



## SCIENTIFIC LITERACY AMONG TRIBAL STUDENTS

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### ABSTRACT :

Researchers are always interested in studies about tribal group and their development. These research studies help the Government and other authorities to make and implement policies for the betterment of life style and improve the socio-economic status of the tribal sector. In a scientific world where technology plays a major role, all human beings must have awareness to deal with these scientific and technological innovations. Thus the study focuses on identifying the existing level of scientific literacy among tribal students and their select communities viz., Paniyan, Muthuvan and Kattunaykkan. A Scientific Literacy Assessment Test was used to analyse the Scientific Literacy among 114 elementary level students selected from various Model Residential Schools of Kerala, undertaken by scheduled tribe development department.



**KEYWORDS :** *Scientific Literacy, Paniyan, Muthuvan, Kattunaykkan.*

### INTRODUCTION

The study of science is crucial to the long term survival of human beings. Today science and technology undergoes drastic changes. Science helps mankind to make better choices, to change one's life style, ensures quality of life etc.

Many researchers have identified that there exists a link between good life style and scientific literacy. Science education works as host for the environment education. According to PISA "scientific literacy is the ability to use scientific knowledge, to identify questions and make conclusions based on evidence, so as to understand and support decision making related to nature and human induced changes in it". Putting science into practice but not creating science is the core of scientific literacy. Scientific literacy is a broad term that incorporates scientific ideas and concepts within and across various scientific disciplines, as well as scientific practices

Tribals are people with a different way of living and community life. They are found in different geographical area. They possess unique culture, customs, religion, belief which is different from each other community. They are a group of people living in close harmony with nature. Environment is an inevitable part of their life. They try to protect and preserve the environment.

The select tribal communities are

**Paniyan:** They are the largest tribal community in Kerala, who reside in Wayanad, Kannur, Kozhikkode, and Malapuram districts. They had been agricultural labourers and worked as slaves of land lords for several decades. They are believed to be brought to Waynad by the King of Malabar centuries ago, as slaves for agricultural labour.

**Muthuvan:** The word means 'those who carry something on their back'. They mainly reside in Idukki and Eranakulam districts of Kerala. They engage in cultivation and are known as food-gatherers.

Kattunaikkan: The Kattunaikkan communities are listed as primitive tribes. They can be seen in the forest. They collect honey from the forests. The name comes from the word 'kattu' which means 'forest' and 'naykkan' means lord. Hence, they are called the 'lord of forest'. Usually they reside inside the forest. The literacy rate and other developments are considerably less in these tribal groups.

### NEED AND SIGNIFICANCE OF THE STUDY

In our country, a major part of the economy is spent on educational developments. The 2011 census reflects that the general literacy gap between the diverse groups and scheduled tribes has come down from 1961 to 2011. The educational status and awareness among tribal community has been stagnant for many years. Haseena (2014) in her study focused on problems of tribal education and causes for drop-outs. She identified tribal literacy lag behind due of their economic backwardness, social customs, lack of awareness about education, cultural ethos and distance between home and schools etc. The dropout rates are becoming higher in schools. It is an alarming fact that in this advanced world, students are uninterested in schooling and education. Not only that tribal community faces much exploitation from the other communities in terms of destruction of their nature and culture, physical harassment, deterioration of their social and economical values. Many of the tribal people are insufficient in their knowledge of advancement of science and technology. Being with a nature centered life setup, creating or enhancing awareness for the protection and preservation of nature centered life and value based culture, scientific literacy can play a vital role. A know how about scientific context in personal, social and global level may help them to lead a better life style. Knowledge in scientific competency helps them to tackle the associated problems in a scientific manner. A knowledgeable person, with scientific base, can find out the reasons and solutions for the problems faced by him. A person with good scientific attitude can make his nature, life and culture better and to look for a better future. Enhancement in scientific literacy can develop reasoning power, observation power, experimenting knowledge etc. These are qualities required by a person to get satisfaction in life. The increased rate of exploitation and deterioration among the tribal communities made this study the need of the hour.

### OBJECTIVES

- To identify the existing level of scientific literacy among tribal students for total sample.
- To compare the scientific literacy among select tribal communities Paniyan, Muthuvan and Kattunaykkar.

### HYPOTHESES

1. There exists an average level of scientific literacy among tribal students for the total sample.
2. There exists a significant difference between mean scores of scientific literacy among select tribal communities

### METHODOLOGY

A survey study was conducted among 114 tribal students of class seventh from Model Residential Schools of Kerala State, undertaken by Scheduled Tribe Development department. A Scientific literacy assessment test was prepared and standardized by the investigator, which was used as the tool for this purpose. Scientific Literacy test (SLAT) with its sub components: context, competency, knowledge and attitude were selected for the study. SLAT consists of 80 items. The maximum and minimum scores of the test are 190 and 55 respectively. Simple statistical techniques were used for the analysis.

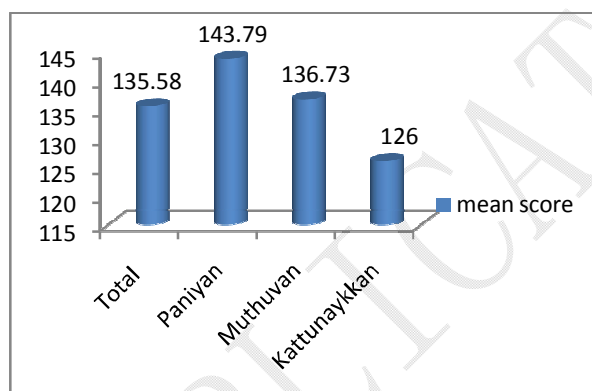
## RESULTS AND DISCUSSIONS

### Existing Level of Scientific Literacy

This section dealt with the existing level of scientific literacy among tribal students at elementary level with respect to the total sample and select tribal communities. The responses were collected, scored and tabulated. The mean, median and standard deviation were calculated.

**Table 1: Scientific Literacy Scores of Tribal Students at Elementary Level for the Total Sample and based on Select Tribal Community**

Select Tribal Community	N	M	Mdn	SD
TOTAL	114	135.79	134	10.11
Paniyar	39	143.79	145	6.4
Muthuvan	37	136.73	137	8.2
Kattunaikkan	38	126	127	6.19



**Fig 1. Comparison of Existing Level of Scientific Literacy among Tribal Students at based on Total Sample and Different Tribal Communities**

Table-1 shows that the existing level of scientific literacy among tribal students at elementary level is above average for the total sample. The standard deviation of the total sample is dispersed from the central value.

The mean values of these communities gives the information that Paniyan and Muthuvan community shows an higher level ( $M_{\text{Paniyan}} = 143.79$  and  $M_{\text{Muthuvan}} = 136.73$ ) of scientific literacy but the Kattunaykkan tribal students showed a lower mean (126) value indicating the existing level of scientific literacy is very low. The standard deviation scores of the group indicate that all the groups are dispersed from the central value. The distribution is negatively skewed for all the tribal communities. This result indicates that the scores were massed at the right end of the distribution. Kurtosis values show positive score for Paniyan and Kattunaykkan but for Muthuvan it is negative. The kurtosis score is higher than the normal value 0.263 for the Paniyan and Muthuvan, the distribution is platykurtic. But for the Kattunaykkan it is leptokurtic. Among the select tribal community Kattunaykkan community have low mean score may be because they do not get a scientific backup to know their environment even though they are highly attached with their environment and forest. Hence the hypothesis-1 is accepted.

### COMPARISON OF EXISTING SCIENTIFIC LITERACY BASED ON SELECT TRIBAL COMMUNITY

Comparison of existing level of scientific literacy among tribal student at elementary level based on different tribal community was done by using F-test. The mean and standard deviation of the existing scientific literacy based on different tribal community was calculated and then the F value found out.

**Table 2: Significance of the Mean Scores of Total Existing Level of Scientific Literacy among Tribal Students at Elementary Level based on Different Community**

Group	Sub Group	M	SD	N	F	Level of Significance
Select Tribal Community	Paniyan	143.8	6.38	39	77	0.05
	Muthuvan	141.51	7.7	37		
	Kattunayakkar	125.5	6.2	38		

From Table-2, the obtained F-value 77 is significant at 0.05 level.  $F=77$ ,  $P>0.05$  for the  $df\ 2/111$ . Thus the interpretation can be done as the difference between mean score of scientific literacy among tribal students at elementary level based on different tribal community can be compared and it was significant at 0.05 level. This indicates that select communities under study are different in all its aspect namely socio- economic status, cultural backgrounds etc. Hence the hypothesis-2 is accepted.

### CONCLUSION

Undoubtedly, to cope up with the challenges in the present century, everyone must search for innovative solution. For the Society to move forward, we need equity and equality, so that the next generation is ready to tackle adverse situation. Being backward in all socio-economic dimensions, tribal students also need to get awareness about science and scientific developments in relation to their environment. Enhancement in scientific literacy parallel to other development will help the tribes to resolve their socio-economic and environmental challenges.

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