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## **Environmental Education in Pre-Service Teacher Education Programmed In India: A Comparative Analysis**

**Indrani Nath**  
M.A. scholar  
Gauhati University, IDOL

### **ABSTRACT**

The objective of the paper was to study the overall attitude of pre service teachers' of different training colleges towards environmental education and practice. The present study was linked with B.Ed. level of pre-service teachers for which the researcher has taken three teacher training colleges in Silchar, Assam, India for his experiment. The subjects were 21, 33, and 46 respectively and these were counted the participants of the study. It was found that environmental education catalyzes positive healthy practices among pupil teachers and there existed significant difference among pre-service teachers' on overall environmental education and practice scores among the trainee.

Key words: awareness, climate, environment, thoughtfulness

### **Introduction**

Environmental education is not the new area of study in the discipline of education. It is virtually a new source of concern for educators, teacher, and students. It has the very wide area of interdisciplinary nature. The area of Environmental education has been discussed thoroughly at several national and international seminars and conferences. Most of the researchers have recognized the urgent need of Environmental Education and they have been found only some pupil and educated and uneducated peoples have clear concepts and understanding about the meaning, purpose, needs of environmental education and the course



of content that need to be taught to the students of education (Agarwal,1982;Bosdogan, 2009).

Environment Education (EE) is a process in which individuals gain awareness of their environment and acquire knowledge, skills, values, experiences and determination, which will enable them to act individually and collectively to solve present and future environmental problems (Jeronen & Kaikkonen1994). It is a complex process, covering not just events, but a string underlying approach to society building as a whole (Arcury and Trimothy,1986). Environmental Education (EE) provides people with the awareness needed to build partnership, understand NGO activities, develop participatory approaches to urban planning, and ensure future market for eco-business. Environmental Education recognizes values and clarifying concepts in order to develop skills and attitudes to understand environment and its relation with man, culture and his biophysical surroundings (Culen, & Volk, 2000). Environmental Education catalyses healthy practices concerning living in a eco friendly nation. International Union for conservation of nature and Natural resources commission always emphasizes environmental education should be included in the school and teacher-training colleges' curriculum for practice to achieve the goal of scientific living (Ahuja, 2009).

### **Environmental Education for Pre-Service Teachers**

Pre service teacher education with special importance to environment education is meaningful to existing ecological crisis world. The information regarding new facts, relationships, threats, and conflicts in the environment has become known through discussion, inquiry, survey and investigation. Classroom teachers play an important part in promoting and improving the capacity of individuals to understand these. That's why teachers address environmental issues in environmental education. If teachers have no knowledge, skills, or commitment to environmental education then it will be difficult to achieve the goals (Stern, Thomas and Linda 1993). Teachers should take a leading role in pursuing the actions on environmental education while acting as individuals infusing environmental perspectives into their classes (Agarwal, 1982).The environmental education should be included in the Bachelor of Education and Master of Education programmes for



teachers who will gain knowledge about the environment and they enable their students to teach environmental education properly. Therefore, in teacher education colleges these programmes should be included for developing eco-friendly teachers who will teach effectively and realize the objectives of environmental education Arcury and Trimothy (1986). The system of environmental education depends upon the teacher education institutions for organizing an effective process of education in schools (Strahler and Strahler 1977). It is not to give importance in criteria of admission, courses of studies and organizational procedure of teacher education but to emphasize the objectives of environmental education in curriculum.

Environmental education is a process of providing learning experiences to obtain knowledge, understanding, skills and awareness about the environment through effective learning by trainee teacher with desirable attitudinal change about man's relationship with his natural and manmade surrounding, which includes the relation of population, pollution, resource allocation, transportation, technology and urban and rural planning to the total human environment. The National Curriculum Framework (2000) recommended that environmental education should be made a part of teacher education programmes in order that teacher could be trained in teaching methodologies. Six years after the recommendations made by the NCE (1993) it was considered desirable to assess pre-service teacher conceptions of environmental education (EE) and the extent to which environmental education as a component of teacher education had been achieved. Teacher conceptions of a subject to be taught have been an area of interest to several researchers. (Thompson,1984; Crawford,1997). In support of assessing student teachers conceptions of subject, they are going to teach. Thompson (1984) observes teachers conceptions about the subject matter and its teaching play an important role in affecting their effectiveness as the primary mediators between the subject and the learners. Yet very little is known about the role that these conceptions might play in the formation of instruction practices characteristic of their teaching inquiry into these issues calls for an examination of teachers' cognitive and meta-cognitive process during instruction. This suggests that for teaching to be effective student teachers should have a clear conception of the subjects they are going to teach (Collins,1984; Barnes,1989; Bulkeley,2000).has also stressed the importance of assessing pre-service teachers conceptions of the subjects they are



going to teach the contents. Few teacher education programmes are structured to foster the development of environmental education. Content and well organized concept of teaching that can guide practice which is crucial for the pre-service teachers' conceptions of a subject they are going to teach should be known before they begin to teach it, because this could help them organize, justify and use their understanding to create an environment conducive to effective learning. Barnes,1989; Cottrell and Alan,1997;Chuang & Poon, ,2003 viewed that teachers construct their own conception of the topics and students' in turn create their own understandings of what has been taught. In the process, new comprehension result for both the students and the teachers have been developed( Culen & Volk, 2000).

Therefore, environmental education is important for pre-service teachers' conceptions because education can give a clear picture of their understandings of environmental education. A few studies have been conducted of teachers' conception of the subjects they are going to teach compared with children's preconception or prior knowledge. Teachers who have a clear conception of a student are in a better position to teach it with confidence (Thompson, 1984).Teacher should correlate the topics of environmental issues while teaching his own subject matter.Teacher conception of a subject to be taught has been an area of interest to several researches (Thompson 1984, Barners, 1989; Anderson, 1989; Crawford et al 1998). In support of assessing student teachers conceptions of a subject they are going to teach, observes; conceptions might play in the formation of instructional practices characteristics of their teaching (Eckholm, 1976;Hammeman ,1980; Fenshm,and Hunwick,1983; Thompson,1984). Environmental education is often taught or enhanced through outdoor experiences. The outdoors experience while not strictly environmental in nature often contains elements of teaching about the environment Gagne,1977; Gilbertson,1990).Pre-service teacher of environmental education should a have basic understanding of the theory, practice and history of environmental education.

### **Significance of the study**

Education about the environment builds awareness, understanding, and the skills necessary adjustment and habit where learning occurs outside of the classroom. Education for the environment is objectives related to natural conservation and sustainable development.



Hungerford and Volk (1990) have argued that active participation is not emphasized enough in EE although environmentally responsible behaviour can be gradually developed by entry level variables, including the ability to experience and enjoy nature and knowledge of ecology; ownership variables, such as in-depth knowledge and personal investment in the environment; and empowerment variables like internal locus of control and intention and ability to act for the environment. According to Nykänen & Kinnunen (1992) positive natural experiences in early childhood develops natural sensitivity. Environmental awareness, attitudes and conceptions can be changed by using repeated experiences (Gilbertson, 1990; Rynning, 1993) and long-term nature education (Palmberg, 1989). It has also been noticed that an emphatic relation towards nature can be supported through nature experiences (Palmberg & Kuru, 1998; Bogner, 1998). To achieve the natural experience nature trips, games, and playing in nature are necessary (Vuolle, 2003; Prüter, 2003). However, Van Matre (1998) has criticized these kinds of activities and stated that they leave environmental education without any deeper meaning. He has argued that for this reason, people are not able to create a holistic conception of environmental phenomena (Palmberg & Kuru, 2000). Similarly, Environmental Education is the basic requirement for both urban and rural male and female teachers and students (Dhanasekeran, 1990) but Malone, 1999; Haugeback, Milbrath, Enright, 1992; Manzanal, Rodriguez, Luis, & Jose, 2007. Schulze (1996); Palmberg, & Kuru, 1998); Palmer, 1998. found that Environmental Education and Management are not properly managed in most of the institutes and both male and female has low environmental awareness. (Stern, Thomas, Linda, 1993; Glaser & Strauss, 1967; Smyth, 2006). found that the problem at environment abuse is a serious one and needs to be addressed at the local, national and international levels. Environmental Education needs critical thinking and problem solving skill (Arcury, Trimothy, 1986). Sonneborn, 1994. Similarly, Cottrell & Alan, 1997 found that there existed significant difference among Indian and Iranian students in their level at environmental awareness. Female had significance higher levels of Environmental awareness as compared to their male counterparts. Good, 1974); Palmberg and Kuru, 2000 found that pre-service teachers reported attitude, value, belief and behavior contributed significantly to responsible environmental behavior. Pre-service teachers' attitude and teaching practices are related to environmental issues (Kolb, 1981). Manzal, Rodriguez,

Luis, Jose, 2007; Jeronen, & Kaikkonen,1994; Jeronen & Kaikkonen,2002; Kemmis, & McTaggart,1992. Separate environmental education methodology course in online learning communities are emerging as sites for building and sustaining communities conservation among pre-service teacher Jackson,1976;Judson,1986;Krapeedang,2000;Holdgate,1982; Hiidenkivi, 2001; Chuang and Poon, 2003; Underdal and Hanf, 2000; Antje and Brown, 2001; Franzini, 2001; Gisela and Vladimir, 2001; Wellington and Faria, 2001 Hines, Hungerford, & Tomera, 1987; Joyce,1980 found that the participant are moderately understand their Environmental and they have lack of significant effect with Environmental issues Hungerford, & Volk,1990).

### **Purpose of the Research**

From the above discussion, it was not cleared whether Environmental Education was affected among learners' attitude and practices and it was also not pre-determined. So many questions can be aroused whether Environmental Education has been continuing among pre-service teacher in different training colleges or not? Whether environmental education catalyses positive healthy practices? If so, then to what extent they aware about after the training? Are the Environmental Education affect on open-mindedness, scientific temper, and thoughtfulness among pre-service teachers? To find out the answers to the questions, the present study was undertaken.

### **Objectives of the Study**

1. To study the overall attitude of pre service teachers of different training colleges towards environmental education and practice.
2. To compare the awareness among pre-service teachers of different training colleges towards environmental education and practice.
3. To compare the open-mindedness among pre-service teachers of different training colleges towards environmental education and practice.
4. To compare the raise of scientific temper among pre-service teachers of different training colleges towards environmental education and practice.

5. To compare the thoughtfulness among pre-service teachers of different training colleges towards environmental education and practice.

### **Hypothesis of the study**

1. There exists no significant difference among the pre-service teacher's overall attitude towards environmental education and practice scores.
2. There exists no significant difference among pre-service teacher's awareness on Environmental education and practice scores.
3. There exists no significant difference among pre-service teacher's open-mindedness on Environmental education and practice scores.
4. There exists no significant difference among pre-service teacher's raise of scientific temper on environmental education and practice scores.
5. There exists no significant difference among pre-service teacher's thoughtfulness on Environmental education and practice scores.

### **Population and Sample**

The present study was concerned with the Bachelor of Education (B.Ed.) pre-service teachers of Cachar District of Assam, India. The whole B.Ed. students of Cachar District were the population. The researcher has taken three teacher training college and their students as the sample. It was a stratified random sampling. In the study 100 pre-service B.Ed. teachers has been undertaken from the population. Among them 21 pre-service B.Ed. teachers from Teacher Training College (TTC), Silchar, 33 pre-service teacher from Silchar College of Education (SCE), Silchar and 46 B.Ed. pre-service teacher from Dr. Shyama Prashad Mukherjee College of Education (SPMCE), Silchar

### **Design of the Study**

The present study was a descriptive survey design because this design helped to study the existing status of Environmental Education and practices among pre-service teachers and it suggested for the improvement of existing status.

### **Tools Used**

### 1. *Instructional tool*

#### **Instructional objectives**

In the recent study the researcher has followed inquiry approach to teach the environmental education programme for that he has followed instructional objectives to achieve these. These were: The students will be able

1. To know ecological foundation;
2. To conceptualize environmental awareness;
3. To develop open-mindedness (OM);
4. To catalyze scientific Temper (ST);
5. To increase thoughtfulness (T) and
4. To take environmental action (skill).

The researcher has used inquiry and a problem-solving approach for instruction

#### **Procedure of teaching programme**

S1: Why the river water looks dirty?

T: You'll have to find out why it is?

S2: Well, the polluted components were not visualized, what are these?

T: Are you asking me 'were there coming from?'

S3: Were these comes from rain, sea, mountain or industries?

T: Yes, from there.

S1: What were those components and they refuses to the river?

T: Yes you think and investigate hypothetically.

S2: Could you get those from the mountains?

T: You could not get all things from the mountains. It is very difficult.

S3: Well, may be some people bathing, washing, cleaning any where?

T: May be.

S1: Was there any evidence that industries are the sources of pollution?

T: Yes, evidences available for that.

S1: Other than the dead bodies are the sources.





T: Yes.

S1: Can I think just the sources of pollution?

T: No, also think what are the cause and effect relationship?

S3: Yes, there are a lot of industries mostly near this river?

T: Yes, but why industries are the sources of water pollution?

S3: Sir, can we visit now the small scale industry?

T: Yes, why not, let's go.

S1: Oh my god, So much pollutants here.

T: See and realize.

S1: Why they are thinking only river is the ultimate garbage?

T: Ask one employee for the reason.

S2: Why you have been used the river for the waste disposition?

E: This one is easier to do. What is your problem?

T: Yes, listen and ask other few questions.

S2: Do you know these pollutants creates hazard?

W: Actually we know but what we will do, where we will through these?

T: You have to sharpen your question.

S2: Was there anyone who protects you not to put pollutants in the river?

W: Yes, sometimes one or two people directly say us not to through these to the river and news paper always states comments?

S2: Now say what you will do?

W: I will request to my Executive manager for the proper placement of pollutant.

S2: Please say whether environmental education necessary to all or not?

W: Yes, it is necessary but all gentlemen should practice first.

S2: Okay

T: No. you ask other people in the community.

S: Shall I ask question to the women?

T: Yes.

S: Was there any evidence of disease in your community?

T: You have to explain some.

S: What diseases people suffer here?

Wo: Yes, there was evidence of disease.

S: Do you know that disease was the cause of death?

T: Good.

Wo: Yes, there was a really widespread epidemic or something contagious diseases spread?

T: You are right..

S: Do you think that all the people that died were diseased?

Wo.: Yes.

S: Say, what are the reasons for diseases in your community

Wo: Local industry may be.

S: Do you need more information?

T: There is some evidence of low rain and dryness here.

S: Why low rain and dryness?

T: Climate changes now a global issue.

S: Carbon dioxide is the main cause of environmental pollution.

T: You are right

S: The causes are man-made.

T: Ask your friends do they know climate change is manmade?

S10: Yes, some extent these are manmade but man control or minimize these.

T: All questions were theory and practice questions?

S: It increases my reality of knowledge, awareness, open mindedness and thoughtfulness.

T: Are you trying to verify it?

## ***2 Measuring Tool***

### **Eco-friendly thought and Practice Scale**

In the present study the researcher has been used single tools developed by (Jena, 2001) which was a two points (yes/no) scale. This scale has four subscales these are Awareness (A), Open-mindedness (OM), Scientific Temper (ST) and Thoughtfulness (T) regarding environmental and practice. Each subscale has five question type items. It has .75 split half

and .80 test retest reliability coefficient and it has been taken 10-12 minutes for giving response.

Each subscale has (a, b, c, d, e) five interrogative type of items having two point response like yes or no. These subscales were used to know the Environmental Education Approach and Awareness, open- mindedness, scientific temper, and thoughtfulness among B.Ed. Pre-service Teachers. The ‘Yes’ response should be counted 1 and ‘No’ response should be counted 0.

### Scoring Procedure

The response were obtain from a two point liker type scale having should be counted as 1 and all no type response should be counted as 0.

Table 1 shows the scoring sheet for environmental education and practices schedule.

Sl.No	Subscale	Items/Response/Score									
		Item	1		2		3		4		Total
1	Approach and Awareness on Environmental Education and Practice (EEP)	Response	Yes	No	Yes	No	Yes	No	Yes	No	
		Score									
		Item	1		2		3		4		
2	Open-mindedness on Environmental Education and Practice (OPEEP)	Response	Yes	No	Yes	No	Yes	No	Yes	No	
		Score									
		Item	1		2		3		4		
3	Scientific Temper through Environmental Education and Practice (STEEP)	Response	Yes	No	Yes	No	Yes	No	Yes	No	
		Score									
		Item	1		2		3		4		
4	Thoughtfulness for Environmental Education and Practice (TEEP)	Response	Yes	No	Yes	No	Yes	No	Yes	No	
		Score									
		Item	1		2		3		4		

## Procedure of Data Collection

From the very beginning of 1<sup>st</sup> week of February the researcher has visited all the three Teacher training colleges for instruction and collection of the data. After three days instruction the researcher has requested the subjects to give their response for the eco-friendly thought and Practice Scale.

## Analysis

**H<sub>1</sub> There exists no significant difference among the pre-service teachers overall attitude towards environmental education practices scores.**

The overall attitude scores on environmental education practices among pre-service teachers' of Teacher Training College (TTC), Silchar College of Education (SCE) and Shyama Prashad Mukherjee College of Education (SPMCE). Teacher Training College (TTC) Mean (4.4471) was greater than both Silchar College of Education (SCE) (1.8872) and Shayama Prashad Mukherjee College of Education (SPMCE) (0.8974). So, TTC pre service teachers' environmental education attitude and practice more among other two colleges students.

Table 1.1 ANOVA for overall environmental education practices among pre service teachers of Teacher Training College (TTC), Silchar College of Education (SCE) and Shyama Prashad Mukherjee College of Education (SPMCE).

Sources	SS	df	MS	F	P
Between group	550.7303	2	275.3652	294.1	<.01
Within group	374.5146	100	3.7451		
Total	833.3846	102			

Table 1.1 illustrated ANOVA for Environmental education practices among pre service teachers of Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE). The F-value (df 2/100, 294.1, p<0.1) was significant at .01 level. Here it was cleared that there existed significant difference among Teacher Training College (TTC), Silchar College of Education (SCE) and

Shayama Prashad Mukherjee College of Education (SPMCE) pre-service Teachers in Environmental Education Practices. Hence, the hypothesis was **rejected**.

Table 1.2 Tukey HSD post-hoc Multiple Comparison Test for environmental education practices among pre service teachers of Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE).

Comparison Group	Mean	SD	q value	p value
TTC v/s SCE	4.4471	0.9323	18.01	<.01
	1.88872	1.0777		
TTC v/s SPMCE	4.4471	1.0777	22.28	<.01
	1.7946	0.8974		
SCE v/s SPMCE	1.8872	1.0777	0.83	Not significant
	1.7946	0.8974		

Table 1.2 analyzed Tukey HSD post-hoc Multiple Comparison test for environmental education practices among the pre service teachers of Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE). The comparison between Teacher Training College (TTC) and Silchar College of Education (SCE) has mean (4.4471 and 1.8872), SD (0.9323 and 1.0777) and their q value (18.01,  $p < 0.1$ ) was significant. Similarly, the comparison between Teacher Training College (TTC) and Shayama Prashad Mukherjee College of Education (SPMCE) mean (4.4471 and 1.7946), SD (0.9323 and 0.8974) and their q value (22.28,  $p < .01$ ) was significant. But in case of Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE) mean (1.8872 and 1.7946), SD (1.0777 and 0.8974) and their q-value 0.83 was not significant. Hence, the hypothesis was rejected and their existed significant difference among pre service teachers of Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE) with regard to their overall attitude towards environmental education practices.

**H<sub>2</sub> There exists no significant different among pre-service teacher’s awareness on Environmental education and practices scores.**

The Awareness on Environmental Education practices among pre service teachers of Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad

Mukherjee College of Education (SPMCE). Teacher Training College (TTC) Mean (4.3182) was greater than both college, Silchar College of Education (SCE) (2.0294) and Shayama Prashad Mukherjee College of Education (SPMCE) (2.0213).

Table 2.1 ANOVA for Awareness on Environmental Education practices among pre service teachers of Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE).

Sources	SS	df	MS	F	P
Between group	109.3612	2	54.6806	43.15	<.01
Within group	126.722	100	1.2672		
Total	217.7282	102			

Table 2.1 analyzed ANOVA for Awareness on Environmental education practices among pre service teachers of Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE) pre-service students, their F value,(df 2/100,43.15,  $p < 0.1$ ) was significant at .01 level. Here it was cleared that there was significant difference among Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE) pre-service Teacher for Awareness on Environmental Education Practices. Hence the hypothesis was rejected.

Table 2.2 Tukey HSD post-hoc multiple comparison test for awareness on Environmental Education Practices among pre service teachers of Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE).

Comparison Group	Mean	SD	q value	p value
TTC v/s SCE	4.3182	1.3233	6.97	<.01
	2.0294	1.1142		
TTC v/s SPMCE	4.3182	1.3233	7.86	<.01
	2.0213	1.0319		
SCE v/s SPMCE	2.0294	1.1142	0.03	Not significant
	2.0213	1.0318		

Table 2.2 analyzed Tukey HSD post-hoc multiple comparison test for pre service teachers' awareness on environmental education practices among of Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee

College of Education (SPMCE). The comparison between Teacher Training College (TTC) and Silchar College of Education (SCE) mean (4.3182 and 2.0294), SD (1.3233 and 1.1142) and their q value (6.97,  $p < 0.1$ ) was significant. Similarly, the comparison between Teacher Training College (TTC) and Shayama Prashad Mukherjee College of Education (SPMCE) has been observed that the mean (4.43182 and 2.0213), SD (1.3233 and 1.0319) and their q value (7.86,  $p < .01$ ) was significant. But in case of Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE), their mean (2.0294 and 2.0213), SD (1.1142 and 1.0319) and q-value 0.03 was not significant. Hence, the hypothesis was rejected and their existed significant difference among the pre-service teachers of Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE) with regard to students' awareness on environmental education practices.

### **H<sub>3</sub> There exists no significant difference among pre-service teacher's open-mindedness on Environmental education and practices scores.**

The open-mindedness on Environmental Education practices among pre service teachers of Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE). Teacher Training College (TTC) mean (4.4091) was greater than both colleges, Silchar College of Education (SCE) ( $m=1.7059$ ) and Shayama Prashad Mukherjee College of Education (SPMCE) ( $m=1.8723$ ).

Table 3.1 ANOVA for open-mindedness on Environmental Education practices among pre service teachers of Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE).

Sources	SS	df	MS	F	P
Between group	143.2258	2	71.6129	65.33	<.01
Within group	109.611	100	1.0961		
Total	227.7087	102			

Table 3.1 illustrates ANOVA for open-mindedness on Environmental education practices among pre service teachers of Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE) pre-service students,

their F-value, (df 2/100, 65.33,  $p < 0.1$ ) was significant at .01 level. Here it was cleared that there existed significant difference among the pre-service teachers of Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE) in open-mindedness on environmental education practices. Hence, the null hypothesis was not accepted.

Table 3.2 Tukey HSD post-hoc multiple comparison test for open-mindedness on environmental education practices among pre service teachers of Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE).

Comparison Group	Mean	SD	q value	p value
TTC v/s SCE	4.4091	1.1816	8.65	<.01
	1.7059	1.1154		
TTC v/s SPMCE	4.4091	1.1816	9.71	<.01
	1.8723	0.9235		
SCE v/s SPMCE	1.7059	1.1154	0.73	Not significant
	1.8723	0.9235		

Table 3.2 analyzed Tukey HSD post-hoc multiple comparison test for open-mindedness on Environmental Education Practices among pre service teachers of Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE). The comparison between Teacher Training College (TTC) and Silchar College of Education (SCE) mean (4.4091 and 1.7059), SD (1.1816 and 1.1154) and their q value (8.65,  $p < 0.1$ ) was significant. Similarly, from the comparison between Teacher Training College (TTC) and Shayama Prashad Mukherjee College of Education (SPMCE) observed that mean (4.4091 and 1.8723), SD (1.1816 and 0.9235) and their q value (9.71,  $p < .01$ ) was significant. But in case of Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE), their mean (1.7059 and 1.8723), SD (1.1154 and 0.9235) and q- value 0.73 was not significant. Hence, the hypothesis was rejected and their existed significant difference among the pre-service teachers of Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE) with regard to students open-mindedness for Environmental Education and Practices.



**H<sub>4</sub> There exists no significant difference among pre-service teacher's raise of scientific temper on environmental education and practices scores.**

Similarly the Scientific Temper on Environmental Education practices among pre service teachers of Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE). Teacher Training College (TTC) Mean (4.1818) was greater than both college, Silchar College of Education (SCE) (2.0294) and Shayama Prashad Mukherjee College of Education (SPMCE) (1.383).

Table 4.1 ANOVA for Scientific Temper on Environmental Education practices among pre service teachers of Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE).

Sources	SS	df	MS	F	P
Between group	188.7668	2	59.3834	63.61	<.01
Within group	93.3497	100	0.9335		
Total	212.1165	102			

Table 4.1 illustrates ANOVA for Scientific Temper on Environmental Education practices among pre service teachers of Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE). The F- value (df 2/100, 63.61,  $p < 0.1$ ) was significant at .01 level. So, there existed significant difference among the pre service teachers of Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE) with regard to raise of scientific temper for environmental education practices. Hence the hypothesis was not accepted.

Table 4.2 Tukey HSD post-hoc multiple comparison test for scientific temper on Environmental Education practices among pre service teachers of Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE).

Comparison Group	Mean	SD	q value	p value
TTC v/s SCE	4.1818	1.2203	6.8	<.01
	2.0294	1.1142		
TTC v/s SPMCE	4.1818	1.2203	12.25	<.01

	1.383	0.6774		
SCE v/s SPMCE	2.0294	1.1142	3.24	Not significant
	1.383	0.6774		

Table 4.2 analyzed Tukey HSD post-hoc Multiple Comparison test for Scientific Temper on Environmental Education Practices among pre service teachers of Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE). The comparison between Teacher Training College (TTC) and Silchar College of Education (SCE) mean (4.1818 and 2.0294), SD (1.2203 and 1.1142) and their q value (6.8 <0.1) was significant. Similarly, the comparison between Teacher Training College (TTC) and Shayama Prashad Mukherjee College of Education (SPMCE) has mean (4.1818 and 1.383), SD (1.2203 and 0.6774) and their q value (12.25, <.01) was significant. But in case of Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE), their mean (2.0294 and 1.383), SD (1.1142 and 0.6774) and q value 0.83 was not significant. Hence, the hypothesis was rejected and their existed significant difference among the pre-service teachers of Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE) with regard to students rise of scientific temper for environmental education and practices.

**H<sub>5</sub> There exists no significant difference among pre-service teacher’s thoughtfulness on environmental education and practices scores**

The thoughtfulness on environmental education and practices among pre service teachers of Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE). Teacher Training College (TTC) Mean (4.2727) was greater than both college, Silchar College of Education (SCE) (2) and Shayama Prashad Mukherjee College of Education (SPMCE) (1.7872).

Table 5.1 ANOVA for thoughtfulness on environmental education practices among pre service teachers of Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE).

Sources	SS	df	MS	F	P
Between group	118.4511	2	59.2256	52.77	<.01
Within group	112.236	100	1.1224		
Total	212.464	102			

Table 5.1 illustrated ANOVA for thoughtfulness on environmental education and practices among pre service teachers of Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE). The F value,(df 2/100,52.77,p<0.1) was significant at .01 level and there existed significant difference among the pre-service teachers of Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE) with regards to their thoughtfulness on environmental education and practices. Hence, the hypothesis was rejected.

Table 5.2 Tukey HSD post-hoc multiple comparison test for thoughtfulness on environmental education and practices among pre service teachers of Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE).

Comparison Group	Mean	SD	q value	p value
TTC v/s SCE	4.2727	1.2414	7.08	<.01
	2	1.1282		
TTC v/s SPMCE	4.2727	1.2414	9.4	<.01
	1.7872	0.9074		
SCE v/s SPMCE	2	1.1282	0.94	Not significant
	1.7872	0.9074		

Table 5.2 analyzed Tukey HSD post-hoc Multiple Comparison test for thoughtfulness on Environmental Education and Practices among pre service teachers of Teacher Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE). The comparison between Teacher Training College (TTC) and Silchar College of Education (SCE) has mean (4.2727 and 2), SD (1.2414 and 1.1282)

and their q value (7.08,  $p < 0.1$ ) was significant. Similarly, the comparison between Teacher Training College (TTC) and Shayama Prashad Mukherjee College of Education (SPMCE) has been observed that mean (4.2727 and 1.7872), SD (1.2414 and 0.9074) and their q value (9.4,  $p < .01$ ) was significant. But in case of Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE), their mean (1.7872 and 1.7946), SD (1.1282 and 0.9074) and q- value 0.94 was not significant. Hence, the hypothesis was rejected and their existed significant difference among the pre service teachers of Training College (TTC), Silchar College of Education (SCE) and Shayama Prashad Mukherjee College of Education (SPMCE) with regard to their thoughtfulness on environmental education and practices.

### **Discussion**

From the recent study, it was found that there existed significant difference among the pre-service teachers on overall environmental education practices. Support to the study Dhanasekeran, 1990; found that environmental education affects both male and female teachers' attitude and awareness significantly. The recent study also found that there was significant difference among pre-service teachers awareness on Environmental Education and practices scores. For strength of the result Mosothwane, 1980; Helen, 1992; Mattew, 1995; Underdal and Hanf, 2000 has been found that Environmental Education significantly effects human behavior. The result of the present study also supported by Palmberg and Kuru, 2000 and found that pre-service teachers reported attitude, value, belief and behavior contributed significantly to responsible environmental behavior. Pre-service teachers' attitude and teaching practices are related to environmental issues (Wagner, P.L.(1960), Trainer, T. (1990). Thathong, K. (2005). Manzal, Rodriguez, Luis, Jose, 2007). Separate environmental education methodology course in online learning communities are emerging as sites for building and sustaining communities conservation among pre-service teacher (Strahler, A.H. and Strahler, 1977; Chuang and Poon, 2003; Underdal and Hanf, 2000; Antje and Brown, 2001; Franzini, 2001; Gisela and Vladimir, 2001; Wellington and Faria, 2001 Stern, Thomas and Linda, 1993; Vidyarthi, 1975; Treshow, 1976 found that the participant are moderately understand their Environmental and they have lack of significant effect with Environmental issues Weil, M. and Joyce, 1978).



There existed significant difference among pre-service teachers' open-mindedness, scientific temper and thoughtfulness on environmental education and practices (Wolverton, and McDonald,1979). Support to the study result Humpel and Owen,2002; Krause,2003; Schmidt,2005 found that there was appositive side on environmental education for the improvement of human, emotion, perception and feeling.

### **Conclusion**

Recently environmental issues and to understand these are crucial for the present pre-service teacher who will teach these to their students. They should design effective instruction they can awareness among learners, open mindedness, scientific temper and thoughtfulness among their students. The paper concluded that Environmental education catalyzes positive healthy practices among pupil teachers and there existed significant difference among pre-service teachers' on overall environmental education and practice scores among the Teacher Training College(TTC), Silchar, Assam, Silchar College of Education(SCE),Silchar and Shyama prashad Mukherjy ColIege of Education(SPMC).Accordingly the pre-service teachers should prepare themselves to mitigate the environmental issues. Motivate student to take up projects pertaining to environment. Create a positive attitude towards physical work among the students. Motivate student to participate in tree plantation programmes. Sensitize students to problems like population explosion and the need for smaller families. Train students to keep their surroundings clean and wear clean clothes. Organize essay writing debating and elocution competitions on environment. Pre-service teachers through environmental education must understand and accept responsibilities associated with practicing environmental education such as exemplary environmental education practice emphasis on education practice, emphasis on education and ongoing learning and professional development. Teacher must enable students to engage in open enquiry and investigation especially when considering environmental issues that are controversial and require students to seriously reflect on their own and others perspectives. Teachers should ensure a climate for learning about and exploring environment, an inclusive and elaborative learning environment, and flexible and responsive instruction. The teachers can be done by integrating the environmental problems with other subjects like geography wherein while dealing with the topic on forests, the problem of deforestation can be dealt with conceptual competencies, the ability to understand

the emerging concepts like globalization, liberalization and relating them to their impact on the environment. Competencies in extracurricular activities, the ability to organize activities relating to environment and motivating the students to participate in these activities as environmental education is incomplete without exploratory activities. So, environmental education and practices should need a place in all level of curriculum. Effective environmental educations play impact on practice at elementary level. So it should be emphasized on grass road level.

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