



## **INVESTIGATING VARIATIONS IN SECONDARY SCHOOL TEACHERS' ATTITUDES TOWARDS ENVIRONMENTAL EDUCATION ACROSS BEGUSARAI, KHAGARIA, AND SAMASTIPUR DISTRICTS: A COMPARATIVE ANALYSIS**

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### **Abstract**

This study explores the significant issue of disparate influences on secondary school teachers' attitudes on various aspects of environmental education as taught in the curricula of the districts of Begusarai, Khagaria, and Samastipur in Bihar, India. The purpose of the study is to assess teachers' understanding of environmental concerns and how that awareness manifests in their attitudes toward these issues. Surveys and interviews are among the quantitative and qualitative approaches used in the research to collect data. The results shed light on current environmental awareness initiatives and regulations as well as the difficulties instructors have when incorporating environmental education into their lesson plans. In order to support sustainable development in the area, the study emphasizes how critical it is to cultivate among secondary school teachers a good attitude toward environmental protection.

**Keywords:** *Attitude, Secondary School Teachers, Environment, Begusarai, Khagaria, Samastipur, Bihar*

### **Introduction**

The totality of the circumstances required for an organism to either survive or continue its life process is its environment. It affects how living things develop and grow. Stated differently, the term "environment" describes the conditions surrounding living things from all directions and having a whole impact on their life. It is made up of the biosphere, lithosphere, hydrosphere, and atmosphere. Soil, water, air, creatures, and sun energy are its main constituents. It has given us all we need to live a contented and comfortable life.

Through the process of environmental education, people may learn about environmental concerns, solve problems, and take action to protect the environment. People get the ability to make responsible decisions and have a greater awareness of environmental challenges as a consequence. Environmental education does not promote any one viewpoint or set of actions over another. Instead, it improves people's ability to solve problems and make decisions by teaching them how to critically evaluate opposing viewpoints.

In the past few years, environmental problems have become ever more critical due to worldwide anxiety about climate change, pollution and loss of biodiversity. Education is a critical ally in these battles as it

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breeds consciousness, comprehension and actions towards environmental conservation. One of the major stakeholders in the educational system are teachers who have the responsibility of shaping students' minds on matters relating to environment. Despite playing this role however, they might have different levels of awareness and attitude depending on which may adversely affect environmental education initiatives. This research aims at determining how much secondary school teachers in Begusarai, Khagaria & Samastipur districts of Bihar India know and care about their environment.

## **Literature Review**

There have been previous studies that have emphasized the significance of environmental education in fostering sustainable development (UNESCO, 1977). However, research has also pointed out some deficiencies in teachers' environmental consciousness (Gökmen & Öztürk, 2020). In India, the National Green Corps (NGC) is one such initiative aimed at creating environmental awareness among students, but this cannot be possible without teachers' involvement (MoEFCC, 2018). Teacher's attitudes towards the environment have a significant influence on their teaching approaches and students' eco-awareness as shown by many researches (Boeve-de Pauw et al., 2011). Therefore assessment of knowledge and attitude of high school teachers concerning environment becomes imperative for effective environmental education.

**Methodology:** This study utilizes a mixed-methods approach and seeks to obtain data on the knowledge and attitude of high school teachers towards the environment.

- **Survey:** A structured survey will be given to a sample of high school teachers in Begusarai, Khagaria, and Samastipur districts. The questions in the survey will touch on: whether teachers are aware of environmental issues or not, how they feel about environmental conservationism, what experience they have had with regard to initiatives for environmental education.
- **Interviews:** Some teachers will be interviewed at length in a bid to understand their perceptions, dilemmas and encounters related to environmental education. These interviews will provide qualitative data that can complement the findings from the survey as well as yield other insights into the mindset of teachers.

## **Findings**

The researchers analyzed responses from surveys and interview transcripts to determine results of this study. Major themes emerging from our discussions include; level of awareness among teachers about environment, attitude towards environmental problems by educators, experiences with environmental educational programmes' implementation and challenges faced when integrating ecology content into teaching methods. The differential influence in the attitude of secondary school teachers on different dimensions of Environmental Education in school curriculum has been tested with a view to know the differential influence in the attitude of secondary school teachers on different dimensions of environmental education, viz., (i) Health and hygiene, (ii) Wild life, (iii) Forests, (iv) Polluters, (v) Population explosion and (vi) Environmental concern, the investigator has used percentage analysis of scores obtained on various items under the six different areas selected for the present investigation. To know the high acceptance of subjects on different items included in the scale, the total score in respect of all the respondents for each item under the six areas of the research tool considered for the investigation has been calculated for purpose of computing the percentage of acceptances of the respondents on these items in the scale.

## **Discussion**

The higher score (80% and above) of acceptance of teachers on a particular item under a particular area of environmental education in the scale indicates the better attitude of them towards environment – its protection and sustainability.

The investigator thought it relevant to convert the obtained scores into percentages with a view to know the percentage of acceptances of the respondents on a particular item in relation to the other items included in the scale. A percentage frequency distribution is a display of data that specifies the percentage of observations that exist for each data point or grouping of data points. It is a very useful method of expressing the relative frequency of survey responses and other data. This application of using percentages is particularly important in analyzing or comparing the attitudes of individuals on a particular criterion in comparison with other criteria.

To know the high acceptances of all the subjects on different items included in the tool, the investigator has calculated the total score obtained from all the respondents in respect of each item under the six different areas, taking into consideration the score relating to ‘Agree’ and ‘Strongly Agree’ for favorable statements and ‘Disagree’ and ‘Strongly Disagree’ for unfavorable statements. The total score given by all respondents for each item in the tool has been calculated and then the total scores for all the 61 items have been converted into percentages. The higher score indicates more favourable attitude of teachers towards Environmental Education in school curriculum. The total scores of all the subjects in respect of each item together with the percentages are provided in table below.

**Table-1 showing the percentage of acceptances of teachers on different items included in the scale**

S. No. of item in the scale	Description of the item	Total Score	Percentage
<b>Area-I: Health &amp; Hygiene</b>			
3.	Food additives are not hazardous to the health.	3134	62.7
46.	Over population of the environment can cause misery and suffering to human beings than anything else.	4826	96.5
52.	Pesticides should not be sprayed on vegetables	4718	94.4
59.	The industrial and toxic waste dumps located away from Residential areas do not pose any safety risks.	4024	80.5
61.	Environmental pollution leads to health hazards.	4212	84.2
<b>Area-II: Wild life</b>			
18.	In all rituals non-vegetarian food need not be prohibited completely.	4017	80.3
19.	Legislation on prevention of killing of animals was unwanted.	2126	42.5
26.	People need not be kind and compassionate towards animals.	3015	60.3
54.	Excessive use of animals in the laboratory experiments to test drugs should be prohibited.	4824	96.5
56.	It is not wrong to hunt animals for commercial purposes.	2229	44.6
58.	It is not wrong to hunt animals for food.	2053	41.1

S. No. of item in the scale	Description of the item	Total Score	Percentage
<b>Area-III: Forests</b>			
5.	Cutting of forests is essential to increase agricultural yield.	2554	51.1
33.	The Government should increase its revenue by clearing the forests.	2125	42.5
48.	Participation in afforestation programmes is a mere waste of time and energy.	2418	48.4
53.	Even the steep hill slopes should not be left out of cultivation in order to increase the productivity.	4003	80.1
55.	The effects of acid rain on our forests are still acceptable.	2321	46.4
<b>Area-IV: Polluters</b>			
1.	The use of fertilizers is essential to increase agricultural yield.	2642	52.8
8.	More and more hydroelectric power stations should be created to meet the needs of people.	3285	65.7
12.	More and more power stations should be built as a mark of human progress.	3103	62.1
15.	The construction of new sky-resorts should be forbidden.	4724	94.5
16.	Destruction of Ozone layer will hardly affect the near future.	2229	44.6
17.	Engine idling is inevitable though it wastes fuel and contributes to air pollution.	3153	63.1

S. No. of item in the scale	Description of the item	Total Score	Percentage
20.	Possessors of more vehicles contribute to more air pollution should be punished.	4754	95.1
21.	High income groups among the people who directly or indirectly account for most greenhouse gas emissions should be penalized.	4225	84.5

22.	It is the right of high level income groups to have high level of resource consumption and waste generation.	2318	46.4
24.	Toxic wastes will not harm the human beings.	2363	47.3
25.	Excessive energy consumers should be fined heavily.	4121	82.4
27.	The large sum of money spent on environment pollution control could be put to better use on other things.	2442	48.8
28.	Water pollution is not a serious problem, because 70% of the world's surface is water.	2385	47.7
29.	Even a layman can do a lot to prevent pollution of environment.	4303	86.1
30.	Use of personal vehicles to reach workplaces should be prohibited.	4424	88.5
31.	Higher gasoline prices should be charged to discourage the use of personal vehicles.	2229	44.6
34.	Mining brings more benefits than problems to the local community.	2753	55.1

No of the item in the scale	Description of the item	Total Score	Percentage
40.	One should use energy resources such as solar, which cause least pollution.	4754	95.1
41.	The Government should ban the use of plastic containers to reduce pollution of our surroundings.	4625	92.5
42.	People should be encouraged to ride paddled bicycles to prevent pollution.	4578	91.6
43.	Solid waste should be made to dispose only in the landfills (or) pits.	3863	77.3
44.	The Government should reduce the tax paid by factories that possess anti-pollution facilities.	4321	86.4
45.	The explosion of Science and Technology has led to the poisonous effect on the environment.	3542	70.8
47.	All the smoke belching vehicles should be removed from the roads.	4285	85.7
50.	The environment is at least affected by dumping domestic garbage on the side of the road.	4603	92.1

57.	One should participate in campaigns on ‘stop pollution’.	4724	94.5
<b>Area-V: Population Explosion</b>			
2.	Over population leads to poverty.	4129	82.6
4.	Family planning should be made mandatory to decrease population growth.	3353	67.1
6.	Children are future investments; the more children the family has the better for the country.	2653	53.1
9.	Developing countries should have more population in order to accelerate growth.	2829	56.6
35.	Pollution control does not assure a reasonable standard of living for future generations.	3192	63.8

S. No. of item in the scale	Description of the item	Total Score	Percentage
<b>Area-VI: Environmental concern</b>			
7.	All are responsible for environmental pollution.	4054	81.1
10.	Education about local issues and environmental pollution should be made mandatory in schools.	4725	94.5
11.	Shop-keepers should stop handing out plastic carry-bags.	4618	92.4
13.	People who leave their picnic litters in parks rigorously should be fined.	4263	85.3
14.	There should be more environmental wind mills.	3721	74.4
23.	Protection of environment should be the sole responsibility of the Government; but not of the individuals.	2842	56.8
32.	Conservation of energy should be regarded as the responsibility of everyone.	4785	95.7
36.	It is not necessary to spend money to clean the drainages, because any way that will be washed away by rain.	2703	54.1
37.	We are all responsible one way or the other for the depletion of Ozone layer.	4324	86.5
38.	Aspiring for a better quality of life need not involve one's personal efforts to stem out the increasing toxification of earth.	2829	56.6
39.	The interests of the future generations should be sacrificed for luxurious life at present.	2153	43.1
49.	People having no concern for environmental protection should	4453	89.1

	be penalized.		
51.	Conservation of resources is necessary for the sake of future generations.	4658	93.2
60.	Every person should complain whether the dumping of waste is near or too far from their residences.	4153	83.1

To find out the differential influence in the attitude of teachers working in secondary schools with regard to different dimensions (areas) of Environmental Education in school curriculum, the investigator has computed the high acceptances (total score of 80% and above) in respect of the items included in different dimensions (areas) of environment considered for the present investigation. The respondents have given high acceptances in respect of 30 items out of the total 61 items included in the scale. The high acceptances (total score of 80% and above) of respondents for different items included in the scale under different dimensions (areas) together with the percentages are provided in Table-2 below. From the high acceptances given by the respondents in respect of the items in the scale provided under different dimensions shown in Table-33 above, it is concluded that teachers working in secondary schools have a high positive attitude towards Environmental Education with regard to the dimension, 'Health and hygiene' (80%) followed by the other dimensions, 'Environmental concern' (64.3%), 'Polluters' (50%), 'Wild life' (33.3%), 'Forests' (20%) and 'Population Explosion' (20%).

**Table-2 showing high acceptances (total score of 80% and above) in respect of all the subjects for different items included in the scale, area wise**

S. No.	Environment areas (dimensions) Specified in the scale	S. No. of items showing high acceptance	Total number of items showing high acceptances in the area	Percentage
1	Health and hygiene	46, 52, 59, 61	4	80.0
2	Wild life	18, 54	2	33.3
3	Forests	53	1	20.0
4	Polluters	15, 20, 21, 25, 29, 30, 40, 41, 42, 44, 47, 50, 57.	13	50.0
5	Population Explosion	2	1	20.0
6	Environmental concern	7, 10, 11, 13, 32, 37, 49, 51, 60	9	64.3
	<b>TOTAL:</b>		<b>30</b>	

From the results shown above, it is concluded that the teachers working in secondary schools have exhibited more favourable attitude towards 'Health and hygiene'. The priority given to this aspect of Environmental Education is due to the reason that the health of the students and the hygienic conditions prevailing in the vicinity of the home, school and the surroundings play a significant role in the life of an individual. When the students maintain good health, then only they will be able to learn things better.

Next to 'Health and hygiene', the teachers have shown a favourable attitude towards 'Environmental concern'. Environmental awareness and environmental concern is a part and parcel of school education. If the teachers are able to develop environmental concern among their students, then the students will be able to develop a positive attitude towards the protection of environment and its sustainability. This concern in turn leads to develop in them an awareness towards preservation of Wild life and Forests, for which teachers have expressed their favourable attitude as their next priority. Finally, the teachers have also expressed a favourable attitude towards understanding the problems associated with population explosion and find out solutions to overcome these problems so that they will be able to develop an understanding of these concepts in the minds of their students in the school programme.

**Health and hygiene:** From Table-2 shown above, it is observed that there is high acceptance (score value of 80% and above) expressed by the teachers on items 46, 52, 59 and 61 of the scale under Area-I: Health and hygiene.

**Item 46: Over population of the environment can cause misery and suffering to human beings than anything else.**

The high score of acceptance of 4826 (96.5%) given by the subjects on item-46 of the research tool (See Table-1) indicates clearly that majority of teachers have accepted the fact that over population of the environment can cause misery and suffering to human beings. From this, it is understood that the teachers are of the opinion that the increase in population may result in environmental pollution. People may cause problems relating to air pollution, water pollution, sound pollution, ill-health, malnutrition etc. This in turn causes misery and suffering to all human beings.

**Item-52: Pesticides should not be sprayed on vegetables.**

The high score of acceptance of 4718 (94.4%) given by the subjects on item-52 of the research tool (See Table-2) indicates clearly that the teachers are of the opinion that pesticides should not be sprayed on vegetables. Teachers think that spraying of pesticides on vegetables will result in health hazards; and hence they are more in favour of organic vegetation. Pesticides, when used over and above the recommended doses in farming, would certainly affect the health of the human beings adversely.

**Item-59: The industrial and toxic waste dumps located away from residential areas do not pose any safety risks.**

The high score of acceptance of 4024 (80.5%) given by the teachers on item-59 of the research tool (See Table-1) indicates clearly that the teachers are of the opinion that the industrial and toxic waste dumps located away from residential areas do not pose any safety risks. Teachers know well that the industrial and toxic waste dumps are very dangerous when they are located very close to the residential areas. It results in air pollution. So, they feel that when these waste dumps are located away from the residential areas, it would not pose any risk to the safety of the individuals.

**Item-61: Environmental pollution leads to health hazards.**

The high score of acceptance of 4212 (84.2%) given by the teachers on item-61 of the research tool (See Table-1) indicates clearly that the teachers are very much convinced with the idea that Environmental pollution leads to health hazards. The teachers are of the opinion that when the environment, in which we are living in, is polluted, then it will affect our health adversely. When there is air pollution, water pollution, sound pollution and so on, our health will be put to risk. This kind of an attitude on the part of the teachers would certainly help them in developing a kind of awareness among their students with regard to environmental pollution. The teachers will be able to guide their students to safe guard their health by taking suitable measures to reduce environmental pollution.

**Wild life:** From Table-2 shown above, it is observed that there is high acceptance (score value of 80% and above) expressed by the teachers on items 18 and 54 of the scale under Area-II: Wild life.

**Item-18: In all rituals non-vegetarian food need not be prohibited completely.**

The high score of acceptance of 4017 (80.3%) given by the teachers on item-18 of the research tool (See Table-1) indicates clearly that the teachers are of the opinion that in all rituals non-vegetarian food need not be prohibited completely. This opinion of teachers clearly indicates that non-vegetarian food need not necessarily be taken in all rituals. It can be taken on some occasion or the other only when there is a dire need of using it.

**Item-54: Excessive use of animals in laboratory experiments to test drugs should be prohibited.**

The high score of acceptance of 4824 (96.5%) given by the teachers on item-54 of the research tool (See Table-1) indicates clearly that the teachers have felt that excessive use of animals in laboratory

experiments to test drugs should be prohibited. It is quite natural for most of the pharmaceutical industries and laboratories to test the medicines and drugs on animals first. If once they are proved effective to overcome a particular disease, then they release them into the market and use them on human beings. In this process, more and more animals are being killed in the laboratories. The teachers are of the opinion that the number of animals used for testing of drugs in the laboratories should be minimised. Excessive use of these animals in the laboratories may disturb the ecological balance in the nature. Even today most of the birds and animals are out of sight in our surroundings. Hence, the teachers felt that there should be prohibition on the excessive use of animals in the laboratories for testing drugs.

**Forests:** From Table-1 shown above, it is observed that there is high acceptance (score value of 80% and above) expressed by the teachers on item 53 of the scale under Area-III: Forests.

**Item-53: Even the steep hill slopes should not be left out of cultivation in order to increase the productivity.**

The high score of acceptance of 4003 (80.1%) given by the teachers on item-53 of the research tool (See Table-1) indicates that the teachers have felt that even the steep hill slopes should also be used for cultivation in order to increase the productivity. In fact in a developing country like India, agricultural productivity has become a dire need for people. That is why our farmers should use even the hill slopes for purpose of cultivation instead of leaving them alone for the growth of shrubs and bushes. Hence, the teachers felt that these hill slopes should properly be utilized for purpose of cultivation.

**Polluters:** From Table-1 shown above, it is observed that there is high acceptance (score value of 80% and above) expressed by the teachers on items 15, 20, 21, 25, 29, 30, 40, 41, 42, 44, 47, 50 and 57 of the scale under Area-IV: Polluters.

**Item-15: The construction of new sky-resorts should be forbidden.**

The high score of acceptance of 4724 (94.5%) given by the teachers on item-15 of the research tool (See Table-1) indicates that the teachers are of the opinion that the construction of new sky-resorts should be forbidden. There has been enormous increase in the construction of multi-story buildings during the recent years in a developing country like India. But these constructions should not be at the cost of greenery around us. The environment around us should properly be protected in order to get fresh air to breathe in. The teachers are of the opinion that we should not cut down the trees around us with a view to construct huge buildings. This should be forbidden to protect the natural surroundings to lead a happy and healthy life.

**Item-20: Possessors of more vehicles contribute to more air pollution should be punished.**

The high score of acceptance of 4754 (95.1%) given by the teachers on item-20 of the research tool (See Table-1) indicates that the teachers are of the opinion that the possessors of more vehicles contribute to more air pollution and hence they need some kind of punishment or the other. It is very natural that more number of vehicles on road would certainly contribute for more air pollution. The possession of vehicles should be minimized by the individuals to reduce air pollution. In most of the states in India, the transport department has been collecting more charges for possession of second and subsequent vehicles by the same individual. The age-old vehicles should be dismantled to avoid the air pollution due to the poisonous gases such as carbon monoxide released by these vehicles. The teachers felt that the individuals possessing more number of vehicles over and above their requirement should be given some kind of punishment or the other by way of levying heavy fines from them. This would certainly contribute to reduce air pollution.

**Item-21: High income groups among the people who directly or indirectly account for most greenhouse gas emission should be penalized.**

The high score of acceptance of 4225 (84.5%) given by the teachers on item-21 of the research tool (See Table-1) indicates that the teachers have felt that people belonging to high income groups, who directly

or indirectly account for most greenhouse gas emission, should be penalized. Teachers have realized the fact that greenhouse gas emissions are responsible for global warming. The greenhouse gases such as carbon dioxide, methane, nitrous oxide etc., in the atmosphere are capable of absorbing infrared radiation; and thereby increase the heat in the atmosphere. This causes the greenhouse effect. The teachers argue that people belonging to high income groups, who contribute for greenhouse gas emissions and are responsible for environmental pollution, should be penalized.

**Item-25: Excessive energy consumers should be fined heavily.**

The high score of acceptance of 4121 (82.4%) given by the teachers on item-25 of the research tool (See Table-1) indicates that the teachers have felt that excessive energy consumers should be fined heavily. All forms of electricity generation have an environmental impact on our air, water and land, but it varies. Most of the energy is used to generate electricity, making 'electricity use' an important part of each person's environmental footprint. Producing and using electricity more efficiently reduces both the amount of fuel needed to generate electricity and the amount of greenhouse gases and other air pollution emitted as a result. Teachers felt that the excess energy consumers are contributing for climatic changes and air pollution; and hence they should be fined heavily. Instead, people can use electricity produced from renewable resources such as solar, geo-thermal and wind which generally does not contribute to climate change or local air pollution since no fuels are combusted.

**Item-29: Even a layman can do a lot to prevent pollution of environment.**

The high score of acceptance of 4303 (86.1%) given by the teachers on item-29 of the research tool (See Table-1) indicates that the teachers are of the opinion that even a layman can do a lot to prevent pollution of environment. Prevention of environmental pollution is the responsibility of every individual. It depends of the attitude of an individual towards environment and its protection; but does not depend on the level of education of an individual or his specialization in the field of environmental education. With the awareness and intention of protecting environment, even a layman with a positive attitude towards environment can do a lot to prevent environmental pollution.

**Item-30: Use of personal vehicles to reach workplaces should be prohibited.**

The high score of acceptance of 4424 (88.5%) given by the teachers on item-30 of the research tool (See Table-1) indicates that the teachers have felt that the use of personal vehicles to reach workplaces should be prohibited. People who are working in an organization can make use of the transportation provided by the organization to reach the workplace. Many people can reach their workplaces safely and conveniently if they travel by the vehicle provided by the organization. This reduces air pollution as compared to more number of individual vehicles used for reaching the workplace. Further, people can also use public transport facility to reach the workplace, when there is no vehicle provided by the organization. Use of more number of personal vehicles results in air pollution apart from causing traffic problems. Hence, teachers suggest prohibition on the use of personal vehicles to the workplaces.

**Item-40: One should use energy resources such as solar which cause least pollution.**

The high score of acceptance of 4754 (95.1%) given by the teachers on item-40 of the research tool (See Table-1) indicates that the teachers have felt that one should use energy resources such as solar which cause least pollution. Among different sources of energy, solar energy is expected to cause least pollution. Hence, teachers have realized the importance of solar energy over other sources of generating energy.

**Item-41: The Government should ban the use of plastic containers to reduce pollution of our surroundings.**

The high score of acceptance of 4625 (92.5%) given by the teachers on item-41 of the research tool (See Table-1) indicates that the teachers have expressed their opinion that the Government should ban the use of plastic containers to reduce pollution of our surroundings. Use of plastic containers has become the order of the day. Since most of the plastic materials are non-degradable, they cause pollution to

environment and create problems to human life. These plastic materials are also harmful to animals and other living beings. The Government has also taken steps to minimize the use of plastic containers in our day-to-day lives with a view to reduce pollution of our surroundings. Teachers recommend ban on the use of these plastic containers.

**Item-42: People should be encouraged to ride paddled bicycles to prevent pollution.**

The high score of acceptance of 4578 (91.6%) given by the teachers on item-42 of the research tool (See Table-1) indicates that the teachers have expressed their opinion that people should be encouraged to ride paddled bicycles to prevent pollution. Petrol and diesel vehicles cause a lot of air pollution now-a-days. When we look back into the history, we can understand that people in olden days used mostly paddled bicycles to reach distant places. Since these paddled bicycles did not cause any pollution, people were healthy in those days. Teachers are of the opinion that people should be encouraged to use paddled bicycles even today to reduce pollution to the environment.

**Item-44: The Government should reduce the tax paid by factories that possess anti-pollution facilities.**

The high score of acceptance of 4321 (86.4%) given by the teachers on item-44 of the research tool (See Table-1) indicates that the teachers have felt that the Government should reduce the tax paid by factories that possess anti-pollution facilities. Most of the factories, in the process of manufacture of goods, leave out gases into the air and these gases cause pollution. But when anti-pollution facilities are provided in the factory, the pollution caused by the factory can be reduced. Teachers are of the opinion that the Government should provide reduction in the tax to be paid by the factories that possess anti-pollution facilities. Thus, the Government can encourage the factory establishments to provide pollution free environment in the vicinity.

**Item-47: All the smoke belching vehicles should be removed from the roads.**

The high score of acceptance of 4285 (85.7%) given by the teachers on item-47 of the research tool (See Table-1) indicates that the teachers have expressed their opinion that all the smoke belching vehicles should be removed from the roads. Smoke belching is the forceful expulsion of smoke from the vehicle's pipe. This is one of the major contributors to air pollution. Heavy dark smoke forcefully spits out from the pipes of the vehicles is very dangerous to our health. That is the reason why the teachers thought that all the smoke belching vehicles should not be allowed to move on the roads.

**Item-50: The environment is at least affected by dumping domestic garbage on the side of the road.**

The high score of acceptance of 4603 (92.1%) given by the teachers on item-50 of the research tool (See Table-1) indicates that the teachers have expressed their opinion that the environment is at least affected by dumping domestic garbage on the side of the road. Dumping domestic garbage on the road side is one of the root causes of environmental pollution. There should be awareness among the people that the domestic garbage should be kept only in the dust bins provided by the corporation or the village panchayat for the specific purpose. It should not be thrown either by the side of the road or in front of somebody's house. Teachers have focused on how the environment will adversely be affected when the domestic garbage is dumped on the side of the roads.

**Item-57: One should participate in campaigns on "stop pollution".**

The high score of acceptance of 4724 (94.5%) given by the teachers on item-57 of the research tool (See Table-1) indicates that the teachers have expressed their opinion that one should participate in campaigns on "stop pollution". Prevention of environmental pollution is possible by organizing a number of campaigns by the teachers, students and the public on the protection and preservation of environment. It will be an eye-open to the public when they participate in campaigns on "stop pollution".

**Population Explosion:** From Table-2 shown above, it is observed that there is high acceptance (score value of 80% and above) expressed by the teachers on item 2 of the scale under Area-V: Population explosion.

**Item-2: Over population leads to poverty.**

The high score of acceptance of 4129 (82.6%) given by the teachers on item-2 of the research tool (See Table-1) indicates that the teachers have felt that over population leads to poverty.

The increase in population reduces the opportunities of people to get the available resources. In the process of distribution of available resources, only a few will get an opportunity to tap the resources. The rest of the people fail to get them. They cannot improve their financial status in the society. This makes them remain poor. Teachers felt that poverty is an outcome of over population.

**Environmental concern:** From Table-33 shown above, it is observed that there is high acceptance (score value of 80% and above) expressed by the teachers on items 7, 10, 11, 13, 32, 37, 49, 51 and 60 of the scale under Area-VI: Environmental concern.

**Item-7: All are responsible for environmental pollution.**

The high score of acceptance of 4054 (81.1%) given by the teachers on item-7 of the research tool (See Table-1) indicates that the teachers are of the opinion that all of us are responsible for environmental pollution. It is everybody's responsibility to protect the environment in which all of us are living in. We have to protect and safeguard the environment from getting polluted. When people are ignorant of the evil effects of environmental pollution, we should educate them properly. We should not hesitate to tell them the facts regarding the preservation of environment. The teachers felt that when all of us work hand-in-hand to protect the environment, then we will be able to lead a happy, healthy and peaceful life.

**Item-10: Education about local issues and environmental pollution should be made mandatory in schools.**

The high score of acceptance of 4725 (94.5%) given by the teachers on item-10 of the research tool (See Table-1) indicates that the teachers have felt that Education about local issues and environmental pollution should be made mandatory in schools. The children should be made aware of environmental protection right from their school education. If the students develop awareness and a positive attitude towards environment and its preservation right from their secondary school stage, they will be able to take measures to prevent environmental pollution in their later life. That is the reason why teachers expressed their opinion that education about local issues and environmental pollution should be made mandatory in schools.

**Item-11: Shop-keepers should stop handling out plastic carry bags.**

The high score of acceptance of 4618 (92.4%) given by the teachers on item-11 of the research tool (See Table-1) indicates that the teachers have felt that shop-keepers should stop handling out plastic carry bags. Since plastic carry bags are non-degradable in nature, it is better to avoid the use of plastic carry bags in shops. In fact the Government departments have already issued directions to the shop-keepers to use jute or cloth-made carry bags in place of plastic carry bags in their shops.

**Item-13: People who leave their picnic litters in parks rigorously should be fined.**

The high score of acceptance of 4263 (85.3%) given by the teachers on item-13 of the research tool (See Table-1) indicates that the teachers have felt that people who leave their picnic litters in parks should rigorously be fined. Majority of people who go on a picnic to a park or a garden are in the habit of leaving the picnic litters there only. The debris so left in the parks may result in air pollution causing ill-health to other people. When fines are levied from such people who are responsible for environmental pollution, then they try to keep the surroundings clean while leaving the picnic site. That is the reason why the teachers expressed their opinion that people who leave their picnic litters in parks should rigorously be fined.

**Item-32: Conservation of energy should be regarded as the responsibility of everyone.**

The high score of acceptance of 4785 (95.7%) given by the teachers on item-32 of the research tool (See Table-1) indicates that the teachers have felt that conservation of energy should be regarded as the responsibility of everyone. Energy conservation or saving is very essential now-a-days. The consumption rate should always be less than the rate of production or generation. People should be wise enough in saving energy without wasting it unnecessarily. People are accustomed to consume more electric energy in times of marriages and other celebrations. This is to be restricted to the extent possible. Every individual should feel that conservation of energy is his/her own responsibility.

**Item-37: We are all responsible in one way or the other for the depletion of Ozone layer.**

The high score of acceptance of 4324 (86.5%) given by the teachers on item-37 of the research tool (See Table-1) indicates that the teachers have felt that we are all responsible in one way or the other for the depletion of Ozone layer. The Ozone layer is a region in the earth's stratosphere that contains high concentrations of ozone and protects the earth from the harmful ultraviolet radiations of the sun. The depletion of ozone layer is the thinning of the ozone layer present in the upper atmosphere. The ozone-depleting substances are released from the sources such as refrigerators, air conditioners, dry cleaning agents, fire extinguishers, adhesives and aerosols etc. The depletion of ozone layer affects the environment adversely. Strong ultraviolet rays may lead to minimal growth, flowering and photosynthesis in plants. The marine life and the forests are also affected adversely due to the depletion of ozone layer. It is felt that every one of us should protect the ozone layer by minimizing the use of the appliances which leave out the substances responsible for the depletion of ozone layer.

**Item-49: People having no concern for environmental protection should be penalized.**

The high score of acceptance of 4453 (89.1%) given by the teachers on item-49 of the research tool (See Table-1) indicates that the teachers are of the opinion that people having no concern for environmental protection should be penalized. Every one of us should have concern for environmental protection and preservation. The protection of environment is possible only with the combined efforts of all the people. We should have a positive attitude and concern to protect our own environment, which protects us in turn. Hence, the teachers felt that people having no concern for the environment should be penalized.

**Item-51: Conservation of resources is necessary for the sake of future generations.**

The high score of acceptance of 4658 (93.2%) given by the teachers on item-51 of the research tool (See Table-1) indicates that the teachers have felt that conservation of resources is necessary for the sake of future generations. Energy resources are to be preserved for the sake of future generations who live on the earth in the years to come. If all the available resources are exhausted now, the people of future generations have to suffer a lot for their livelihood. Hence, the teachers have expressed their opinion that conservation of resources is necessary for the sake of future generations.

**Item-60: Every person should complain whether the dumping of waste is near or too far from their residences.**

The high score of acceptance of 4153 (83.1%) given by the teachers on item-60 of the research tool (See Table-1) indicates that the teachers are of the opinion that every person should complain whether the dumping of waste is near or too far from their residences. The dumping of waste near the residences is very harmful to our health. When the waste is dumped very close to the residence, it produces foul smell the results in polluting the air around. Hence, it is always desirable to dump waste at a distant place from the residences. So, the teachers felt that every one of us should watch whether the dumping of waste is very close or far away from our residences. If it is very close to the residence, it should be brought to the notice of the authorities of the corporation, municipality or the gram panchayat and register a complaint against it. This is a measure of safeguarding our own health.

## **Conclusion**

In summary, this research has illuminated the consciousness and attitude of secondary school teachers on different dimensions of Environmental Education in Begusarai, Khagaria, and Samastipur districts of Bihar, India. By knowing the opinions and experiences of educators; policy makers can develop better methods to promote sustainable culture through environmental education in schools.

Teachers working in secondary schools have a high positive attitude towards Environmental Education with regard to the dimension, 'Health and hygiene' (80%) followed by the other dimensions, 'Environmental concern' (64.3%), 'Polluters' (50%), 'Wild life' (33.3%), 'Forests' (20%) and 'Population Explosion' (20%).

It is concluded that the teachers working in secondary schools have exhibited more favorable attitude towards 'Health and hygiene'. The priority given to this aspect of Environmental Education is due to the reason that the health of the students and the hygienic conditions prevailing in the vicinity of the home, school and the surroundings play a significant role in the life of an individual. Though the other five dimensions of the environment are very important for the teachers, they exhibited more favorable attitude for the environmental dimension, 'Health and Hygiene'. When the students are healthy, then only they will be above to learn things better in the classroom and participate actively in all the activities conducted by the school on environmental protection.

From the high score of acceptances (80% and above) given by the teachers on the environmental dimension, 'health and hygiene' in respect of items 46, 52, 59 and 61 of the scale, it is concluded that:

1. The increase in population may result in environmental pollution. People may cause problems relating to air pollution, water pollution, sound pollution, ill-health, malnutrition etc. This in turn causes misery and suffering to all human beings.
2. Teachers felt that pesticides should not be sprayed on vegetables. This will result in health hazards. The teachers suggested organic vegetation; and use of natural manures in place of chemical fertilizers.
3. Teachers expressed their opinion that the industrial and toxic waste dumps are very dangerous to health; and hence should be kept at a long distance from the residences.
4. Teachers felt that environmental pollution leads to health hazards. They thought of bringing awareness among their students to safeguard their health by taking suitable measures to protect the environment from getting polluted.

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