

# Naturalistic Intelligence Among Secondary and Higher Secondary Students

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## Abstract:

Naturalistic Intelligence deals with sensing patterns in and making connections to elements in nature. Using this same intelligence, people possessing enhanced levels of this intelligence may also be very interested in other species, or in the environment and the earth. The objectives of the present study were to find out the status of Naturalistic Intelligence of Secondary Students with special reference to Gender, Locality and Category. The descriptive survey method and purposive sampling technique was used. For data collection, self-constructed questionnaire was used. Investigation revealed that Gender, Locality and Category do not play significant role in Naturalistic Intelligence among Secondary and Higher Secondary Students.

**Keywords:** Naturalistic Intelligence, Education.

## INTRODUCTION:

Intelligence or cognitive development is a bio-psychological potential to process information that can be activated to solve problems. It is the ability to learn from experience and to adapt to, shape, and select environments. It has traditionally been thought of as an inherited entity that one is born with and cannot be changed. Professor Gardner at Harvard's Graduate School of Education argued that there are better or alternative ways to measure intelligence than standard IQ tests. He first proposed nine intelligences and insists that all people are born with one or more intelligences and that people can be smart in a number of different ways. This implies that we are all intelligent in different ways. Naturalist intelligence is one of Howard Gardner's nine multiple intelligences, which involves how sensitive a person is to nature and the world.

Naturalistic Intelligence deals with sensing patterns in and making connections to elements in nature. Using this same intelligence, people possessing enhanced levels of this intelligence may also be very interested in other species, or in the environment and the earth. Children possessing this type of intelligence may have a strong affinity to the outside world or to animals, and this interest often begins at an early age. Frequently, they may notice things others might not be aware of. As children these people often like to collect, classify, or read about things from nature—rocks, fossils, butterflies, feathers, shells, and the like. During pre-historic times, hunter-gatherers used to rely on naturalistic intelligence to identify edible and non-edible flora and fauna. Today, naturalistic intelligence may be seen in the way we relate to

our surroundings and the role that each part of our surroundings plays. The nature smarters may work as farmers, gardeners, botanists, geologists, florists, archaeologists, FBI agents who distinguish fingerprints and other such occupations.

In 1983, Howard Gardner published seven types of intelligence in his famous book 'FRAMES OF MIND' (1983). These are: verbal/linguistic, mathematical/logical, spatial, musical, kinesthetic, interpersonal, and intrapersonal. Figure 1 illustrates Howard Gardner's theory of multiple intelligences. In 2006 (twenty-three years later), Gardner added an eighth branch to his model in another book. This eighth branch is known as naturalistic intelligence. Naturalistic intelligence is a new addition that meets Gardner's criteria an intelligence. According to Gardner, naturalistic intelligence is the ability to identify, classify, and manipulate elements of the environment, objects, animals or plants. The intelligence has to do with being in tune with nature and one's natural environment.

Naturalistic intelligence is the ability to identify, observe, categorize, understand, and manipulate natural elements like plants, animals, and the environment. People with high naturalistic intelligence are interested in nurturing, exploring, and learning about the environment and other species. They're also said to be sensitive to even the most subtle changes in their environment, which help them find patterns and relationships with nature. People have likely been exhibiting naturalistic intelligence since the time of the first humans. Centuries ago, their survival relied on their ability to recognize useful and dangerous subjects, observe climate changes, and use the land for resources like food and potable water.

#### REVIEW OF RELATED LITERATURE:

**Arba'at Hassana, et.al. (2010)** made an investigation to identify the status of the level of environmental awareness in the concept of sustainable development among secondary school students. The survey was conducted on 340 respondents (n=340) of Form Four and Form Five students from urban and suburban areas in the district of Hulu Langat, Selangor. Research outcomes showed that secondary school students had a —high levell of environmental awareness in the concept of sustainable development. The Pearson correlation showed that there was a positive but weak relationship between the level of environmental awareness and the practices for sustainable development.

**Boeve-de Pauw, et.al. (2013)** studied on The Effect of Eco-Schools on Children's Environmental Values and Behaviourl. Controlling for effects of gender and socio-economic status, analyses show that eco-schools do not affect the environmental behaviour of their students or their preservation values. Eco-school students do, however, show lower utilisation values than control school students. Results furthermore indicate that preservation values and not utilisation values impact environment behaviour.

**Brymer, et.al. (2013)** made a study on Ecological Dynamics as a Theoretical Framework for Development of Sustainable Behaviours towards the Environmentll. The salient points of the model are highlighted for educators interested in manipulating environmental constraints in the learning process, to design effective learning programmes in environmental education. The study is concluding by providing generic principles of application that might define the learning process in environmental education programmes. He provided an overview of research evidence for the existence of environmental citizenship, considering the origins of the term, exploring how it 1s defined and drawing on a series of case studies to identify the characteristics of environmental citizens. It asks whether approaches based on environmental citizenship could be used as a means of encouraging pro-environmental behaviour and sets out more specific policy recommendations for how this may be done.

**Dixon and McPhee (2000)** sketched a brief biography of Howard Gardner in their article "Howard Gardner and Education: The theory of multiple intelligences" and described naturalistic intelligence as an individual's ability to perceive patterns in nature and to classify them. They also reported that 'an evolutionary perspective is helpful, dating from our earliest origins as hunter-gatherers who depended upon this particular intelligence to find food and therefore to survive. In evolved civilization, naturalistic intelligence is concerned with the ways in which we relate to our environment, perceive it and ultimately use it.

**Gardia, (2010)** in his study on "Value based Environmental education: A Conceptual Framework" emphasized the need and purpose of value based environmental education He stated that the increasing material greed of modern man has posed a threat for his own survival. Therefore, once again there is a need to induce such cultural transformation through education where desired values towards environment may be nurtured. Tripathi and Pandey (2010) compared the naturalistic intelligence of 180 adolescents (90 males and 90 females) in a study conducted by them and concluded that male and female adolescents do not differ significantly in their naturalistic intelligence. Their findings also suggested that no significant difference exists in the naturalistic intelligence between the adolescents studying in different schools of Varanasi namely government, semi-government and private schools.

**Karupagam (2014)** conducted a study on the influence of Naturalistic Intelligence and Environmental Awareness on teaching science among school teachers. The study adopted a Normative survey method of research. The investigator identified five dimensions of Naturalistic Intelligence. They are admiration, outdoor activities, global warming, biophilia and scientific hobbies. Participants were 500 school teachers randomly selected from 30 schools in the Tirunelveli district (195 male and 305 female). The research instrument used for data collection were the Naturalistic Intelligence scale, Environmental Awareness scale and Teaching Science Scale. The findings are the Naturalistic Intelligence and Environmental Awareness did not influence the teaching science of school teachers. The correlation test reveals that there is a significant relationship between Naturalistic Intelligence and teaching of science, there is a significant relationship between Environmental Awareness and teaching of science.

**Mondal, Roy and Das (2009)** in their study of "Achievement in Environmental Education" developed a questionnaire in order to test the achievement level in environmental education. The questionnaire was standardized and tested on class VIII students of Khatundi High School, ketugram-1, Burdwan, West Bengal. He concluded that boys are better than girls in two aspects of EE i.e in overall achievement in Environmental Education and Cognitive style. They explain that the success level of boys is better than girls due to their participation in co- curricular activities and other formal and non-formal activities. They emphasize that for overall development of EE schools should take some initiatives regarding teaching- learning process together with other activities which are directly or indirectly associated with EE.

**Shabana (2013)** studied the difference in Academic Achievement of Higher Secondary School students based on Emotional Intelligence and its four components namely interpersonal skill, intrapersonal skill, interpersonal management, intrapersonal management Study was conducted on one hundred sixty higher secondary school students selected by random sampling technique. Findings indicate no significant difference in the academic achievement of higher secondary school students based on Interpersonal skill, intrapersonal skill, interpersonal management and intrapersonal management. But a significant difference exists in academic achievement based on interpersonal skills.

**OBJECTIVES:**

- ❖ To find out the status of Naturalistic Intelligence of Secondary Students with special reference to Gender.
- ❖ To find out the status of Naturalistic Intelligence of Secondary Students with special reference to Locality.
- ❖ To measure the status of Naturalistic Intelligence of Secondary Students with special reference to Category.
- ❖ To find out the status of Naturalistic Intelligence of Higher Secondary Students with special reference to Gender.
- ❖ To find out the status of Naturalistic Intelligence of Higher Secondary Students with special reference to Locality.
- ❖ To measure the status of Naturalistic Intelligence of Higher Secondary Students with special reference to Category.
- ❖ To compare the relationship between Secondary and Higher Secondary students towards Naturalistic Intelligence.

**HYPOTHESES:**

**H01:** There is no significant difference between male and female secondary students towards Naturalistic Intelligence.

**H02:** There is no significant difference between urban and rural Secondary students towards Naturalistic Intelligence.

**H03:** There is no significant difference between Reserved and Unreserved Secondary students towards Naturalistic Intelligence.

**H04:** There is no significant difference between male and female higher secondary students towards Naturalistic Intelligence.

**H05:** There is no significant difference between urban and rural higher secondary students towards Naturalistic Intelligence.

**H06:** There is no significant difference between Reserved and Unreserved higher secondary students towards Naturalistic Intelligence.

**H07:** There is no significant difference between secondary and higher secondary student towards Naturalistic Intelligence.

**METHODOLOGY:**

The present study attempts to find out Naturalistic Intelligence among secondary and higher secondary school students of Nadia District in West Bengal and presenting the attribute of gender, locality, category. Therefore, Descriptive Survey method has followed for the present study.

**SAMPLE:**

In this study, 250 secondary and higher secondary students from 2 schools of Nadia District under West Bengal Board of Secondary Education and West Bengal Council of Higher Secondary Education have been selected as the sample of the study.

**ANALYSIS AND INTERPRETATION:**

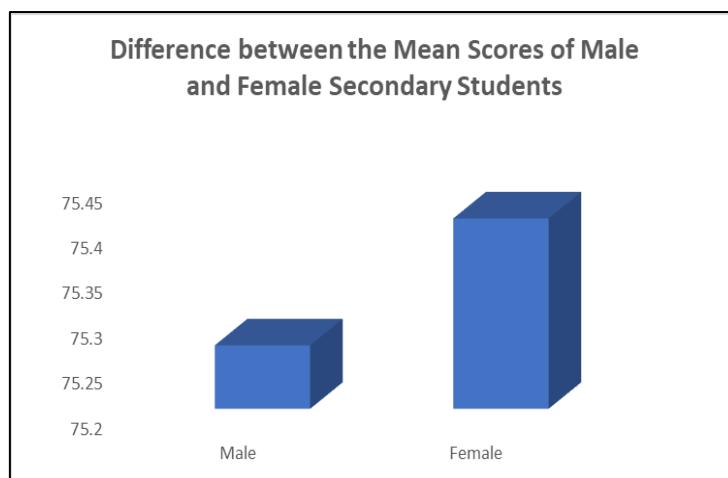
**Hypotheses-wise Analysis:**

**H0<sub>1</sub>– There is no significant difference between Male and Female Secondary students towards Naturalistic Intelligence.**

**Table- 5.1**  
**Difference between Male and Female Secondary School Students**

Category	N	Mean	SD	Df	t- value
Male	45	75.27	7.44	129	0.105
Female	86	75.41	7.34		

**Not Significant at 0.05 level**



**Fig – 5.1: Difference between the Mean Scores of Secondary Male and Female Students**

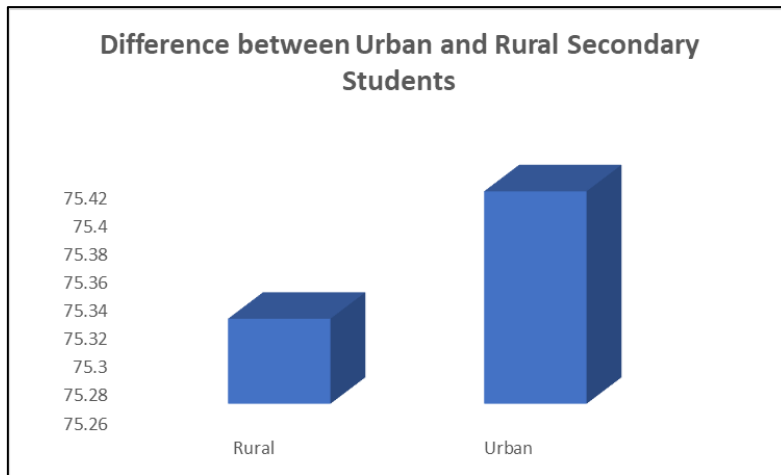
In the above table, the t-value was found to be not significant. Therefore, corresponding Null Hypothesis was accepted. As such Researcher Concluded that there is no significant difference in the mean score of secondary Male and Female students towards naturalistic intelligence. The status of Secondary Male Students is equal to the status of Secondary Female students towards naturalistic intelligence.

**H0<sub>2</sub>: There is no significant difference between Urban and Rural Secondary Student towards Naturalistic Intelligence.**

**Table- 5.2.**  
**Difference between Urban and Rural Secondary Students**

Category	N	Mean	SD	Df	t- value
Urban	84	75.41	7.33	129	0.062
Rural	47	75.32	7.39		

**Not Significant at 0.05 level**



**Fig – 5.2: Difference between the Mean Scores of Secondary Urban and Rural Students**

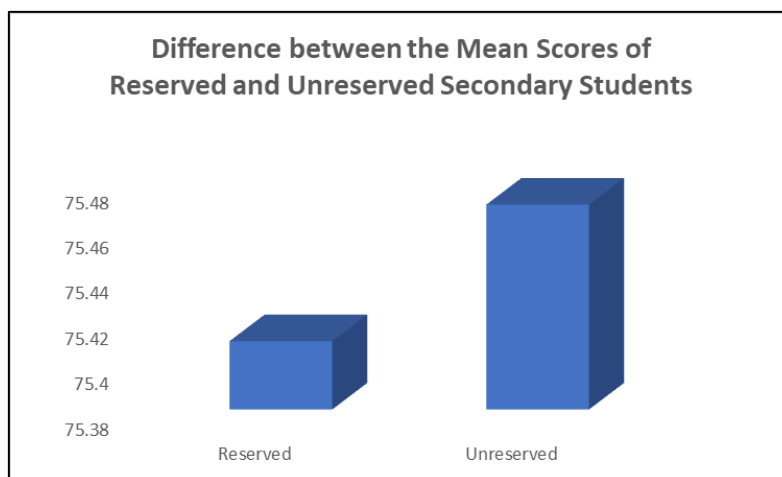
In the above table, the t-value was found to be not significant. Therefore, corresponding Null Hypothesis was accepted. As such Researcher Concluded that there is no significant difference in the mean score of secondary Urban and Rural students towards naturalistic intelligence. The status of Secondary Urban Students is equal to the status of Secondary Female students towards naturalistic intelligence.

**H0<sub>3</sub>: There is no significant difference between Reserved and Unreserved Secondary Students towards Naturalistic Intelligence.**

**Table- 5.3**  
**Difference between Reserved and Unreserved Secondary Students**

Category	N	Mean	SD	df	t- value
Reserved	109	75.41	7.33	129	0.039
Unreserved	22	75.47	6.84		

**Not Significant at 0.05 level**



**Fig – 5.3: Difference between the Mean Scores of Secondary Reserved and Unreserved Students**

In the above table, the t-value was found to be not significant. Therefore, corresponding Null Hypothesis was accepted. As such Researcher concluded that there is no significant difference in the mean scores of secondary Reserved and Unreserved students towards naturalistic intelligence. The status of

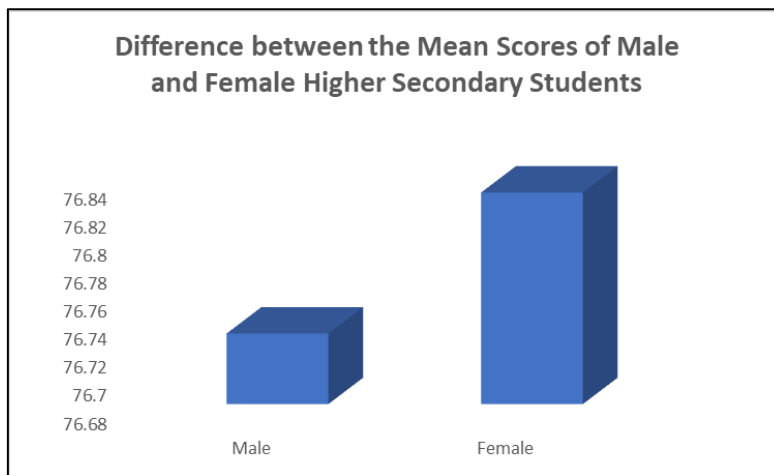
Secondary Reserved Students is equal to the status of Secondary Unreserved students towards Naturalistic Intelligence.

**H04- There is no significant difference between Male and Female higher secondary students towards Naturalistic Intelligence**

**Table-5.4**  
**Difference between Male and Female Higher Secondary students**

Category	N	Mean	SD	df	t-value
Male	89	76.73	8.62	117	0.053
Female	30	76.83	8.58		

Not Significant at 0.05 level



**Fig – 5.4: Difference between the Mean Scores of Higher Secondary Male and Female Students**

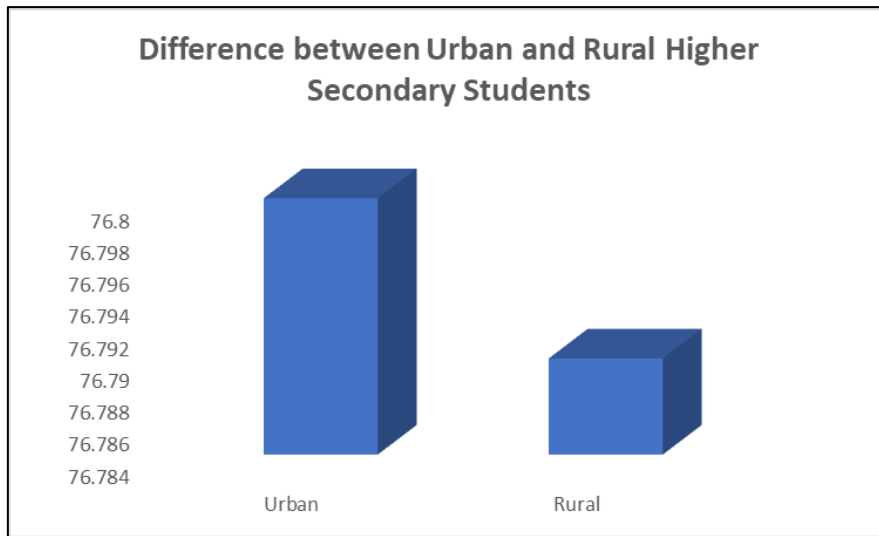
In the above table, the t-value was found to be not significant. Therefore, corresponding Null Hypothesis was accepted. As such Researcher concluded that there is no significant difference in the mean scores of higher secondary Male and Female students towards naturalistic intelligence. The status of Secondary Male Students is equal to the status of Secondary Female students towards Naturalistic Intelligence.

**H05- There is no significant difference between Urban and Rural Higher Secondary students towards Naturalistic Intelligence.**

**Table- 5.5**  
**Difference between Urban and Rural Higher Secondary Students**

Category	N	Mean	SD	df	t-value
Urban	88	76.80	8.60	117	0.001
Rural	31	76.79	8.62		

Not Significant at 0.05 level



**Fig – 5.5: Difference between the Mean Scores of Higher Secondary Urban and Rural Students**

In the above table, the t-value was found to be not significant. Therefore, corresponding Null Hypothesis was accepted. As such Researcher concluded that there is no significant difference in the mean scores of higher secondary Urban and Rural students towards naturalistic intelligence. The status of Higher Secondary Urban Students is equal to the status of Secondary Rural students towards Naturalistic Intelligence.

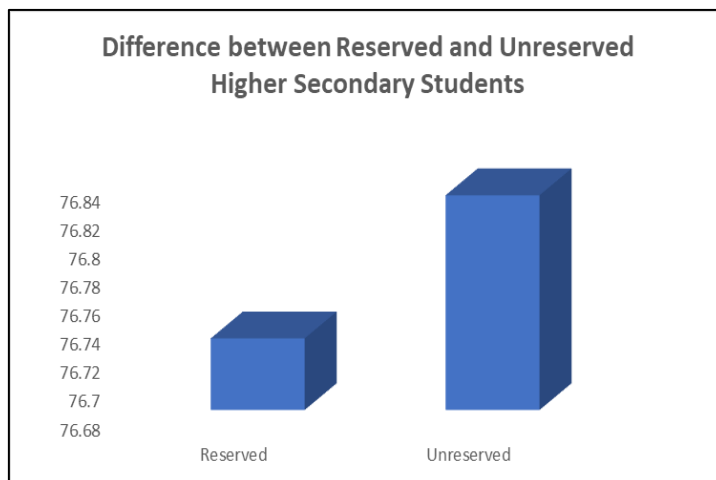
**H0<sub>6</sub>- There is no significant difference between Reserved and Unreserved higher secondary students towards naturalistic intelligence.**

**Table- 5.6**

**Difference between Reserved and Unreserved Higher Secondary Students.**

Category	N	Mean	SD	df	t-value
Reserved	72	76.73	8.61	117	0.060
Unreserved	47	76.83	8.58		

**Not Significant at 0.05 level**



**Fig – 5.6: Difference between the Mean Scores of Higher Secondary Reserved and Unreserved Students**



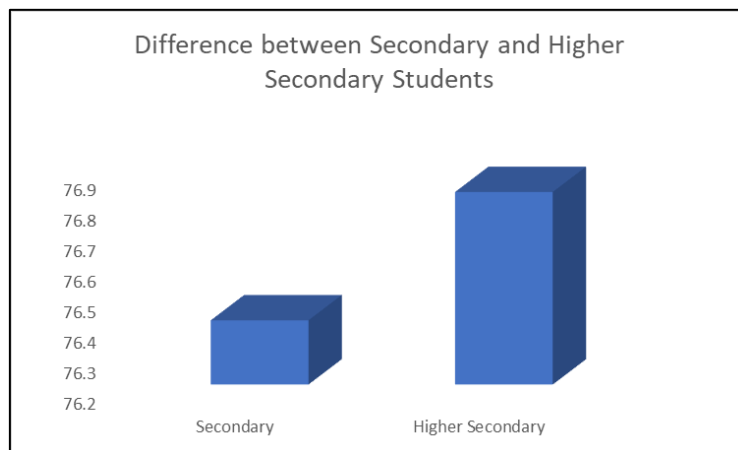
In the above table, the t-value was found to be not significant. Therefore, corresponding Null Hypothesis was accepted. As such Researcher concluded that there is no significant difference in the mean scores of higher secondary Reserved and Unreserved students towards naturalistic intelligence. The status of Higher Secondary Reserved Students is equal to the status of Secondary Unreserved students towards Naturalistic Intelligence.

**H07- There is no significant difference between Secondary and Higher Secondary Student towards Naturalistic Intelligence.**

**Table- 5.7**  
**Difference between Secondary and Higher Secondary students**

Category	N	Mean	SD	df	t-value
Secondary	131	76.41	7.33	248	0.416
Higher secondary	119	76.83	8.58		

**Not Significant at 0.05 level**



**Fig – 5.7: Difference between the Mean Scores of Secondary and Higher Secondary Students**

In the above table, the t-value was found to be not significant. Therefore, corresponding Null Hypothesis was accepted. As such Researcher concluded that there is no significant difference in the mean scores of secondary and higher secondary students towards naturalistic intelligence. The status of Secondary Students is equal to the status of Higher Secondary students towards Naturalistic Intelligence.

**OVERALL SUMMARY:**

From the above results, the Researcher concluded that there is no significant difference between the Male-Female, Urban-Rural, Reserved-Unreserved Secondary and Higher Secondary Students. Naturalistic intelligence is the intelligence deals with the natural, the environment of residence, or anything related to nature. Speculation has it that naturalistic intelligence helped our ancient hunter-gatherer ancestors to identify which flora and fauna were edible and which ones were not. People who have naturalistic intelligence are the ones who wonder about the things they see around them and ask endless questions about what they observe. They make astute observations about natural changes, emerging patterns, and natural phenomena. They love books, shows, or videos about nature or natural

phenomena, or animals. They often find their way into professions that deal with or are focused on biology, agriculture, horticulture, and archaeology.

### **FINDINGS:**

At the end of all the research study Researcher can said briefly -

- ❖ There is no significant difference in the mean score of secondary Male and Female students towards naturalistic intelligence. The status of Secondary Male Students is equal to the status of Secondary Female students towards naturalistic intelligence.
- ❖ There is no significant difference in the mean score of secondary Urban and Rural students towards naturalistic intelligence. The status of Secondary Urban Students is equal to the status of Secondary Female students towards naturalistic intelligence.
- ❖ There is no significant difference in the mean scores of secondary Reserved and Unreserved students towards naturalistic intelligence. The status of Secondary Reserved Students is equal to the status of Secondary Unreserved students towards Naturalistic Intelligence.
- ❖ There is no significant difference in the mean scores of higher secondary Male and Female students towards naturalistic intelligence. The status of Secondary Male Students is equal to the status of Secondary Female students towards Naturalistic Intelligence.
- ❖ There is no significant difference in the mean scores of higher secondary Urban and Rural students towards naturalistic intelligence. The status of Higher Secondary Urban Students is equal to the status of Secondary Rural students towards Naturalistic Intelligence.
- ❖ There is no significant difference in the mean scores of higher secondary Reserved and Unreserved students towards naturalistic intelligence. The status of Higher Secondary Reserved Students is equal to the status of Secondary Unreserved students towards Naturalistic Intelligence.
- ❖ There is no significant difference in the mean scores of secondary and higher secondary students towards naturalistic intelligence. The status of Secondary Students is equal to the status of Higher Secondary students towards Naturalistic Intelligence.

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