

A COMPARATIVE STUDY OF NON VERBAL INTELLIGENCE BETWEEN RURAL AND URBAN SECONDARY SCHOOL STUDENT OF MAHARASHTRA STATE

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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, i.e. Secondary and Higher Secondary School Board controlled by the department of education, government 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 between rural and urban secondary and higher secondary school a student on NVTI shows that urban student are more intelligent than rural students. ii) Comparisons between male and female secondary and higher secondary school students on NVTI shows that male student are more intelligent than female students.

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



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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. MEANING OF INTELLIGENCE

Intelligence is one of the most popular concepts defined and studied variously in education and psychology. As it is considered as the major key ingredient in success of an individual,

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it plays major role in guiding and driving the person's strengths towards opportunities and converting them in to achievements. Apart from all these popularities, every individual is considered as a separate entity, so this study traces the difference in individual intelligence differences on NVTI. Following are some of the important definitions given by the scholars and experts about intelligence.

In the words of **Binet (1905)** "It seems to us that in intelligence there is a fundamental faculty, the alteration or the lack of which, is of the utmost importance for practical life. This faculty is judgement, otherwise called good sense, practical sense, initiative, the faculty of adapting one's self to circumstances."

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.

As per **Burt (1957)** intelligence is a quality that is intellectual and not emotional or moral: in measuring it we try to rule out the effects of the child's zeal, interest, industry, and the like. Secondly, it denotes a general capacity, a capacity that enters into everything the child says or does or thinks; any want of 'intelligence' will therefore be revealed to some degree in almost all that he attempts;"

According to **Piaget (1963)** Intelligence is assimilation to the extent that it incorporates all the given data of experience within its framework. There can be no doubt either, that mental life is also accommodation to the environment. Assimilation can never be pure because by incorporating new elements into its earlier schemata the intelligence constantly modifies the latter in order to adjust them to new elements."

According to **Anastasi (1992)** "Intelligence is not a single, unitary ability, but rather a composite of several functions. The term denotes that combination of abilities required for survival and advancement within a particular culture."

As per **Gardner (1993)** "intelligence is the ability to solve problems, or to create products, that are valued within one or more cultural settings."

As per Freeman cited in **Sternberg (2000)** intelligence is related to “Sensory capacity, capacity for perceptual recognition, quickness, range or flexibility or association, facility and imagination, span of attention, quickness or alertness in response.”

As per Pinter cited in **Sternberg (2000)** intelligence refers to the “Ability to adapt oneself adequately to relatively new situations in life.”

As stated by **Peterson**, cited in Sternberg (2000) intelligence is “A biological mechanism by which the effects of a complexity of stimuli are brought together and given a somewhat unified effect in behavior.”

Simonton (2003) defined intelligence as a certain set of cognitive capacities that enable an individual to adapt and thrive in any given environment they find themselves in, and those cognitive capacities include things like memory and retrieval, and problem solving and so forth. There’s a cluster of cognitive abilities that lead to successful adaptation to a wide range of environments.”

As per **Anderson (2006)** “intelligence is related to that facet of mind underlying our capacity to think, to solve novel problems, to reason and to have knowledge of the world.”

Intelligence is power or faculty which helps us in understanding thinking and reasoning about the things. Intelligence is the only word which makes the human being difference from animal. Gods gives us with certain cognitive ability to man, by which man become a rational being. Our learning and thinking are possible through intelligence only. It is an organization comprising the abilities of readiness, correctness and of understanding complicated and abstract things and with its help a person shows necessary mental control and action in solving problems. Intelligence is a term describing one or more capacities of the mind. In different context the term intelligence can be defined in different ways, including the capacities for abstract thought, understanding, communication, reasoning, learning, planning, and problem solving. Intelligence is most widely studied in human, but it is also observed in animal and plants. Intelligence is the necessary conditions for achievement. It is impossible to achieve without corresponding intelligence which is comprised of mental abilities. Ability is about the quality of being able to do something which serves as the foundation of achievement. The process of achievement fostered the development of intelligence, (Kornhaber, Krechevsky and Gardener 1990), convinced of intelligence as the product of dynamic process involving individual abilities, the values and opportunities afforded by society. This statement emphasizes that the development of

individual abilities infers the development of intelligence is correlated with the development of individual abilities through individual experience in particular environment. The process of achievement is an important experience and displays directly the development of individual competencies. Intelligence is evidenced by past and present achievement used for predicting future achievement. Intelligence sets up the foundation of achievement. The occurrence of achievement requires not only the corresponding intelligence but also motivated and the supported by appropriate academically congenial environment.

3. CONCEPTS

3.1 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.

3.2 Secondary School Students -

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

3.3. Higher Secondary School Students -

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

4. REVIEW OF RELATED LITERATURE

While studying the comparison between the intelligence of male and female, urban and rural students at secondary and higher secondary level, some previous studies were reviewed:

Pathak (1972) in his study showed that besides influencing in academic achievement, intelligence also worked for creative writing. The creative writers showed higher intelligence as compared to an average population. The high creative writers were better able to handle anxiety producing situations, tension and were more sensitive and quicker in their reaction to environmental stimuli.

Study by **Shanmugasumdaram (1983)** supported that women had higher intelligence, greater achievement motivation and better study habits and they also performed academically better than men students.

Habibolla, N. and Abdullah, H. (2010) in their study entitled “Intelligence and academic Achievement: An investigation of gender differences” found that there existed a significant relationship between intelligence and academic achievement for both male and female separately and in total sample.

Dhull, Jitender (2012) in a comparative study of the achievement in science in relation to intelligence, academic anxiety and reading interest of the X class students in government and private schools of Haryana, revealed that there was a significant difference in the mean scores of academic anxiety of government and private school students. It might, therefore be concluded that government school students had less academic anxiety in comparison to private school students.

Saikia, Pallabi and Choudhary (2014) made a study on “Effect of Intelligence on Academic Achievement of Secondary School Students- a Study in Lakhimpur District of Assam”. The objective of this study was to study the academic achievement of the secondary school students according to gender and place of residence; to determine the level of intelligence to gender and place of residence. This study is conducted on a sample of 100 classes X students from government and provincialised schools of Lakhimpur district of Assam. The normative survey method is used for data collection. The findings of the study was: (i) there is difference between boys and girls student on the academic achievement in the test examination, (ii) there is difference between rural and urban students on the average academic achievement in the test examination and (iii) it is also found that the mean score of intelligence for both rural and urban students is quite high.

Dutta, Jadab, Chetia, Pranab and Soni, J.C (2015) conducted a study on “A Comparative Study on Intelligence of Secondary School Students in Lakhimpur District of Assam”. This study is conducted on a sample of 500 Students comprised of 250 boys and 250 girls selected randomly from 16 Government and Private secondary schools of Lakhimpur district of Assam. The descriptive survey method is used for data collection using group test of mental ability was constructed and standardized by Dr. S. Jalota. The findings of the study reported that there are no difference on intelligence in respect of male and females of private and rural male/female private secondary school students. But it

reported real difference in overall between government and urban private secondary school students.

Dutta, Jadab, Rajkower, Suresh and Soni, J.C (2015) conducted a study on “A Comparative Study on Intelligence of Secondary School Students in Lakhimpur and Sonitpur Districts of Assam”. This study is conducted on a sample of 1000 Students of comprised 500 boys and 500 girls selected randomly from 32 Government and Private secondary schools of both districts of Assam. The descriptive survey method is used for data collection using group test of mental ability was constructed and standardized by Dr. S. Jalota. The study showed that there are major differences in the intelligence of secondary school students of both districts whether they belong to government and private male/female and urban male and female private students. This study also showed that there is a no difference between rural and urban govt., male / female; govt., male / female of rural; male/female of urban; male / female of private and rural male and female of private secondary students of both the districts on intelligence.

Dutta, Jadab, Rajkower, Suresh and Soni, J.C (2016) conducted a study on “A Comparative Study on Intelligence of Secondary School Students in Sonitpur District of Assam”. This study is conducted on a sample of 500 Students comprised of 250 boys and 250 girls selected randomly from 16 Government and Private secondary schools of Sonitpur district of Assam. The descriptive survey method is used for data collection using group test of mental ability was constructed and standardized by Dr. S. Jalota. The study clearly revealed that in the whole sample the secondary school students studying in government and private schools as well as belonging to in urban and rural areas do differ significantly in respect of their intelligence. However, the separate comparison of male and female students of (a) government and private schools; (b) government schools located in urban and rural areas and as well as (c) private schools located in urban and rural areas showed no significant mean differences on their intelligence scores.

Dutta (2016), studied intelligence of secondary school student of Arunachal Pradesh 800 students from class 10th equally presentation Boys and Girls students as well as Urban and Rural Students was maintained. Study reported male’s students score high on intelligence compare to female students. Present research has similar objective of state of Maharashtra

5. NEED OF THE STUDY

The present study has been designed to study the Intelligence of Secondary and higher secondary School Students in Maharashtra. To help student performs as per inborn ability measuring intelligence of the students for knowing whether the school performance of the student is correlating with his / her intelligence level is essential.

The factual information that can be analysed after comparing the academic performance and measured intelligence level, would be useful to channelizes and provide intervention in achieving a proper growth and development of the student through the schooling period. Secondary and Higher Secondary school performance is known as an important period in student's life where he / she have to fix their career paths. If this process of selecting suitable higher education goes according to his / her intelligence level that may help him / her to take over appropriate career. In the present circumstance it is seen that there are few studies taken in some Indian researchers. This prompted the researchers to take up the present problem for the study.

6. STATEMENT OF THE PROBLEM

The problem under study is stated as "A Comparative Study on Intelligence of Secondary and Higher Secondary School Students of Maharashtra State".

7. OBJECTIVE OF THE STUDY

- i) To test the significance of the mean differences on intelligence of male and female
- ii) To test the significance of the mean differences on intelligence of Rural and urban

8. HYPOTHESIS

- i) There will be no significant difference between male and female secondary and higher secondary school student on NVTI
- ii) There will be no significant difference between urban and rural secondary and higher secondary school student on NVTI

9. 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.

9.1 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

9.2 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.

9.3 Statistical Techniques Used

In this study various statistical measures such as Mean, S.D., and ‘t’ test were used for analyzing and interpreting data.

9.3.1 Analysis of Data

After collecting data the investigators used the mean, standard deviation and independent sample ‘t’ test for analyzing the data. The calculation was done by using SPSS version 20.0 in computer.

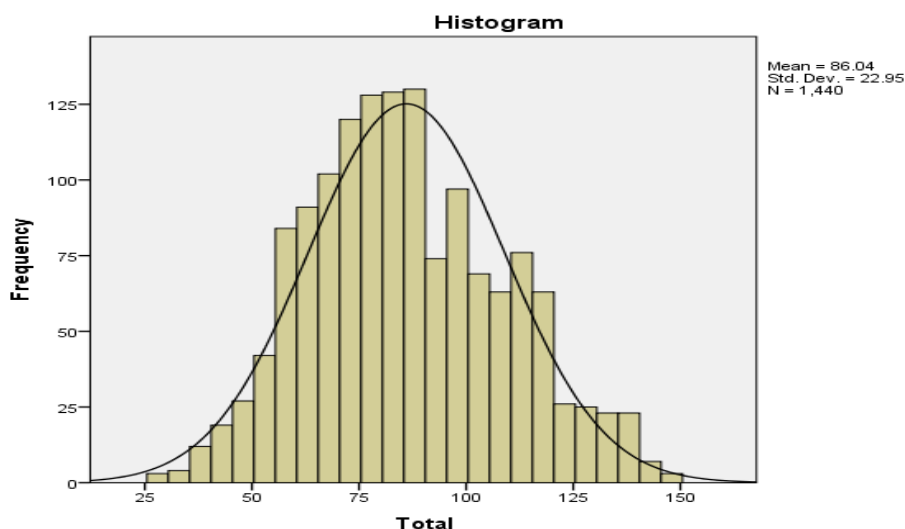
9.3.1.1 Descriptive Statistics

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.

Hypothesis - 1: There will be no significant difference between male and female secondary and higher secondary school student on NVTI

Table - 4: Showing the Mean, Standard deviation and 't' - value of intelligence between Male and Female secondary and Higher secondary school student of State of Maharashtra.

Variable	Male		Female		't' value
	Mean	Std. Deviation	Mean	Std. Deviation	
Intelligence Score	88.99	22.74	83.09	22.790	4.92**
Note * Significance at .05 level, ** Significance at .01 level					

Male and Female secondary and higher secondary school students were compared using independent sample t test for Male students M = 88.99, SD = 22.74 and Female students M = 83.09, SD = 22.79. $t = 4.92^{**}$ $p < 0.01$. With the help of t score it is conformed that Male student have score higher on NVTI compare to Female secondary and higher secondary school students. Therefore, hypothesis no. 1 there will be no significant difference between male and female secondary and higher secondary school student on NVTI is accepted with the finding of male student score high compare to female secondary and higher secondary school students.

Hypothesis - 2: There will be no significant difference between urban and rural secondary and higher secondary school student on NVTI

Table - 3: Showing the Mean, Standard deviation and 't' - value of intelligence between Urban and Rural secondary and Higher secondary school student of State of Maharashtra.

Variable	Urban		Rural		't' value
	Mean	Std. Deviation	Mean	Std. Deviation	
Intelligence Score	89.42	23.66	82.67	21.710	5.64**
Note * Significance at .05 level, ** Significance at .01 level					

Urban and Rural secondary and higher secondary school students were compared using independent sample t test for Urban students $M = 89.42$, $SD = 23.66$ and $M = 82.67$, $SD = 21.71$. $t = 5.64^{**}$ $p < 0.01$. With the help of t score it is conformed that urban student have score higher on NVTI compare to Rural secondary and higher secondary school students. Therefore, hypothesis no. 1 there will be no significant difference between urban and rural secondary and higher secondary school student on NVTI is accepted with the finding of urban student scored high compare to rural secondary and higher secondary school students.

10. FINDING OF THE STUDY

- i) Male scored higher on NVTI compare to female Secondary and higher secondary school students
- ii) Urban student scored higher on NVTI compare to Rural Secondary and higher secondary school students

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