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INGENUOUS STEWARDSHIP FOR SUSTAINABLE ENVIRONMENTAL TURN-OUT IN MEGHALAYA

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ABSTRACT

Environmental Sustainability is such journey though not a destination and environmental practices are those sanguine anthropogenic practices based on agriculture, mining, pollution, forest, industrialization, urbanization, and other associated convention. Basing on the principles and guidelines of Environmental Education and its need, Environmental Practices Scale (EPS) was constructed with 40 items/6areas and administered on selected sample of 2290 (M=1100, F=1190) students from higher secondary of Jaintia Hills District, Meghalaya. The EPS score of the higher secondary school students were analysed. It was found that means showed "average practices towards the environment" on the six areas like agriculture (M= 28.48 & F= 27.65); mining (M=13.4,F=11.2); pollution (M=53.68, F=53.48); forest (M=16.16, F=16.24); industrialization (M=16.6, F=16.2) & urbanization (M=28.6, F=27.68). The result of this study indicates that the fundamental role of EE in fostering the 3As - awareness-analysis- action is remarkably problematic. It suggests awareness of the environment for positive practices should be shared by all sections of the people both in rural as well as urban for the conservation of the environment as a whole.

Keywords: Environmental Education, Environmental Practices, Agriculture, Mining, Pollution, Forest, Industrialization, Urbanization.

INTRODUCTION

Jaintia Hills District, Meghalaya is richly endowed with natural resources and mineral deposits like coal, limestone and other commercially exploitable mineral deposits explicitly. However, coal mining being the most profitable economical activity in the area accompanied by various environmental degradation surface out acute scarcity of potable water, deforestation, water pollution, land subsidence, dust pollution and increase wasteland, acid mine discharge (Nongrum, 2008), besides, a vast topography being physically flawed due to chaotic elimination of squandered loads of caving in the ground. Unscientific mining and cement factories, edifice of roads, dams accumulating the threat exaggerate reduction of forest cover, erosion of soil at a shoddier scale contaminating the air, water and land, consequently deteriorating the natural strength of the biodiversity. There are health risks coupled with breathing dust and other airborne contaminants in and around mines. Reiterating the same, the Times of India (2012) also

supported that rampant degradation of the environment in the region perpetrated by cement plants has prompted adverse impact in the region.

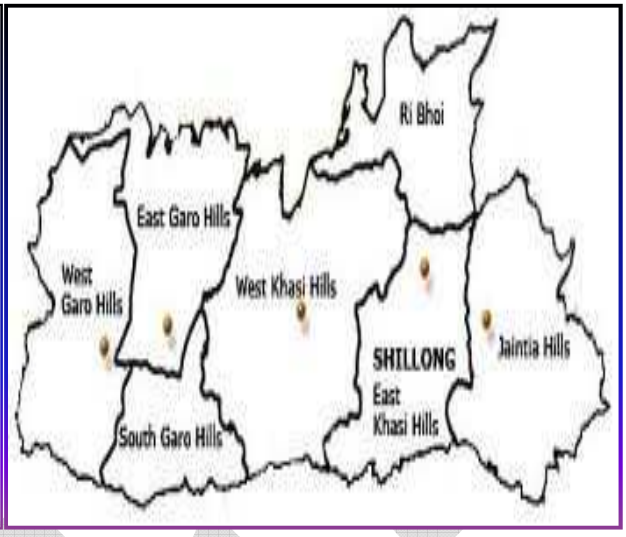

Fig 1: Map of India with Meghalaya location **Fig 2: Map of Meghalaya**

Unscientific, "rat-hole" mining of coal in the Jaintia Hills has not only damaged the ecology but also has failed to unwaveringly uplift the economic condition of the local people. It is the rich coal merchants who benefited the owner's while those who toil in the mines under acute life-threatening circumstances continue to live in abject poverty (NGO, 2012). Coal, limestone and other minerals are mined by private operators and the dormancy of a regulatory policy for mining has affected the environment to a large extent. Meghalaya Cabinet, headed by Chief Minister Dr. Mukul M Sangma approved the Meghalaya Mining Policy on 5th October 2012 which astonishingly accepted prime rat-hole mining of coal practices in the State. Meghalaya Government taking shelter under the Central Government stated that even the Central is in favour of protecting the customary rights of the people in which the small miners in Meghalaya still practice the aged rat-hole mining. Meghalaya is essentially caught in cross road, one is the hope of mining policy to preserved and protect the environment; secondly, to create awareness in mining areas to educate the miners their respective duties towards protecting the environment, to began with refilling the pit after mining and planting trees on top; thirdly, to improve the Law and Order situation in the mining areas, the anti social activities and rampant in the belt & fourthly, to sensitise the media and general public to exposed the situation and attract the attention of the nation (The Meghalaya Times, 2012). Vindicating the situational dilemma of state, Sustainable Development of the Environment ensuring to meet the needs of the present without compromising the ability of future generations to meet their own needs assert it's cry towards humanity- in consequence being the focus of this paper.

(a) **(b)**

Fig 3: Environmental Degradation in Jaintia Hills District, Meghalaya

(a) Coal Mining and (b) Construction of dam

While Environmental Education (EE) helps people's to improve their environmental awareness, education for sustainable development is a life-wide and life-long learning endeavour which challenges individuals, institutions and societies to view tomorrow as now (UNESCO, 2004:9). It is also imperative since it gentlely get hold of ecological peril originated by human development. It contents being environmental protection, the proficient utilization of natural wealth, the safeguarding of the ecosystem and inculcation of accountable and conscientious attitudes among members of society and the business community. EE being one pillar of sustainable development is fundamental of our environmental practices towards the energetic sustainable surroundings.

(c) **(d)**

Fig 4: Environmental Degradation in Jaintia Hills District, Meghalaya

(c) Limestone Quarrying and (d) Cement Factory

Environmental practices for sustainable future demands knowledge and understanding of our environment, how it works, what we have done to it and what can we do to protect, conserve and preserve it. We must ensure that any development for changes in natural environment has a minimal pessimistic impact as far as possible on the environment. Environmental Sustainability

is such journey though not a destination and environmental practices are those sanguine anthropogenic practices based on agriculture, mining, pollution, forest, industrialization, urbanization, and other associated convention. Good environmental practices manifest beneficial environmental performances of the people or community, it entails to self-regulation, demonstration of responsibility and earning of respectability (T. Wilkins 2006).

(e) **(f)**

Fig 5: Environmental Degradation in Jaintia Hills District, Meghalaya

(e) Deforestation and (f) Drastic Earth Cutting

Apprehensive about the environmental squalor and unsustainable development of the region, the investigators found it relevant to construct an Environmental Practices Scale (EPS) in order to study the environmental practices of the nation builders of tomorrow, ie, the Jaintia students towards the environment for ensued establishment of awareness of Environmental protection in command to entail practices in decision making and self formulation of a code of behaviour about problems and issues concerning environmental quality and sustainable Meghalaya.

RATIONALE OF THE STUDY

Sustainable Development emphasizes the need for understanding the principles of sustainability and asserts that learning the independence of the environment, the economy, and social systems can help in making the necessary changes towards sustainable utilisation of natural resources and the environment (Agenda 21-1992). Therefore, the investigators' intention is to arouse the mindset of the people the need of sustainable development in Jaintia Hills District of Meghalaya through Environmental Education and henceforth environmentally healthy and friendly practices. It is only through such practices sustainable development of environment will progress. The research philosophy of constructing and responding to the Environmental Practices Scale (EPS) aught to lead the students to the awareness of the positive environmental practice and necessary stewardship toward the environment is a worthwhile tool not only for diagnostic purpose but also for changing and modifying the practices of the students through their daily activities. It would also help the students imbibe in environmental values which they would cherish life-long to have

them as principles guiding towards a more sustainable development and environmental conservation in the region. Such reconstructed experiences in the students would strengthen the environmental practices and awareness, increasing sensitivity, deeper understanding of students to raise good stewards to care for issues like resources depletion, environmental pollution, land degradation and acceleration species extinctions. But as administration of EPS would benefit the educated and make conscious not only the students, propaganda highlighting its importances to the members of the society with regards to their connection and practice in the environment and dependency upon nature is inevitable. The EPS anticipates to make general public become aware of the ecological problems, analyze their own ecological status and act towards the sustainability of one's own environment with focal point being the school. However, its ripple in the society cannot be undermined.

OBJECTIVES OF THE STUDY

(a) To construct the Environmental Practices Scale (EPS) for the Jaintia Students in Jaintia Hills District, Meghalaya.
(b) To study the environmental practices among the Jaintia Students in Jaintia Hills District, Meghalaya.
(c) To study the environmental practices between male and female Jaintia Students in Jaintia Hills District, Meghalaya.

HYPOTHESES

1. There is no significant difference in the environmental practices among the Jaintia Students in Jaintia Hills District, Meghalaya.
2. There is no significant difference in the environmental practices between male and female Jaintia Students in Jaintia Hills District, Meghalaya.

METHODOLOGY

The study was conducted on 2290 among the Jaintia Students in Jaintia Hills District, Meghalaya. Stratified random sampling technique was used to collect the sample.

Tools

The tool used in the present study was the Environmental Practices Scale (EPS) constructed by the investigators' (2011). This tool measures the degree of Environmental Practices among the Jaintia Students in Jaintia Hills District, Meghalaya.

Environmental Practices Scale and its Construction

Basing on the principles and guidelines of Environmental Education as directed by the Tbilisi Declaration (1977), a felt need for development of positive stewardship of one's environment, following the Likert's five point scale method, Environmental Practices Scale (EPS) was constructed with 40 items consisting of six areas. The six areas dealt within the scale are Environmental Practices towards:

1. *Agriculture:* Agriculture is the primary economic activity of the people in the region and it is being practiced in most villages till date. Eventually, most of the agricultural fields was found to be affected with coal mining and cement plants, infertility and abandonment of the agricultural areas setting in as disastrous economical output.
2. *Mining:* It is one of the most glaring natural resource industry in the region. As a result of mining, large areas are deforested, making the land unsuitable for growth, causing large damage to the natural systems like land, water, air and vegetation.
3. *Pollution:* Pollution created by human actions, results in natural disasters. Industrial waste, agricultural practices, coal mining, cement factory, modes of transportation, everyday human activity manifest land, air, water and noise pollution are some of the glaring types in this region.
4. *Forest:* Forest a living treasure house is loosing its vitality through unscientific mining in Jaintia Hills. Rampant exploitation of natural resources, coal mining, cement plants, stone quarrying, forest fires, burning of wood, road and dams constructions resulted to the process of land degradation and clearance of forest in this part of the state.
5. *Industrialization :* Indiscriminate industrial growth like mining, cement plants, stone quarrying in the area has directed to environmental hazards, degraded agricultural fields and environmental disasters poses danger to the balance of the ecosystem.
6. *Urbanization:* Urbanization has become a phenomenon of this century. The lifestyle of the people involves use of chemicals, for instance chlorofluorocarbons in refrigerators, high level of energy consumption leads to environmental degradation and depletion of ozone layer.

Besides the above six areas, relevant points under general environmental concerns were use included. Through scoring the items of final try-out, the scores were entered in the answer sheets by using the answer key in descending order. After scoring the highest 27% and the lowest 27% were taken to fine out the 't' value, using the formula given by Edward (1957). Based on the 't' value, the significant statement were selected for the final form of EPS. The total numbers and Item Selection of positive and negative items with the serial numbers in the final scale are shown in Table-1 **:**

Table 1: Serial Number of positive and negative items in final EPS

Type	Serial Number Of Items In Final EPS	Total No. of Items
Positive	1, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 22, 23, 24, 25, 26, 27, 28, 29, 30, 32, 33, 34, 35, 36, 37, 38, 39.	35
Negative	2, 3, 21, 31, 40.	5
	Total	40

The final try-out sample consisted of 370 students, 175 male and 195 female between the age group of 14-24 years selected from 15 Higher Secondary and Colleges in Jaintia Hills District Meghalaya. The sample belonged to two groups: Higher Secondary and Colleges. During the try-

out, the investigator gave important instruction to the students with regards to the answer sheet and to clear doubts if any. After this, the students were requested to fill up the answer sheet. Scoring procedure is simple. Each item is assigned a weightage ranging from 5 (strongly agree) to 1 (strongly disagree) for positive items. In case of negative items the scoring is reversed i.e from 1 (strongly agree) to 5 (strongly disagree). The range of scores is from 1 to 200 with the higher score indicating the positive environmental practices and vice versa for negative items (i.e 200 to 1).

Table 2: Range of Environmental Practices Score

Categories	Scores
High Practices	191 – 200
Above Average Practices	171 – 190
Average Practices	141 – 170
Below Average Practices	121 – 140
Low Practices	Upto 120

The reliability of the scale was estimated by test-Retest method. The two test was re-administered with a time gap of one month after the first administration. Using the Pearson Product Moment Coefficient, Correlation between the two set of obtained data was found to be .85. The coefficient of correlation indicates a high degree of Test-Retest Reliability. The content validity of EPS was established on the subject experts opinion. The EPS form was given to 30 experts, in which 80% of experts agreement in this field were selected. Thus, the content validity for this scale was established.

The investigators' conducted a study on Environmental Practices Scale (EPS), the population was the higher secondary school students of Jaintia Hills. The selected sample of 2290 students from higher secondary of Jaintia Hills District, Meghalaya, 1100 male and 1190 female were administered for the test and the EPS score of the higher secondary school students were processed for the tabulation and analysis.

Procedure of Data Collection

The selected schools were first visited and permission was sought from the competent authority to administered amongst the students. Initially, the purpose of the study was vividly explained to them in group, secondly instruction to fill up the questionnaire in phase manner was done, thirdly, the students were asked to respond to each question in the questionnaire with clear conviction and commitment. However, if the students had any doubts with the questions, the investigators' made those questions clear to the students. After the respondents completed filling up the questionnarie, they were collected back from them. Scoring was done and data processing was followed up for analysis and interpretation.

Statistical Technique

The statistical technique used in the present study are Mean, Standard Deviation and t-test. This was employed to find out the significance differences in the level of Environmental Practices among the two categories of Jaintia Students from Jaintia Hills District, Meghalaya.

RESULTS

Table- 3 reveals the observed the mean scores among the Jaintia Students on Environmental Practices Scale. It was found that students showed "average practices towards the environment" in the different areas of the scale.

Table 3: Mean and Standard Deviation Scores of Different Areas

Areas	Mean	SD
Agriculture	28.28	2.99
Forest	16	2.16
Mining	11.56	1.99
Pollution	54.26	7.89
Industrial	16.2	2.04
Urbanization	27.24	4.06

Table 4: Difference in the Environmental Practices among male and female Jaintia Students

Areas	Sex	Mean	SD	t	Significant at 0.05 level
Agriculture	Male Female	27.65 28.48	3.62 2.62	.93	NS
Forest	Male Female	16.16 16.24	2.71 1.41	1.33	NS
Mining	Male Female	13.4 11.2	1.89 2.04	4	Sig
Pollution	Male Female	53.68 53.48	9.99 4.99	.09	NS
Industrialization	Male Female	16.6 16.2	2.28 1.78	.70	NS
Urbanization	Male Female	28.6 27.68	4.61 3.36	.81	NS

Table- 4 depicts that the Mean of Environmental Practices towards Agriculture among the Jaintia Students male was 27.65 and female 28.49. standard Deviation of male was 3.62 and female 2.62, and the t-value was retained at .05 level found to be .93 which is insignificant. Therefore, hypothesis is to be accepted. Mean score of Environmental Practices towards Forest among male was 16.16 and female 16.24. Standard Deviation of male was 2.71 and female was 1.41, t – value at .05 was 1.33 and found to be insignificant. Hence, hypothesis is to be accepted. Mean score of Environmental Practices towards Mining among male was 13.4 and female 11.2. Standard

Deviation of male was 1.89 and female 2.04, t – value at .05 level was 4, which was to be significant. Hence, hypothesis is to be rejected. Mean score of Environmental Practices towards Pollution among male was 53.68 and female 53.48. Standard Deviation of male was 9.99 and female 4.99, t – value at .05 level was found to be .09, indicates insignificant. Hence, hypothesis is to be accepted. Mean score of Environmental Practices towards Industrialization among male was 16.6 and female 16.2. Standard Deviation of male was 2.28 and female 1.78, t – value at .05 level was .70, found to be insignificant. Hence, hypothesis is to be accepted. Mean score of Environmental Practices towards Urbanization among male was 28.6 and female 27.68. Standard Deviation of male was 4.61 and female 3.36, t – value at .05 level was .81, found to be insignificant. Hence, hypothesis is to be accepted.

DISCUSSION AND CONCLUSION

Environmental Practices towards agriculture, forest, pollution, industrialization and urbanization found that both male and female Jaintia Students have the same practices towards these areas. The reason is that, they are studying in the same teaching learning environment, followed the same syllabus have the same practices in their daily life. Practices towards mining is found to be different among male and female Jaintia Students. Male students are more alert about mining and socio-economic the reason for this , is since male are more engrossed in building up a family and shaping of the society, its entire process of economic process leads them to have more awareness on mining as compared to female. It was also observed that during the data collection, Environmental Education as a subject in most schools of Jaintia Hills, is not taken seriously by the school and teacher, therefore degenerating the interest and attention of students for this particular subject. The reason is that, it was evaluated internally where the teacher concern maintain it in a slothful manner, and there are no trained teachers for Environmental Education. It was also observed, that good students response well and show interest while responding to the questionnaire. Hence, the investigators' view is to make Environmental Education (EE) subject more interest with the availability of well-trained teachers. Despite the deteriorating status of the environment, educational system must planned in a way that EE should inculcate in the students the environmental concerns and values, awareness and practices towards a sustainable future. Jaintia hills has been threatened by large-scale environmental deprivation caused by extensive deforestation, over exploitation of innate resources and other anthropogenic activities. Nonetheless, constructions of roads, dams, several cements plants, mining leading to the depletion of forest swathe, pollution of air, water and soil, degradation of agricultural fields, polluted rivers, streams has contaminated the agricultural fields, reduced the agricultural productivity drastically and forced the farmers to abandon the agricultural activity consequential in acute scarcity of fresh drinking and irrigation water. The ecology in the region has been severely degraded due to unsustainable use of natural resources and dumping of toxic waste chemicals bringing in climate change imperiling human health to a large extent that in if the citizens of tomorrow do not boast of "good environmental practices", their unfavourable environmental performances would blow their own trumpet of annihilation of Jaintia hills region

of Meghalaya. Hence, this research is an attempt against such vulnerability in its own humble approach crying-out for the ingenuous environmental practices for sustainable turn-out in the state.

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