vocabulary	31.32	3.573	32.38	3.729	0.242	NS
Scientific Aptitude	255.30	17.874	254.80	18.897	0.422	NS

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

Hypothesis: 3

In terms of Reasoning Aptitude, Numerical Ability, Scientific Information, Scientific Vocabulary, and Scientific Aptitude, there is no substantial difference between urban and rural pupils.

Table 3

Difference Between Urban and Rural Students in their Scientific Aptitude

Scientific Aptitude and its dimensions	Urban (N= 79)		Rural (N = 121)		Calculated Value of 't'	Remarks at 5% level
	Mean	SD	Mean	SD		
Reasoning Aptitude	31.56	3.697	41.56	3.738	0.005	NS
Numerical Ability	31.80	3.644	32.78	3.527	0.044	NS
Scientific Information	30.46	3.645	31.44	3.720	0.094	NS
Scientific Vocabulary	32.49	3.563	32.22	3.720	1.051	NS
Scientific Aptitude	243.22	18.663	254.86	18.213	0.223	NS

Conclusion

Based on the findings scientific learning is crucial not just for one's own growth, but also for a learner's ability to contribute meaningfully to a nation's progress. Many parents and kids now see scientific learning as a status symbol, particularly at the high school level. Students are assigned to a scientific track based on their performance in the science exam. The accomplishment level of pupils in high schools is not determined just by their grades. Academic achievement is enthralled by the right kind of scientific aptitude. Measuring scientific aptitude improves teacher, student, and administrator awareness of students' science learning abilities and helps them develop strategies to improve the learning capacity of high school students.

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