

A COMPARATIVE STUDY OF NORMS OF SECONDARY AND HIGHER SECONDARY SCHOOL STUDENTS ON TEST OF NON VERBAL INTELLIGENCE

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Abstract

The present study investigated the Intelligence of Secondary and Higher Secondary School Students of Maharashtra. The study was conducted on fourteen hundred and forty (1440) class 9th to 12th by giving due representation to boys and girls as well as rural and urban location of the six administrative regional zone in Maharashtra state, namely: Pune, Aurangabad, Amravati, Nasik, Kokan and Nagpur. The schools were selected using stratified random sampling technique. The selected schools are affiliated to SSC and HSC board of State of Maharashtra. The descriptive survey method is used for data collections. As far as Intelligence was measured by the group test of Non verbal test of intelligence constructed and standardized by More (2019). The finding of the study reported that, i) comparisons **norms of secondary and higher secondary school student on test of non verbal intelligence** shows that :- i) on **below average level** urban student's raw score are higher than rural students. ii) On **average level** urban students are on high raw score than rural students. In 10th std. urban boys are on higher raw score than other students. iii) On **above average level** urban students are on high raw score than rural students. In 9th std. urban and rural boys are on higher raw score than urban boys. 9th and 10th std. students are on high raw score than other students.

Keywords: Intelligence, Secondary and Higher Secondary School Students, Norms



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1. INTRODUCTION

Intelligence is a key factor to determine the individual's development throughout the life. It concerns to his or her every need and has effect on his or her performance in every situation. That is why it is considered to be an essential ingredient in success of any individual. Student's academic performances in school and outside the school always get affected by his intelligence. So far a career is concerned; success is counted on intelligence basis. Thus Intelligence is cognitive potentiality which helps to increase the learning abilities in the students which helps in defining achieving various demands of his environment.

2. CONCEPTS

2.1 Intelligence

Wechsler (1939) defined Intelligence as, "the aggregate or the global capacity of a person to act purposefully, to think rationally, and to deal effectively with his environment." He believed that intelligence was made up of specific elements that could be isolated, defined,

and subsequently measured. However, these individual elements were not entirely independent, but were all interrelated. His argument, in other words, is that general intelligence is composed of various specific and interrelated functions or elements that can be individually measured.

2.2 Secondary School Students -

Students of English and Marathi Medium studying in 9th to 10th standard affiliated to Maharashtra State Board.

2.3 Higher Secondary School Students -

Students of English and Marathi Medium studying in 11th to 12th standard affiliated to Maharashtra State Board.

2.4 Norms - Norms refer to the performances by defined groups on particular tests. The norms for a test are based on the distribution of scores obtained by some defined sample of individuals. Norms are used to give information about performance relative to what has been observed in a standardization sample. Norms are obtained by administering the test to a sample of people and obtaining the distribution of scores for that group. Norms can be formed on the bases like age related, grade, gender etc. There are different types of norms, in the present study age norms, gender norms, Percentile rank, stanine and standard score. Percentiles norms will be used to develop norms. Separate gender and standards wise norms will be developed

i) Age Norms:

Also known as age-equivalent scores, age norms indicate the average performance of different samples of test takers who were at various ages at the time the test was administered. For example, if the measurement under consideration is height in inches, then we know that scores (heights) for children will gradually increase at various rates as a function of age up to the middle to late teens. With the graying of America, there has been increased interest in performance on various types of psychological tests, particularly neuropsychological tests, as a function of advancing age.

ii) Percentiles:

The percentile is explained by different psychologist like Anastasi, (2006), etc. Percentile scores are expressed in terms of the percentage of the person in the standardization sample who falls below a given raw score (Anastasi 2006), Percentiles are the specific scores or point within a distribution. Percentile divides the total frequency for a set of observations into

hundredths. Instead of indicating what percentage of scores fall below a particular score, as percentile rank do, percentile indicates the particular score, below which a defined percentage of scores falls. Percentile rank scores are the most direct and ubiquitous method used to convey norm-referenced test results. Their chief advantages are that they are readily understood by test takers and applicable to most sorts of tests and test populations. A *percentile score* indicates the relative position of an individual test taker compared to a reference group, such as the standardization sample; specifically, it represents the percentage of persons in the reference group who scored at or below a given raw score. Thus, higher percentile scores indicate higher raw scores in whatever the test measures; the 50th percentile (*P50*), or median, corresponds to the raw score point that separates the top and bottom halves of the score distribution of the reference group. In a normal distribution the 50th percentile is also the group's mean level of performance. An additional advantage of percentile rank scores comes into play when there is more than one normative group for the same test or when normative groups are subdivided by categories, such as gender, age, or ethnicity. When additional norms are available, a raw score can be located within the distributions of two or more different groups or subgroups and easily converted into percentile ranks. For example, interest inventory scores for various occupational groups are often reported for men and women as separate sex group norms, so that test takers can see their rankings on a given interest and occupational scale compared to both groups. This information is particularly useful for those who are considering an occupation that is significantly segregated along sex lines, such as engineering or nursing. The separation of norms allows individuals to gauge the relative strengths of their expressed interests in comparison to members of both sex groups.

iii) Stanine:

Stanine were originally devised by the U.S. Air Force during World War II. The *standard nine*, or *stanine*, scale transforms all the scores in a distribution into single-digit numbers from 1 to 9. This device has the distinct advantage of reducing the time and effort needed to enter scores on a computer for storage and further processing. Stanine transformations also make use of cumulative frequency and cumulative percentage distributions. Stanine scores are allocated on the basis of the percentage of cases at given score ranges. Even though the stanine scale is economical and simple, its brevity and simplicity also result in a certain loss of precision.

Stanine is contraction of ‘Standard Nine’ and it has score expressed in digits ranging from 1 to 9. The mean of these scores is 5 and the standard deviation is 1.96 or approximately 2. When raw scores are transformed in to Stanine scores, they automatically take a shape approximating the normal curve. As a matter of fact, Stanine scores are the condensed scores on the C scale. In the C scale there are 11 score points ranging from 0 to 10 with the mean lying exactly at 5, for computational facilities with computer punched-card records the 2 points at both the extremes (that is, 0 on the lower end and 10 on the higher end) are combined, these leaving only a 9 point scale (called the Stanine scale). A variant of the Stanine scale is the Sten scale proposed by Canfield (1951) where there are 10 units - 5 units above and 5 units below the mean.

Raw score can be transformed in to the Stanine scale by arranging them in order of size and then giving the percentage of each Stanine score points according to normal distribution curve.

Table 1 - Normal Curve Percentage for use in Stanine Conversion

Percentage	4	7	12	17	20	17	12	7	4
Stanine	1	2	3	4	5	6	7	8	9
Percentile	P4	P5 - P10	P20 - P23	P25 - P40	P50 - P60	P70 - P77	P80 - P89	P90 - P96	P99
Rank									

The first Stanine covers 4%, second Stanine covers 7%, and third Stanine covers 12%, fourth Stanine covers 17%, fifth Stanine covers 20%, sixth 17%, seventh 12% eighth 7% and nine 4% of the total cases. When, for example, there are 300 scores earned by 300 students on the test, then the lowest 12 scores (4% of 300) would receive a Stanine score of 1; the next 21 scores would receive a Stanine score of 2, and so on. Stanine divides the percentiles into 9 divisions, with the 4, 5 and 6th stanine considered average, 7th and 8th stanine considered above average, and 9th stanine considered very much above average.

3. REVIEW OF LITERATURE

The review of the research is important for any scientific investigation. Its main objective is not only to understand the trends of research in the field but also find the gap in research if any.

The Universal Nonverbal Intelligence Test (UNIT) (Bracken & McCallum, 1998)

Bracken and McCallum (1998) designed the Universal Nonverbal Intelligence Test (UNIT) which is model-driven, multidimensional, and psychometrically sound. The UNIT is a non verbal measure of cognitive abilities designed to assess intellectual functioning of children

between the ages of 5 and 17 years who may experience a disadvantage if assessed using a traditional language-loaded measure of intelligence (Wilhoit & McCallum, 2002). Reliability - The UNIT manual includes data on internal-consistency and test-retest reliability. Internal-consistency coefficients across ages for the subtests of the UNIT range from .50 to .95. The reliabilities of Mazes are quite low (.50 to .76). Reliabilities for the Analogical Reasoning, Object Memory, and Mazes subtests are too low for use in individual decision making. The reliabilities of scales (Memory, Reasoning, Symbolic, and Non symbolic), on the other hand, exceed .87 and are sufficient for use in individual decision making. Test - retest reliability of the UNIT is based on only one study, which included 197 participants (15 at each age level). More than two-thirds of the coefficients are below the .90 coefficient necessary for making decisions about individuals. Validity - The UNIT provide evidence of correlation with other measures of intelligence and with measures of academic achievement. They show that, overall, the correlations are high.

Thurstone Model of Multiple TONI (Hammill, Pearson, & Wiederholt, 1996)

The Test of Nonverbal Intelligence, Third Edition (TONI-3) is formed measure nonverbal abstract / figural problem solving in individuals ages 6 years 0 months to 89 years 11 months in several content areas: Shape, Position, Direction, Rotation, Contiguity, Shading, Size, and Movement. The TONI-III (Brown, Sherbenou, & Johnsen, 1997) measures both abstract and figural problem-solving and is appropriate for individuals ages 6 to 89. The result of test indicates high internal consistency. The test has high reliability scores and high correlation with tests of achievement. The norms were developed using 3,400 people, subsets of this group not only include male, female but also deaf, gifted and learning disabled individuals.

The TONI-3 discusses three kinds of reliability measures - Internal Consistency, test retest reliability and Inter scorer reliability fall high range. Validity -The test validity is high on all three types of validity i.e. - i) Convergent validity is .76 and .74 for forms A and B. ii) Construct Validity is .55, iii) Discriminative Validity is .76

Naglieri Nonverbal Ability Test (NNAT) (Naglieri, 1996)

This test is used for students between grades kindergarten to 12, is can be administered on group and individually. The instrument requires “students to rely on reasoning and problem-solving skills rather than verbal skills” (Stephens, Kiger, Karnes, & Whorton, 1999). The test has been developed for seven levels, differed levels for different grades. They comprise of 39 questions for each level. The time take for administration is 30 - 45 min. Each group of 25

students needs to have one qualified instructor with minimum qualification of post graduate in psychology or education. The NNAT has been normed in a national sample of 100,000 children and adults. It NNAT has also been studied for use with special populations, including the gifted, learning disabled, and hearing-impaired students. Cross-cultural studies also validated its use with Hispanic, Asian, and other ethnic groups. Reliability studies of the NNAT indicate a range of .83 to .93 by grade level and .81 to .88 across the seven test levels.

The Raven's Progressive Matrices (Raven, Court, & Raven, 1995)

Raven's Progressive Matrices the culture fair Intelligence test was developed to measure fluid intelligence. It is free from culture factors and is influenced by biological factors rather than crystallized intelligence. Studies of the CFIT (Anastasi, 1968) indicated "a high saturation on general ability factor and a relative independence from cultural experiences". Two levels are available: Scale 1 for ages 4 to 8, which measures general mental capacity for 'g' and Scale 2 for ages 8 to 13, which measures general intelligence. Reliability for Scale 1 is .91, and .87 for Scale 2. The reliability and validity of the scale is good. It was standardized on more than 4,000 boys and girls from U.S. region.

Cattell (1940)

Cattell constructed and standardized the group and individual intelligence test for children of the age 2 months to 30 months. The test was designed to reduce the possible influence of verbal fluency, cultural climate and educational level. The reliability of the test was calculated by odd- even number method and corrected by Spearman Brown formula. Coefficient ranged from a low of 0.56 + -0.05 at the age of three months, to a high of 0.90 + - 0.01 at 18 months. The median coefficient was 0.86 + - 0.02. In 1960, Cattell devised the test in format of scale 1, 2, & 3 designed in form A & B. The scale is meant for children of 4 to 8 years and scale 2 & 3 are for adults. The reliability of the test in full form (A & B) and in short form (A) for scale 2 was estimated by applying three methods of consistency over items, consistency over parts and consistency over times on different samples. The reliability coefficient of correlation of scales 2 in full form (A & B) was found to be 0.87, 0.80 and 0.84 and in short form (A) was found to be 0.76, 0.67 and 0.73 respectively. The reliability coefficients of correlation of scales 3 in full form (A & B) were found to be 0.85 and 0.66 respectively.

Shah (1981)

A non verbal group test of Intelligence was constructed by Shah which was Spiral Omnibus type. It was Intelligence test for grades VIII to XII, age group 13 to 17 years. The test consists of six types of nonverbal tests namely: similarities, classification, analogies, series, conditions and matrices. The method of random sampling was used on 3612 pupils of Gujarat for norms development. The reliability of the test was estimated by test re-test method for different age groups ranged from 0.80 to 0.95. The tests re-test reliability for separate tests ranged from 0.60 to 0.80. The split-half reliability for different age ranged between 0.80 to 0.87 The validity of the test was obtained by correlating the test with Bhavsar' Non-verbal Test, Desai-Bhatt verbal test, school examination marks and teacher's opinion which were 0.88, 0.90, 0.57 and 0.78 respectively.

Nafde (1961)

Nafde developed a Non-verbal test of Abstract reasoning (DAT). The test was administered to 10,000 boys and girls mainly from the high schools of Bombay city. The sample was from college going students from different streams. The split-half reliability was found 0.88 and by test re-tests 0.91. The validity of the test was 0.47, 0.54 and 0.35 respectively. IQ distribution and Age norms were worked out.

4. NEED OF THE STUDY

Test is generally guided by certain norms; norm-referenced test interpretation uses standards based on the performance of specific groups of people to provide information for interpreting scores. This type of test interpretation is useful primarily when we need to compare individuals with one another or with a reference group in order to evaluate differences between them on whatever characteristic the test measures. In the present study with the help of norms performance of various classes of Secondary and higher secondary school student will be evaluated to support the learning teaching policies.

5. STATEMENT OF THE PROBLEM

A Comparative study of Norms of Secondary and Higher Secondary School Student on test of Non verbal Intelligence

6. OBJECTIVE OF THE STUDY

To compare the norms of 9th to 12th standard Rural and Urban, Male and Female student on Non verbal test of Intelligence

7. METHOD OF THE STUDY

The present study attempted to find Intelligence of secondary and higher secondary school students of Maharashtra state. Keeping the view the nature of the study, the survey method was found to be more suitable.

7.1 Population of the Study

Population:

In the present study researcher has studied finite population, where all the members are easily counted. A secondary and Higher Secondary school student of Marathi and English medium from State Board of Maharashtra is the population for the present study.

Sample:

The sample considered for the present study is from State of Maharashtra. There are total six geographical zones in State of Maharashtra; they are Pune, Kokan, Nasik, Aurangabad, Amravati and Nagpur. For selecting sample for final phase random sampling method was used. Among these six zones, one district each was selected for study where standard 9th to 12th students from Urban and Rural schools were selected randomly. 1440 students (720 Male & 720 Female) were considered as sample.

Table - 1: Sample for calculating Psychometric Properties

Sr. No.	Zone	Area	Gender		TOTAL
			Male	Female	
1	Pune	Urban	60	60	120
		Rural	60	60	120
2	Kokan	Urban	60	60	120
		Rural	60	60	120
3	Nasik	Urban	60	60	120
		Rural	60	60	120
4	Aurangabad	Urban	60	60	120
		Rural	60	60	120
5	Amravati	Urban	60	60	120
		Rural	60	60	120
6	Nagpur	Urban	60	60	60
		Rural	60	60	60
TOTAL			720	720	1440

7.2 Research Tool - Non Verbal Test of Intelligence (NVTI)

First variable in the study is intelligence. The researcher used) Non-verbal test of Intelligence (NVTI) by More, (2019). The NVTI is a tool of intelligence test meant to assess intelligence of secondary and higher secondary school students. Present tool is a part of Ph.D. dissertation

submitted to Savitribai Phule Pune University. This intelligence test comprises of nine separate categories, they are i) Series ii) Analogy iii) Classification iv) Water Reflection v) Mirror Reflection vi) Embedded Figure vii) Paper Folding viii) Pattern Completion, and ix) Trace Image.

7.3 Statistical Techniques Used

In this study Norms are established through the method of percentile and stanine, Stanine are one of the standard score therefore stanine score were used for the comparison between groups.

7.3.1 Analysis of Data

After collecting data the investigators calculated percentile and stanine norms on the categories of grade, gender and area. The calculation was done by using SPSS version 20.0 in computer.

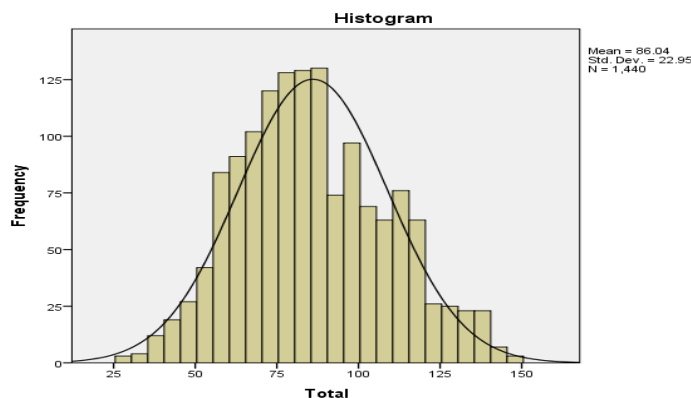
7.3.1.1 Descriptive Statistics

Table - 2: Descriptive statistics for Intelligence Score

Sub Test	Mean	Std. Deviation	Std. Error of Mean	Skewness	Std. Error of Skewness	Kurtosis	Std. Error of Kurtosis
Intelligence Score	86.04	22.95	0.605	0.284	0.064	0.395	0.129
N	1440	1440	1440	1440	1440	1440	1440

The Table Number - 2 shows descriptive statistics with the Mean & S.D. sample consist 1440. For Scale of NVTI Mean is 86.04 and S.D. is 22.95, to test the normality of the data Skewness, Kurtosis was tested with the reference of standard error of mean. It has founded that all the value of skewness & kurtosis with reference to standard error is less than 1.96 it show that data is acceptable on the Normal Distribution Curve (NDC).

Graph - 1: Normal Distribution Curve to test the Normality of the data



To test the normality of the data histogram with normal curve plotted graph 4.1 explains normality of the data it is noticed that score ranges from 20 to 140 with the mean of 78.02 and S.D. = 23.73 for N= 1440. The plot shows near to normal histogram it also implies the data has suitable for further statistical analysis.

7.3.1.2 Analysis of the Data

For Scale of NVTI norms are established for the comparison on grade, gender and region wise on the sample 1440 from which 720 were Boys and 720 were Girls form State of Maharashtra. Details norms values are shown in the **Table number - 3**

Table - 3 Area, Gender, and Grade wise Norms for total scale of NVTI

Stanine	Percentil	9th				10th				11th				12th			
		Urban		Rural		Urban		Rural		Urban		Rural		Urban		Rural	
		B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G
1	P4	45	42	56	43	55	55	52	51	61	49	45	44	61	47	56	43
2	P10	56	55	58	52	62	63	61	58	67	56	54	54	70	52	62	50
	P11	56	57	60	52	64	64	63	60	67	56	56	55	71	53	62	54
3	P20	63	67	66	63	74	74	68	64	74	64	65	60	79	60	69	58
	P23	64	68	67	65	75	75	70	66	76	65	67	61	80	62	70	60
4	P25	67	68	68	67	76	77	71	66	77	66	68	63	81	63	71	60
	P30	71	72	70	71	80	79	73	68	81	69	72	68	82	65	72	63
	P40	76	76	80	74	90	85	78	74	87	76	77	75	90	72	75	71
5	P50	85	83	85	81	97	89	82	80	95	82	81	80	100	80	82	78
	P60	91	87	90	88	109	99	86	84	97	86	85	83	106	84	88	85
6	P70	110	96	100	99	117	106	94	96	99	91	88	88	110	90	92	92
	P75	114	102	111	102	119	113	97	100	101	93	89	90	112	97	99	93
	P77	116	105	111	105	119	115	97	101	101	94	90	92	113	101	100	95
7	P80	118	109	111	108	121	117	101	103	105	97	93	94	114	104	103	96
	P89	123	119	120	114	130	127	113	111	114	106	100	104	122	113	113	104
8	P90	123	119	121	116	131	129	113	111	114	107	100	108	125	115	113	107
	P95	129	135	133	129	138	136	123	122	117	120	111	111	131	119	124	111
	P96	135	137	133	132	139	137	130	125	119	120	111	111	134	119	124	111
9	P99	136	138	140	135	140	139	132	128	122	133	122	122	135	122	133	111
N		90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
Mean		88	85	88	84	97	93	84	82	91	81	79	78	97	80	85	78

		5	4		9	6	5	7	1	7	9	8	2	4		
S.D.	27.	24.	24.	25.	25.	23.	20.	20.	17.	20.	18.	20.	20.	22.	19.	21.
	1	5	9	2	4	8	4	8	3	7	7	4	9	2	9	2

OBSERVATIONS

i) **For 9th Standard** - Table Number - 3 shows score till P₄ are considering 1st stanine, in the Total Scale of NVTI score of 45 falls under P₄ and Stanine 1. For this sub scale score ranged 45 to 136. Score 56 falls under P₁₀ and P₁₁ and Stanine 2. Similarly score 63 to 64 falls under Stanine 3 score 67 to 76 falls under Stanine 4, Total Scale of NVTI score 85 to 91 falls under Stanine 5. Scores from 110 to 136 fall under the Stanine of 6 to 9. These Stanine scores are for **9th Grade Urban Boys**. On same line Stanine, scores for **9th Grade Urban Girls** are established. Stanine range of 1 to 3 lies at the raw score of 42 to 68 on the NVTI. Raw scores of 68 to 105 lies between the Stanine score of 4 to 6. Lastly, Stanine score of 7 to 9 lies between the score range of 109 to 138 explaining the highest score on the scale. Similarly for **9th Grade Rural Boys** Student's raw scores ranged from 56 to 140 on NVTI. For Stanine points 1 to 3 raw scored ranged 56 to 67. Similarly raw scores 68 to 112 lies between Stanine ranges point 4 to 6 and lastly raw scores for 115 to 140 lies between Stanine ranges of 7 to 9 for rural boys students. For **9th Grade Rural Girl's** Students raw scores ranged from 43 to 135 on NVTI. For Stanine, points 1 to 3 raw scored ranged 43 to 65. Similarly raw scores 67 to 105 lies between Stanine ranges point 4 to 6 and lastly raw scores for 108 to 135 lies between Stanine ranges of 7 to 9 for 9th Grade Rural Girls Students.

ii) **For 10th standard** - Table Number - 3 shows score till P₄ are considering 1st Stanine, in the Total Scale of NVTI score of 55 falls under P₄ and stanine 1. For this subscale score ranged 55 to 140. Score 62 to 64 falls under P₁₀ and P₁₁ and Stanine 2. Similarly score 74 to 75 falls under Stanine 3 score 76 to 90 falls under Stanine 4, Total Scale of NVTI score 97 to 109 falls under Stanine 5. Scores from 117 to 140 fall under the Stanine of 6 to 9. These Stanine scores are for **10th Grade Urban Boys**. On same line Stanine, scores for **10th Grade Urban Girls** are established. Stanine ranges of 1 to 3 lies at the raw score of 55 to 75 on the NVTI. Raw scores of 77 to 115 lies between the Stanine score of 4 to 6. Lastly, Stanine score of 7 to 9 lies between the score range of 117 to 139 explaining the highest score on the scale. Similarly for **10th Grade Rural Boys** Student's raw scores ranged from 52 to 132 on NVTI. For Stanine points 1 to 3 raw scored ranged 52 to 70. Similarly raw scores 71 to 97 lies between Stanine ranges point 4 to 6 and lastly raw scores for 101 to 132 lies between Stanine

ranges of 7 to 9 for Rural Boys students. For **10th Grade Rural Girl's** students' raw scores ranged from 51 to 128 on NVTI. For stanine, points 1 to 3 raw scored ranged 51 to 66. Similarly raw scores 66 to 101 lies between Stanine ranges point 4 to 6 and lastly raw scores for 103 to 128 lies between Stanine ranges of 7 to 9 for **10th Grade Rural Girls** Students.

iii) For 11th standard - Table Number - 3 shows score till P₄ are considering 1st Stanine, in the Total Scale of NVTI score of 61 falls under P₄ and stanine 1. For this subscale score ranged 61 to 120. Score 67 falls under P₁₀ and P₁₁ and Stanine 2. Similarly score 74 to 76 falls under Stanine 3, score 77 to 87 falls under stanine 4, Total Scale of NVTI score 95 to 97 falls under Stanine 5. Scores from 99 to 120 fall under the Stanine of 6 to 9. These Stanine scores are for **11th Grade Urban Boys**. On same line Stanine, scores for **11th Grade Urban Girls** are established, Stanine range of 1 to 3 lies at the raw score of 49 to 65 on the NVTI. Raw scores of 66 to 94 lies between the Stanine score of 4 to 6. Lastly, Stanine score of 7 to 9 lies between the score range of 97 to 132 explaining the highest score on the scale. Similarly for **11th Grade Rural Boys** student's raw scores ranged from 45 to 120 on NVTI. For Stanine points 1 to 3 raw scored ranged 45 to 67. Similarly raw scores 68 to 90 lies between Stanine ranges point 4 to 6 and lastly raw scores for 93 to 120 lies between Stanine ranges of 7 to 9 for Rural Boys Students. For **11th Grade Rural Girl's** student's raw scores ranged from 44 to 121 on NVTI. For Stanine, points 1 to 3 raw scored ranged 44 to 61. Similarly raw scores 63 to 92 lies between Stanine ranges point 4 to 6 and lastly raw scores for 94 to 121 lies between Stanine ranges of 7 to 9 for **11th Grade Rural Girls** Students.

iv) For 12th standard - Table Number - 3 shows score till P₄ are considering 1st stanine, in the Total Scale of NVTI score of 61 falls under P₄ and Stanine 1. For this subscale score ranged 61 to 135. Score 70 to 71 falls under P₁₀ and P₁₁ and Stanine 2. Similarly score 79 to 80 falls under Stanine 3. Score 81 to 90 falls under stanine 4, Total Scale of NVTI score 100 to 106 falls under Stanine 5. Scores from 110 to 135 falls under the Stanine of 6 to 9. These Stanine scores are for **12th Grade Urban Boys**. On same line Stanine, scores for **Urban 12th Grade Girls** are established. Stanine range of 1 to 3 lies at the raw score of 47 to 62 on the NVTI. Raw scores of 63 to 101 lies between the Stanine score of 4 to 6. Lastly, Stanine score of 7 to 9 lies between the score range of 104 to 121 explaining the highest score on the scale. Similarly for **12th Grade Rural Boys** Student's raw scores ranged from 56 to 130 on NVTI. For Stanine points 1 to 3 raw scored ranged 56 to 70. Similarly raw scores 71 to 100 lies between Stanine ranges point 4 to 6 and lastly raw scores for 103 to 130 lies between Stanine

ranges of 7 to 9 for rural boys students. For **12th Grade Rural Girl's** student's raw scores ranged from 43 to 118 on NVTI. For Stanine, points 1 to 3 raw scored ranged 43 to 60. Similarly raw scores 60 to 95 lies between Stanine ranges point 4 to 6 and lastly raw scores for 96 to 118 lies between Stanine ranges of 7 to 9 for 12th Grade Rural Girls Students.

FINDINGS:

I) Class wise

As mention in objective To compare the norms of 9th to 12th standard Rural and Urban, Male and Female student on Non verbal test of Intelligence it is found that:-

i) For Standard 9th: - Within '**Below Average**' (Percentile P4 to P23) range it is found that, raw score of urban boys is comparatively low than rural boys. Raw score of rural boys is high than rural girls. Urban girls raw score is high than urban boys and rural girls. In '**Average**' (Percentile P25 to P77) range, there is difference seen in raw score of boys and girls. Raw score of urban students is comparatively high than that of the score of rural students. Urban boys are on high score than urban girls and rural boys. And raw score of rural boys is high than and rural girls. In '**Above average**' (Percentile P80 to P99) range, there is a little difference seen in the raw score of rural and urban students. Rural boys show high raw score than urban boys. Urban girls are on high score than urban boys and rural girls. Rural boys are on high score than rural girls.

ii) For Standard 10th: - In '**Below Average**' (Percentile P4 to P23) range it is found that, raw score of urban students are comparatively high than that of the score of rural students. Raw score of urban boys is low than urban girls but higher than rural boys. Raw score of urban girls is higher than urban boys and rural girls. And raw score of rural boys is high than rural girls. In '**Average**' (Percentile P25 to P77) range also, raw score of urban students is comparatively high than that of the score of rural students. Urban boys are on high raw score than urban girls and rural boys. Urban girls raw score is high than rural girls. Rural boy's raw score is low than rural girls. In '**Above average**' (Percentile P80 to P99) range, there is difference seen in the raw score of rural and urban students. Urban students are on high score than rural students. Raw score of urban boys is high than rural boys and urban girls whereas, rural boys are on high raw score than rural girls.

iii) For Standard 11th: - In '**Below Average**' (Percentile P4 to P23) range it is found that, raw score of urban students is comparatively high than that of the score of rural students. Raw score of urban boys is high than urban girls and rural boys. And raw score of rural boy is

high than rural girls. Urban girls are on high raw score than rural girls. In '**Average**' (Percentile P25 to P77) range also, raw score of urban students is comparatively high than that of the score of rural students. Urban boys are on high score than urban girls and rural boys. And raw score of rural girls is high than rural boys. Urban girls raw score is high than rural girls. In '**Above average**' (Percentile P80 to P99) range, raw score of urban students is comparatively high than that of the score of rural students. The raw score of urban girls is higher than urban boys and rural girls. Urban boys are also on high score than rural boys. Rural girls are on high score than rural boys.

iv) For Standard 12th: - In '**Below Average**' (Percentile P4 to P23) range it is found that, there is difference in raw score of urban and rural students. Raw score of urban boys is high than rural boys and urban girls. Raw score of rural boys is also high than rural girls. Urban girl's raw score is on high than rural girls. In '**Average**' (Percentile P25 to P77) range also, raw score of urban boys is comparatively high than that of the score of urban girls and rural boys. Raw score of rural boys is also high than rural girls. Urban girls are on high score than rural girls. In '**Above average**' (Percentile P80 to P99) range, there is difference seen in the raw score of boys and girls. Urban students are on high score than that of the score of rural students. Urban boys are on high score than urban girls and rural boys. Rural boys are seen on high score than rural girls.

II) Performance wise

As mention in objective To compare the norms of 9th to 12th standard Rural and Urban, Male and Female student on Non verbal test of Intelligence it is found that:-

i) Below Average - (Percentile P4 to P23) - While comparing the raw scores of NVTI within the 9th, 10th, 11th and 12th STD students, it can be interpreted that, the raw scores falling in below average ranges from lowest score 42 and highest score 80. Urban student's raw score are higher than rural students.

ii) Average - (Percentile P25 to P77) - While comparing the raw scores within the 9th, 10th, 11th and 12th STD students, it can be interpreted that, the raw scores ranges from lowest score 63 and highest score 119. From data it reveals that urban students are on high raw score than rural students. In 10th std. urban boys are on higher raw score than other students.

iii) Above average - (Percentile P80 to P99) - Comparative study of raw score of 9th, 10th, 11th and 12th STD student's show that, the raw scores ranges from lowest score 93 and highest score 140. From data it reveals that urban students are on high raw score than rural

students. In 9th std. urban and rural boys are on higher raw score than urban boys. 9th and 10th std. students are on high raw score than other students.

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