

NATURALISTIC INTELLIGENCE AND PROACTIVE ENVIRONMENTAL BEHAVIOUR AMONG SECONDARY SCHOOL STUDENTS

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Abstract: *Nature smart students may learn best if new information is presented in natural content or if they are allowed to compare and contrast the information with what they have already learned. Gardner suggests that intelligence are galvanized by participation in some kind of culturally valued activity and that an individual's growth follows a developmental pattern. Pro-environmental behaviour may be influenced by various aspects, such as Socio- demographics—gender, age or residence, political perspective, values, and beliefs about life. The study aimed to find out naturalistic intelligence and pro-active environment behaviour among secondary school students.*

Key Words: *Naturalistic Intelligence, Pro-active Environmental Behaviour.*

1. INTRODUCTION:

Education for life developing transferable knowledge and skills in the 21st century describes this important set of key skills and that increase deeper learning, college and career readiness student-centred learning, and higher-order thinking. Thomas Hoerr, [2002] opines that, when viewed through an MI lens, more children succeed, put another way, when teachers offer different pathways for students to learn rather than just filtering all information and learning through the “Scholastic intelligence” – more students find success in school. An MI approach is “Child-Centred”. Educators begin by looking at how the child learns and then work to develop curriculum, instruction and assessment based on this information. Conversely, in most schools, a “Curriculum-Centred” approach is used as educators bend the students to fit the curriculum.

Multiple Intelligence Theory focuses on humans to real-life circumstances and emphasizes the training of students to solve problems. This connects to the real world, rather than abstract classroom learning, places it close to the true reason humans learn, for this reason, it has caught widespread attention from various international circles. When Gardner brought up the theory in America in 1983. Furthermore, the theory was extensively applied in the American education system, causing an educational reform [Sternberg, 1988]. With the Multiple Intelligence theory spreading across America and all over the world, it produced the following influences on American education.

Why it is important to get children outdoors? If children spend most of their time out those old they get in an understanding and interest of the indoor culture. They miss out on an enriched natural environment that is full of learning experiences. The natural environment provides learning opportunities for all kinds of learners- visual, auditory and kinesthetic. Hence children can be out those touching, feeling, exploring, experimenting, problem-solving and learning. Outdoor education follows the experimental philosophy of learning by doing. Nature-smart individuals are keenly aware of their surroundings and changes in their environment, even if these changes are at a minute or subtle level. Young Children are future citizens and must have environmental awareness naturalistic intelligence. Thus it becomes necessary to develop awareness and natural intelligence in people since childhood.

Steg and Nordlund (2012) reviewed Proactive Environmental behaviour as any action which enhances the environmental quality with or without such intention. Pro-environmental behaviour is a practice that promotes resource protection, conservation practices and supports the sustainable use of the natural environment (Lee, 2011). Being aware of the impact of their environmental behaviour, individuals are more likely to act in a pro-environmental way (Clayton and Myers, 2015)

1.1 Need and Significance of the study

Environmental problems and the accelerating changes in living conditions have become a fundamental part of the world in general and Metropolises in particular. Earlier environmental problems have been considered as technical and economic problems while in recent decades the social dimensions of environmental problems such as public attention and peoples attitude towards the environment have been one of the areas of environmental sociology and environmental psychology in this respect public environmental attitudes and ecological behaviour and their environmental consequence have been investigated in developing and developed countries during the last few decades.

Incorporating Naturalistic Intelligence in Classrooms There are two approaches for implementing Natural Intelligence theory in the classroom. One is a teacher-centered approach in which the instructor incorporates materials, resources, and activities into the lesson that cater to the fostering of naturalistic intelligence. The other is a student-centred approach in which students create a variety of different materials that demonstrate their understanding of the subject matter. The student-centred approach allows students to actively use their varied forms of intelligence. In the student-centred approach, the instructor may incorporate aspects of project-based learning, collaborative learning, nature studies, outdoor education, inquiry-based learning activities, and experiential learning strategies. The best approach is the right blend of both student centres and teacher-centred activities into classroom learning. Naturalistic intelligence can be fostered in students by emphasizing the need for well-rounded scientific naturalists: developing curricula that involve students in outdoor inquiry-based projects and helping students learn how to observe both the natural world and their learning skills that are essential for developing expert naturalistic knowledge.

Teachers can improve the naturalistic intelligence of students by giving these students opportunities to be involved in outdoor research activities. Time spent outdoors alone and among people with expertise in natural history, ecology, and conservation Biology will have important influences on the knowledge and skills students learn, the careers they pursue and contributions they make to conserving Mother Earth's Biodiversity. Proactive Environmental Behaviour is an index of Naturalistic Intelligence. These two factors are interdependent. Hence the study assumes significance.

2. Review of related studies :

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.

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.

Boeve-de Pauw, et.al. (2013) studied —The Effect of Eco-Schools on Children's Environmental Values and Behaviour. 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 Environment. 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.

Dobson(2010) reviewed on environmental citizenship and proenvironmental behaviour. He provided an overview of research evidence for the existence of environmental citizenship, considering the origins of the term, exploring how it is 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.

In another study by Tugra R et al (2010) on pro-environmental behaviour, rational choice and moral motivation relationship was explored and insights regarding interdisciplinary economic psychological and moral models were considered.

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 level 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.

All the studies revealed that Naturalistic Intelligence and Pro-active Environmental Behaviour is important in creating a sustainable environmentally friendly lifestyle.

3. Hypotheses of the study :

- H(1). The level of Naturalistic Intelligence among secondary school students is moderate
- H (2) The level of Proactive Environmental Behaviour among secondary school students is moderate
- H (3) There exists significant difference in Naturalistic Intelligence for the sub-samples based on Gender
- H(4) There exists significant difference in Naturalistic Intelligence for the sub-samples based on Locale
- H(5) There exists significant difference in Proactive Environmental behaviour for the subsamples based on Gender
- H(6) There exists significant difference in Proactive Environmental behaviour for the subsamples based on Locale
- H(7) There exists significant relationship between Naturalistic Intelligence and Proactive Environmental behaviour among secondary school students.

4. Objectives of the study :

- To find out the level of Naturalistic Intelligence among Secondary School Students.
- To find out the level of Proactive Environmental Behaviour among Secondary School Students.
- To find out the difference in Naturalistic Intelligence for the subsamples based on : Gender and Locale
- To find out the difference in Proactive Environmental Behaviour for the subsamples based on : Gender and Locale
- To find out the relationship between Naturalistic Intelligence and Proactive Environmental Behaviour among Secondary School Students.

5. Methodology :

Method adopted

The purpose of the present investigation is to study Naturalistic Intelligence and Proactive Environmental Behaviour among Secondary School Students. Normative Survey Method was adopted for the study.

Sample selected for the study

A sample of 100 Secondary School Students was selected. The sample was taken with due representation to Gender and Locale.

Table. 1 Distribution of Sample

Sample			Total
Locality	Rural	50	100
	Urban	50	
Gender	Male	40	100
	Female	60	

Tools used for the study

1. Test on Naturalistic Intelligence:
2. Scale on Proactive Environmental Behaviour:

Statistical techniques used

- Descriptive statistics
- Test of significant difference between means (t-test),
- Pearson's product-moment of Correlation

Descriptive data analysis

The details of the analysis of data are presented under appropriate heads

Table. 2 Basic statistics of Naturalistic Intelligence & Proactive Environmental Behaviour among Secondary Students for the total sample

Variable	Mean	Median	Mode	SD	Skewness	Kurtosis
Naturalistic Intelligence	39.86	42	46	13.45	-0.36	-1.00
Proactive Environmental Behaviour	81.08	81.5	88	6.91	-0.93	0.71

Discussion of Result

The above table shows that the Mean, Median, Mode, Standard Deviation, Skewness and Kurtosis of the scores obtained for the Test on Naturalistic Intelligence for the total sample is found to be 39.86,42,46, and 13.45 respectively. Also found that skewness of the distribution is -0.36 and its kurtosis is -1.00. And the value of skewness that it is negatively skewed (mean< median<mode).

Test on Proactive Environmental Behaviour for the total sample that the Mean, Median, Mode, Standard Deviation, Skewness and Kurtosis is found to be 81.08, 81.5,88 and 6.91 respectively. Also found that skewness of the distribution is -0.93 and its kurtosis are 0.71. And the value of skewness that it is negatively skewed (mean< median<mode) and the values of kurtosis shows the distribution is platykurtic.

Percentage analysis of level of Naturalistic Intelligence among Secondary School Students.

Table. 3 Data and Results of percentage of level of Naturalistic Intelligence among Secondary School Students

Awareness level	Number of students	Percentage
Low	19	19
Average	62	62
High	19	19
Total	100	100

Discussion of Result

Above table shows the level of Naturalistic Intelligence among Secondary School Students. 19% of students have high Naturalistic Intelligence. 62% of students have moderate Naturalistic Intelligence and 19% of students have low Naturalistic Intelligence. Therefore it can be tentatively concluded that most of the level of Naturalistic Intelligence among secondary school students is moderate.

Tenability of Hypothesis

The analysis of the data revealed that most of the students have moderate Naturalistic Intelligence. So the hypothesis H (1) is substantiated.

Percentage analysis of level of Proactive Environment among Secondary School Students

Table. 4 Data and Results of percentage of level of Proactive Environment among Secondary School Students

Awareness level	Number of students	Percentage
Low	28	28
Average	69	69
High	3	3
Total	100	100

Discussion of Result

The above table shows the level of Proactive Environmental Behaviour among Secondary School Students. 3% of students have high Proactive Environmental Behaviour. 69% of students have moderate Proactive Environmental Behaviour and 28% of students have low Proactive Environmental Behaviour. Therefore it can be tentatively concluded that most of the level of Proactive Environmental Behaviour among secondary school students is moderate.

Tenability of Hypothesis

The analysis of the data revealed that most of the students have moderate Proactive Environmental Behaviour. So the above hypothesis H(2) is substantiated.

Analysis of difference in Naturalistic Intelligence for the subsamples based on gender and locale- Gender

Table. 5 Data and result of test of significance difference between means in Naturalistic Intelligence of the secondary school students based on the gender.

Variable	Gender	N	Mean	SD	t Value	Level of Significance
Naturalistic Intelligence	MALE	40	47.4	9.32	2.21	p<0.05
	FEMALE	60	34.78	13.44		

Discussion of Result

Above table shows that the obtained t value is 2.21 is greater than the table value 1.96 at $p < 0.05$ level of significance. So there exists a significant difference between male and female students in their Naturalistic Intelligence. The mean score of male students is 47.4 is greater than the mean score of female students 34.78, which indicates that male students have high Naturalistic Intelligence compare to female students.

Tenability of Hypothesis

The obtained t value is significant at $p < 0.05$ which indicates there exist significant difference between the male and female students in their Naturalistic Intelligence. So the hypothesis H(3) is accepted.

Table. 6 Data and result of test of significance difference in Naturalistic Intelligence of the secondary school students based on the locale

Variable	Locale	N	Mean	SD	t -value	Level significance
Naturalistic Intelligence	Rural	50	46.54	11.83	1.26	$p > 0.05$
	Urban	50	33.18	11.60		

Discussion of Result

Above table shows that the obtained t value is 1.26 is less than the table value 1.96 at 0.05 level of significance. So that there is no exist significant difference between urban and rural students in their Naturalistic Intelligence. So the hypothesis is rejected.

Tenability of Hypothesis

The obtained t value is not significant at $p > 0.05$ which indicates there exist no significant difference between the rural and urban students in their Naturalistic Intelligence. So the hypothesis H(4) is rejected.

Analysis of difference in Proactive Environmental Behaviour for the subsamples based on gender and locale

Table. 7 Data and result of test of significance difference in Proactive Environmental Behaviour of the secondary school students based on the gender.

	Gender	Mean	SD	t-value	Level of significance
Proactive Environmental Behaviour	Male	80.9	7.37	5.24	$p < 0.01$
	Female	61.3	23.42		

Discussion of Result

Above table shows that the obtained t value is 5.24 is greater than the table value 1.96 at $p < 0.01$ level of significance. So there exists a significant difference between male and female students in their Proactive Environmental Behaviour. The mean score of male students 80.9 is greater than the mean score of female students 61.3, which indicates that male students have high Proactive Environmental Behaviour compare to female students.

Tenability of Hypothesis

The obtained t value is not significant at $p < 0.01$ which indicates there exist significant difference between the male and female students in their Proactive Environmental Behaviour. So the hypothesis H(5) is accepted.

Table. 8 Data and result of test of significant difference in Proactive Environmental Behaviour of the secondary school students based on the locale.

	Locality	Mean	SD	t-value	Level of significance
Proactive Environmental Behaviour	Urban	57.2	23.51	1	$p > 0.05$
	Rural	81.08	6.91		

Discussion of Result

Above table shows that the obtained t value is 1 is less than the table value 1.96 at $p < 0.05$ level of significance. So that there is no significant difference between urban and rural students in their Proactive Environmental Behaviour. So the hypothesis is rejected

Tenability of Hypothesis

The obtained t value is not significant at $p < 0.01$ which indicates there exist no significant difference between the rural and urban students in their Proactive Environmental Behaviour. So the hypothesis H(6) is rejected.

Relationship between Naturalistic Intelligence and Proactive Environmental behaviour among Secondary School Students. (total sample = 100)

In this section the investigator study the relationship between Naturalistic Intelligence and Proactive Environmental behaviour among Secondary School Students based on the total sample and different subsamples. The calculation of the coefficient of correlation is carried out by the Karl Pearsons; product-moment method efficient correlation is carried out by Karl Pearson's product-moment method The correlation has also been verbally interpreted using the following criterion, shown in Table 9

Table. 9 Data and results of the Correlation between Naturalistic Intelligence and Proactive Environmental behaviour among Secondary School Students

Variables	N	r
Naturalistic Intelligence and Proactive Environmental behaviour	100	0.18

Discussion of Result

The scores obtained the Naturalistic Intelligence and Proactive Environmental behaviour among Secondary School Students were tabulated and were used to find out Pearson's Product Moment Correlation between the variables The significance of r value was determined and used to estimate the population "r" the parameter

From the table 16 the coefficient of correlation obtained between the variables is 0.18 which shows a negligible relationship. The results show that there exists a negligible relationship between Naturalistic Intelligence and Proactive Environmental behaviour among Secondary School Students.

Tenability of Hypothesis

The results show that there exists a negligible relationship between Naturalistic Intelligence and Proactive Environmental behaviour among Secondary School Students. So the hypothesis H(7) is rejected

6. CONCLUSION :

Percentage analysis was done to find out the level of Naturalistic Intelligence among Secondary School Students shows that majority of the students have a moderate level of Naturalistic Intelligence. Percentage analysis to find out the level of Proactive Environmental Behaviour among Secondary School Students revealed that 69% of students have moderate Proactive Environmental Behaviour There exists a significant difference between male and female students in their Naturalistic Intelligence. There is not significant difference between the rural and urban students in their Naturalistic Intelligence. There exists a significant difference between male and female in their Proactive Environmental Behaviour. The male students have high Proactive Environmental Behaviour compare to female students. There does not exist significant difference between the rural and urban students in their Proactive Environmental Behaviour.

The coefficient of correlation obtained between the variables is 0.18 which shows a negligible relationship. The results show that there exists a negligible relationship between Naturalistic Intelligence and Proactive Environmental Behaviour among Secondary School Students

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