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MATHEMATICAL ABILITY AND GENERAL INTELLIGENCE AMONG JENUKURUBA TRIBAL STUDENTS OF HUNSUR TALUK – MYSORE

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Abstract

The present study aims to assess the Mathematical Ability and General Intelligence among VII standard Jenukuruba Tribal students of Hunsur Taluk in relation to their gender, and types of schools. The findings reveal that no significant difference was found between boys and girls in their Mathematical Ability and General Intelligence. But significant difference was found between Ashrama School and Normal Day schools students in Mathematical Ability, but not in General Intelligence. And positive correlation was found between Mathematical Ability and General Intelligence among VII standard Jenukuruba students.

***Keywords*:** Jenukuruba tribes, Mathematical ability, General intelligence.

INTRODUCTION

The Jenu Kuruba tribals inhabit the forest area that forms a conclave of the 3 states: Karnataka, Tamil Nadu and Kerala. This forest covering an area of 2000 square kilometres is home not only to the Jenu Kurubas, but also to other tribes like the Betta Kurubas, Soligas, Yeravas and Paniyars. However, the Jenu Kuruba tribe is distinct in its appearance and cultural practices. The Jenu Kurubas have Negroid features. They are of short stature, have curly hair and are generally dark complexioned. They are shy and timid by nature.

The Jenu Kurubas have several versions regarding their origin. One version is that, when the world was inundated and completely destroyed, a vegetable called the "burude" (bitter gourd) managed to stay afloat. This vegetable finally settled on a piece of earth. From this "burude" sprung a man and a woman who were brother and sister. They perpetrated the Jenu Kuruba tribe.The second version is centered on their belief that the world was created within 40 days. There was a male Kont and a femal Kont [the God of this tribe] who took a handful of mud and from each fistful, created a man and a woman. They were the first of the Jenu Kurubas. The tribe believes that they were born in early summer.

The Jenu Kurubas derive the name from their occupation. They are traditionally honey gatherers. 'Jenu' means honey and 'Kuruba' means tribe. These people roam the forests in search of honey, edible tubers, fruits etc. History has it that the Jenu Kurubas used to supply elephants to the Chola and the Pallava Kings. More recently in 1972, the Jenu Kurubas played a major role in the famous 'Khedda' operations, helping to catch and train wild elephants. They have proved to be exceptionally skilled mahouts and are well versed with the flora and fauna of the forests.

In a democratic country like India, everybody has right to education through which development of an individual and society/Nation is achieved. As such importance has been given to education of tribes in general and Jenukurubas in particular. The state government has taken action to provide basic amenities like drinking water, solar lights, BPL/Anthyodaya Cards, supply of nutritional food in addition to the ration being provided under PDS system, construction of houses under conservative-cum-development programme, setting up of Ashram Schools hostels, residential schools and special scholarship of Rs. 2500/- and Rs. 5000/- to the children of Jenu Kuruba families who pass 7th and 10th Std. respectively besides economic development programmes. According to 2011 Indian Census the population of Jenukuruba was 54,000 and educational level is 46.43 %.

NEED AND IMPORTANCE OF THE STUDY

It is common observation that more and more Jenukuruba tribal students are getting into the schools, but they remain backward in their education level. Because of difference between tribal and standard school language and other factors, tribal students find it difficult to reach higher level in Mathematics also like language as Mathematics involve language usage in addition to logical and abstract thinking. It is also found through

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research that Mathematical Ability and General Intelligence are related to each other. Mathematical Ability is very much required to develop their skills of calculation in addition, multiplication, subtraction and division and also mental calculation with an understanding of contemporary issues.

Regarding General Intelligence many researches have been conducted on tribal communities but not on mathematical abilities of Jenukuruba students. ***Adishesha and Ramanathan (1994),*** have undertaken research pertaining to the educational problems of scheduled cast and scheduled tribes and found that the literacy level is 11.66 % during 1986 and 22 % in 1991.

Buch, Agarwal's (1969) study on "primary school teacher's Mathematical Ability and Measurement' revealed that the 50 % of Mathematics teachers do not have required ability in teaching mathematics.

Pille K. K.(1980)'s study on "Teaching of Mathematics in High Schools of Kerala" revealed that, 72 % of Mathematics teachers have obtained training in teaching mathematics.

Ramya Kalyani (1983) study on "The mastery in Mathematics at the Minimum Level of Learning in Mathematics among primary school children", with a sample of 498 V standard students and 482 VI standard students in and around Mysore city, found that 80 % of students achievement in Mathematics learning.

Gupta's (1996) research on "Knowledge of teachers in Mathematics" found that, 45 % of teachers do not have mastery of multiplication with zero. 25 % of mathematics teachers are not successful in solving simple problems pertaining to addition, subtraction, multiplication and division.

One of the findings of **Sarsani and Maddini (2010)** research on "Achievement in Mathematics of Secondary School students in selected variables", was that girls performed better than boys in Mathematics skills.

All the above said research works revealed that, there is substantially lot of research work done pertaining to the mathematical ability of primary school teachers, teaching mathematics, anxiety in mathematical learning, Achievement in Mathematics and knowledge about mathematical ability, but no studies focusing on the Mathematical Ability and General Intelligence of Jenukuruba tribal students have been reported. It is commonly reported that tribal students are backward in education in general and backward in language and Mathematics learning too. There are many factors which influence this mater, out of which students' level of general Intellectual ability also counts a lot. Hence, it is found imperative to know the level of General Intelligence and Mathematics ability among tribal students and is there any relationship between these two variables. As such the present study is taken up with Jenukuruba tribal students of VII standard in Hunsur Taluk of Mysore District. This study intends to know the level of Mathematical Ability and General Intelligence among Jenukuruba tribal students of VII standard and also to know is there any relationship between these two variables.

OBJECTIVES OF THE STUDY

1. To study the level of Mathematical Ability and General Intelligence of VII standard Jenukuruba Tribal students of Hunsur Taluk.
2. To study the difference between VII standard Jenukuruba boys and girls in their Mathematical Ability.
3. To study the difference between VII standard Jenukuruba boys and girls in their General Intelligence.
4. To study the difference between VII standard Jenukuruba tribal students from Ashrama School and other Normal students from Day school in their Mathematical Ability.
5. To study the difference between VII standard Jenukuruba tribal students from Ashrama School and other Normal students from Day school in their General Intelligence.
6. To study the relationship between Mathematical Ability and General Intelligence among VII standard Jenukuruba tribal students of Hunsur Taluk.

HYPOTHESES OF THE STUDY

1. There is no significant difference between VII standard Jenukuruba boys and girls in their Mathematical Ability.
2. There is no significant difference between VII standard Jenukuruba boys and girls in their General Intelligence.

3. There is no significant difference between VII standard Jenukuruba tribal students from Ashrama School and other Normal students from Day school in their Mathematical Ability.
4. There is no significant difference between VII standard Jenukuruba tribal students from Ashrama School and other Normal students from Day school in their General Intelligence.
5. There is no significant relationship between Mathematical Ability and General Intelligence among VII standard Jenukuruba Tribal students of Hunsur Taluk.

OPERATIONAL DEFINITION OF KEY TERMS

Mathematical Ability: Mathematical Ability is the ability, whether learnt or perceived as natural capability to process numerical data and conclude a mathematical calculation based on that data. This involves fundamental operations, relationship, simple questions etc. Here mathematical literacy and mathematical reasoning which includes complex operation and mathematical calculations is considered. In this study, it is represented by the total marks obtained on the Mathematical Ability Test developed by the investigator on the bases of VII Standard Mathematics Book of Karnataka state Government schools.

General Intelligence: General Intelligence is the ability to think about ideas, analyze situations, and solve problems. It is measured through various types of intelligence tests. But in the present study it is represented by the total score on the Intelligence test constructed and validated by M. G. Premalatha.

Tribes: According to 342 of Indian Constitution, People who are living in foothill areas and have their own way of livings, and living in far below poverty line are defined as tribes.

Jenukuruba Tribe: As mentioned in the book *"The Mysore Tribes and Caste"* authored by Nanjundaiah and Ananth Krishnaiah (1931), "People who live in forest areas and who live on collecting honey only for their living are called 'Jenukuruba' Tribes."

Types of school: represents 2 type of schools- The government schools exclusively for tribal students in their neighborhood are called Ashrama schools. The government schools mainly for normal students, but accommodating tribal students also in the (out skirts of) tribal area are called Day schools.

METHODOLOGY

This study is descriptive cum co-relational in nature involving survey method of research. The data was collected by administering the tools considered for the study on the sample selected for the study.

Sample of the Study:

The study was conducted on a sample of 100 VII standard Jenukuruba Tribal students from Two Ashrama schools and One Day School in Hunsur Taluk. The schools were selected randomly, giving representation to types of school and all the students consisting of both boys and girls studying in VII standard were considered as the sample for the study. Total sample consisted of 50 students from Ashrama schools and 50 from Day schools out of which 50 were boys and 50 were girls.

Tools Used:

1. *Mathematical Ability Test*: Constructed by the researcher
   It consisted of totally 48 items and it is spread over 2 types of tests:

   a) 37 items were Multiple choice questions (37 items and 37 marks)
   b) 11 items were fill in the banks questions (11itmes and 11 marks)

   Cronbach's Alpha reliability was calculated and it is 0.844. This tool was constructed only for VII standard students on the basis of Government of Karnataka Text Books. It is a written test to be administered in group.

2. *General Intelligence Test:* Constructed by M.G. Premalatha.
   The test has totally 183 items spread over on 7 components as detailed below;

a) Similarities-14 items, b)Classification-15 items, c)Progressive Series-15 items, d) Analogies-15 items, e) Absurdities-24 items, f) Substitution(1)-40 items, and g) Substitution(2)-60 items. This tool was constructed

with special reference to Karnataka, for the age group of 7 to 13+, and its reliability is 0.9. It is a group paper pencil test.

Statistical Techniques Used:

Mean and Standard Deviation to describe the level of Mathematical Ability and General Intelligence of VII standard students, 't' test for testing H1 to H4 and coefficient of correlation (r) to find out the relationship between Mathematical Ability and General Intelligence of VII standard Jenukuruba students were employed to collect the data required.

ANALYSIS AND INTERPRETATION OF THE DATA

1. Level of Mathematical Ability:

The students were categorized in to 3 levels – High, Average and Low in Mathematical Ability based on the criteria of M ± σ and the details are presented in table 1.

Table 1. Level of Mathematical Ability of VII Standard Jenukuruba Tribal Students

Level of Mathematical Ability	Levels of Mathematical Ability			Total
	High	Average	Low	
Score limits	(45 and above)	(35-44)	(34 and below)	
Frequency	15	67	18	100
Percentage	15%	67%	18%	100%

It is evident from table 1 that, high percentage (67 %) of Jenukuruba tribal students exhibit average level of Mathematical Ability, 18 % of them are having low level and 15 % are having high level Mathematical Ability.

2. Level of General Intelligence:

The students were categorized in to 3 levels – High, Average and Low in General Intelligence based on the criteria of M ± σ and the details are presented in table 2.

Table 2. Level of General Intelligence of VII Standard Jenukuruba Tribal Students

Level of Mathematical Ability	Levels of General Intelligence			Total
	High	Average	Low	
Score limits	(130 and above)	(97-129)	(96 and bellow)	
Frequency	12	77	11	100
Percentage	12%	77%	11%	100%

It is evident from table 2 that, high percentage (77 %) of Jenukuruba tribal students exhibit average level of Genera Intelligence, 11 % of them are having low level and 12 % are having high level General Intelligence.

3. Difference between boys and girls in Mathematical Ability and General Intelligence:

Hypothesis 1 and hypothesis 2 for the difference between boys and girls in their Reading Ability and General Intelligence were tested using 't' test and details are given in table-3.

Table 3. Details of 't' Test for Hypotheses 1 and 2

Variable	Gender	N	Mean	SD	df	t	Level of significant
Mathematical Ability	Boys	50	38.72	6.17	98	1.50	Not significant at 0.05 level
	Girls	50	40.48	5.53			
General Intelligence	Boys	50	112.22	13.32	98	0.31	Not significant at 0.05 level
	Girls	50	113.28	20.17			

It is evident from the table 3 that the't' value is 1.50 for Mathematical Ability and 0.31 for General Intelligence are not significant at 0.05 level. Hence the null hypotheses were accepted and concluded that there is no significant difference between VII standard Jenukuruba boys and girls in their Mathematical Ability and General Intelligence.

4. Difference between VII standard Jenukuruba students from Ashrama schools and normal students from Day schools in their Mathematical Ability and General Intelligence:

Hypothesis 3 and hypothesis 4 for the difference between VII standard Jenukuruba students from Ashrama schools and normal students from Day schools in their Mathematical Ability and General Intelligence were tested using 't' test and details are given in table - 4.

Table 4. Details of 't' Test for Hypotheses 3 and 4

Variable	School	N	Mean	SD	df	t	Level of significant
Mathematical Ability	Ashrama school	52	13.12	6.66	98	21.70	significant at 0.01 level
	Normal (Day) school	48	41.21	4.46			
General Intelligence	Ashrama school	52	114.04	20.39	98	0.78	Not significant
	Normal (Day) school	48	111.35	12.49			

It is evident from the table - 4 that the 't' value is 21.70 for Mathematical Ability and 0.78 for General Intelligence and it is significant at 0.01 level for Mathematical Ability and is not significant at 0.05 level for General Intelligence. Hence, in Mathematical Ability null hypotheses was rejected, in General Intelligence null hypotheses was accepted and concluded that there is significant difference between VII standard Jenukuruba students from Ashrama schools and normal students from Day school in their Mathematical Ability and not significant in their General Intelligence.

5. Relationship between Mathematical Ability and General Intelligence of VII standard Jenukuruba students:

Hypothesis 5 was tested by computing Pearson coefficient of correlation (r). It was found to be 0.208 and is significant at 0.05 level. Hence the null hypothesis is rejected and inferred that there exists positive relationship between Mathematical Ability and General Intelligence of VII standard Jenukuruba tribal students of Hunsur Taluk.

FINDINGS OF THE STUDY

1. More than 70 % of VII standard Jenukuruba tribal students are average both in Mathematical Ability and General Intelligence, where as of the remaining percentage more or low equal % of them have exhibited high and low level in both the variables.
2. VII standard Jenukuruba tribal boys and girls do not significantly differ in their level of Mathematical Ability and General Intelligence.
3. VII standard Jenukuruba tribal students from Ashrama Schools and normal students from Day Schools significantly differ in Mathematical Ability and but not in General Intelligence. In Mathematical Ability normal students have higher mean score (41.21%) than Jenukuruba students (38.12%), where as in General Intelligence Jenukuruba students have higher (114.04 %) mean score than normal students (111.35%).
4. There is significant relationship between Mathematical Ability and General Intelligence among VII standard Jenukuruba tribal students of Hunsur Taluk.

EDUCATIOAL IMPLICATIONS

It is evident from the study that, Mathematical Ability and General Intelligence are related to each other. And also about 15 % of VII standard Jenukuruba tribal students have higher level of Mathematical Ability and General Intelligence. Remaining 70 % average and 15 % poor students are to be upgraded to reach the higher level both in Mathematical Ability and General Intelligence. Hence it is a challenging task for teacher and others interested in education of tribal students. Teachers should work on finding different ways to teach mathematics; i.e., instead of just memorizing the multiplication tables, explain that 8 x 2 = 16, so if 16 is doubled, 8 x 4 must = 32 and promising and motivating strategies are to be thought of to improve the quality of teaching-learning of Mathematics and student participation in learning and other activities. This further implies to provide quality teacher education in Mathematics and also teachers practice estimating as a way to begin solving mathematical problems.

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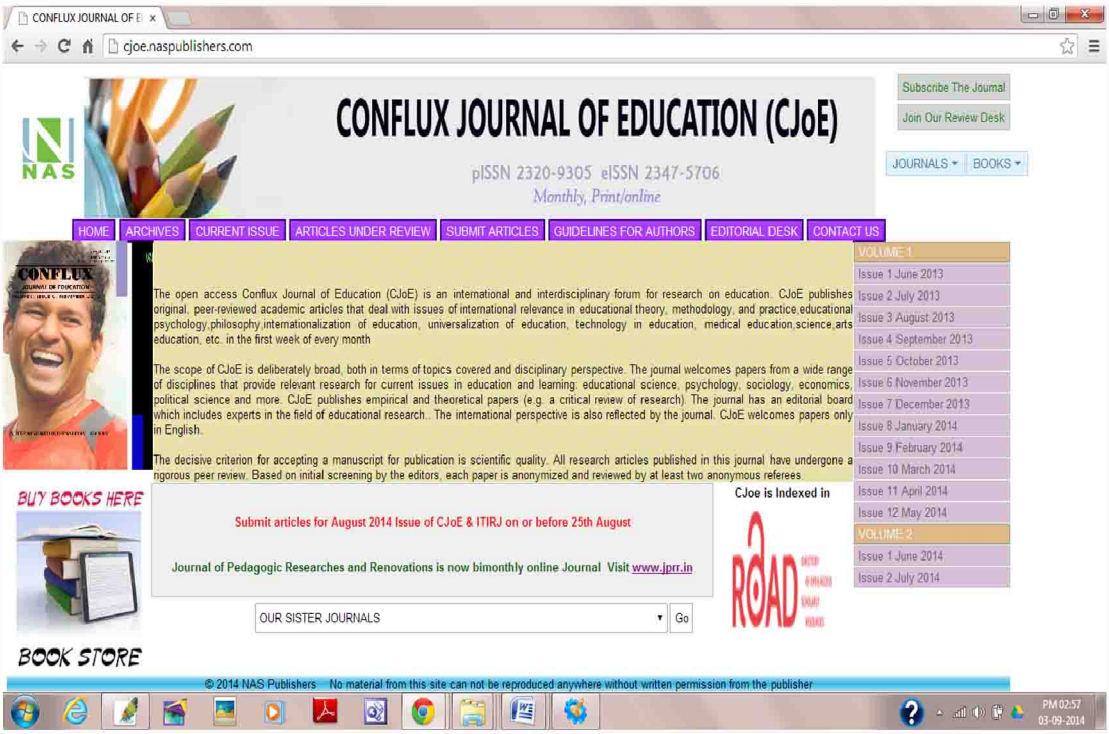

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