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Study Of Certain Academic Factors And Their Impact On Awareness Of Green Technology Among B.Ed., Trainees

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Abstract: Environment has been defined as the sum total of all conditions and influences that affect the development and life of organisms. It is being increasingly felt by the policymaker and educationists that teachers should be trained in the development of environmental awareness in them as well as in their student's. Environmental education should have an important place in pre-service teacher training and the teacher education institutions should share this responsibility. It is also felt that there is an urgent need to frame a suitable curriculum for teacher education course. National Council of teacher Education has also included a course related to environmental issues in its teacher education curriculum frame work (1998) in order to make future teacher more aware as well as concerned about natural environment. Green technology, also known as environmental or clean technology, minimizes impacts on the environment and natural resources. It is based on concepts such as conserving water and energy, reducing waste and pollution, harnessing renewable energy sources, finding ways to reuse materials, and developing less polluting technologies. This study has been conducted with the purpose of determining whether Academic factors such as educational qualifications, teaching experiences, optional subject, type of institution and computer knowledge have an Influence on awareness of Green Technology among selected B.Ed., trainees. The sample of this research consisted 600 B.Ed., trainees from the government, government aided, and self-financing colleges in urban and rural areas in Coimbatore educational district. To collect the data for the present investigation, the researcher developed and standardized questionnaire on the awareness of Green Technology. Thus the collected data were analyzed using descriptive and Test of significance statistical Methods to arrive the findings and meaningful conclusions. Finally it is concluded that of all the Academic factors taken to consideration in the present investigation only the variable teaching experience have an influence on awareness of green technology among the selected B.Ed. trainees.

Key words: Green Technology, Environment Education, Environment Awareness, Academic Factors, B.Ed., Trainees.

INTRODUCTION :

Today, the environment has become a main concern for the world. Pollutions in the seas, rivers, the atmosphere, and wherever we can think of are a global problem (Lisowski, 1993; risler, 1993). The polluting of a river springing in our lands is not a local problem anymore, but a global one. The atmospheric pollution or nuclear activities harming environment in the USA or anywhere of the world are not problems of the country where they take place but have turned to be the problems of the whole world. The consequences of the disaster in Chernobyl that happened years ago are suffered not only by the country where the explosion took place but also by the rest of the world. When the fact that people from different cultures act with a nationalistic awareness, which is seen as one of the biggest problems of globalization, is taken into consideration, it will be inevitable for us to face the fact that it would not be easy to find a solution to environmental problems. As awareness grows about environmental issues such as pollution, human impact on climate change, and depletion of natural resources, so is interest growing in environmentally friendly products and services. For example, the popularity of green cleaning products has increased in recent years. Nontoxic, biodegradable cleaning products are safer for use in the home (they are less likely to cause health problems). They also keep harmful chemicals out of the environment. Green technology, also known as environmental or clean technology, minimizes impacts on the environment and natural resources. It is based on concepts such as conserving water and energy, reducing waste and pollution, harnessing renewable energy sources, finding ways to reuse materials, and developing less polluting technologies.

Effective environmental education first and foremost requires a highly trained and competent instructor. These educators work in a variety of settings, at a variety of jobs. They teach in public and private classrooms, and lead

activities for children and adults at non-formal educational institutions such as nature centers, zoos, museums, outdoor learning centers, and parks. They develop curriculum materials, put on public awareness events, and administer national, state, and local programs. Their training involves both initial educator training, as well as ongoing professional development.

In formal, school-based environmental education, teachers have an important role in providing students an adequate knowledge base and clear understanding of environmental problems (Khalid, 2001). Groves & Pugh (1999) stated that students' misunderstandings might arise from incorrect understandings passed along by their teachers. Recent researches in environmental education support the idea that teachers have poor understanding of the actual environmental problems (Michail et al., 2007; Summers et al., 2000).Therefore, it is necessary to educate prospective teachers who incorrectly understand causes, consequences and reducing of major environmental problems (kisoglu et al., 2010).

RESEARCH REVIEWS

Several studies in this field have served an important function by developing knowledge, concern, attitude, awareness, etc. among the masses to preserve, protect and conserve the environment from various types of problems and to take effective decisions for enacting environmental laws (Nagra, 2010). The researchers have carried out some studies, which are reviewed below.

Pradhan (1995) compared the environmental awareness of 124 B.Ed. students studying in two-teacher education institutions and revealed significant variation in environmental awareness of urban and rural teacher trainees, the master's degree holders and the bachelor's degree holders Patel (1999) concluded from his study on primary teachers in Dang district of Gujarat that the level of environmental awareness of these teachers was high. Further, he also found that male teachers, experienced teachers (more than 35 years) and graduate teachers had higher environmental awareness than their counterparts (female, less experienced and Primary Teacher Training).and the subject background of trainees. Praharaj (1991) concluded that the pre service teachers distinctly had poor knowledge regarding environment while in service teachers moderately known about it. Ambasht (1997) concluded that researches on environment education teaching are very inadequate and need outright promotion at all levels and regions.

Tan (2001) found that teachers' belief, attitudes and education philosophy influence their instructional approach the classroom climate and roles that they may adopt. From the environmental perspective, teachers can act as predecessors who pass on the selected environmental elements to the next generation. Therefore the determination of prospective primary school teachers understanding of the environment is important.

Dash & Satapathy (2006) studied Education for Sustainable Development, teaching values for conservation of Environment through 3 R's. The environmental crisis that the world faces today is due to overpopulation, hunger, poverty, peoples unlimited desire, ignorance and materialistic approach to life. For SD the literacy scale for community should not be limited to simple 3 R's (Reading, Writing and Arithmetic), but include environmental philosophy of 3 R's (Reduce, Recycle and Re-use) Reduction in the use of natural resource, re-use of left over's and recycle of waste beside respect for nature are essential for survival of mankind. Every individual, rich or poor, young or old has contributed in his / her capacity for sustenance of life and sustainable economic development. The concept of 3 R's should be taught to young children as well as adults through organization of activities, demonstration and exhibits. It would lead to protection and preservation of the environment and the life support system leading to economic prosperity in the long run.

Kalplata Pandey (2007) studied on inculcation of Environmental Value among teachers. The findings of the study shows that there exists significant different between pre-service B. Ed student teacher and in-service primary school teachers teaching in aided school and pre-service student teacher excel govt. secondary school teacher as far as environmental values are concerned. B. Ed student teacher has more environmental value in comparison to primary school teachers teaching in aided schools and secondary school teacher teaching in Govt. School. Mohini Agarwal (2007) studied on student teachers attitude towards environmental education. The results reveal that the direction of difference is in favour of science student teachers when compared to arts student teachers. There is no significant difference in attitude towards environmental education among students teachers of village and city origin.
In the current context the need for studying the environmental awareness of B.Ed., Trainees is a must. It is very essential for each individual to develop an awareness of protective and preservation towards environment. Our environment is threatened due to many hazards. Air, water and pollution are on the increase degradation of environment resulting in many problems. Therefore, there is a great need to protect and preserve the environment. The roles of prospective teachers would go a long way in achieving the desired goals. In order to hasten the awareness towards environment it is necessary to know that level of awareness they possess towards environment. Further, to know the impact of academic factors on awareness on green technology the academic variables such as educational qualifications, teaching experiences, optional subject, type of institution and computer knowledge of the B.Ed. trainees were also associated in the present study.

RESEARCH DESIGN

Since the objective of the study is to find out the impact of Academic factors such as educational qualifications, teaching experiences, optional subject, type of institution and computer knowledge on awareness of Green Technology among B.Ed., trainees, a normative survey research method was adopted. The data were collected from 600 B.Ed., trainees from the government, government aided, and self-financing colleges in urban and rural areas in Coimbatore educational district. To collect the data for the present investigation, the researcher has standardized a questionnaire on the awareness of Green

Technology. Thus the collected data were analyzed using descriptive and Test of significance statistical Methods to arrive the findings and meaningful conclusions.

ANALYSIS AND INTERPRETATION

Hypothesis – 1: There will be a significant mean score difference in Awareness on Green Technology between the groups based on Educational Qualification among the selected B.Ed. Trainees.

Table – 1: Mean score difference in Awareness on Green Technology between the groups based on Educational Qualification among the selected B.Ed. Trainees.

Factors in Awareness on Green Technology	Educational Qualification	N	Mean	SD	Df	t-value	p-value
Knowledge on GT	UG	299	28.49	4.00	598	1.824	.069
	PG	301	27.86	4.54			
Curricular Aspect	UG	299	18.31	3.29	598	0.244	.807
	PG	301	18.38	3.50			
Sustainable Development	UG	299	18.69	2.72	598	1.390	.165
	PG	301	18.37	2.86			
Awareness on Climate Change	UG	299	15.48	2.91	598	1.008	.314
	PG	301	15.73	2.98			
Green Barriers	UG	299	22.00	5.65	598	1.472	.141
	PG	301	22.67	5.57			
Applications of GT	UG	299	17.14	1.77	598	.062	.951
	PG	301	17.15	1.79			
Awareness on Renewable Energy	UG	299	24.47	3.33	598	1.713	.087
	PG	301	23.98	3.69			
Green Technology (Tot)	UG	299	144.59	13.12	598	0.414	.679
	PG	301	144.14	13.64			

Hypothesis – 2: There will be a significant mean score difference in Awareness on Green Technology between the groups based on Teaching Experience among the selected B.Ed. Trainees.

Table – 2: Mean score difference in Awareness on Green Technology between the groups based on Teaching Experience among the selected B.Ed. Trainees.

Factors in Awareness on Green Technology	Teaching Experience	N	Mean	SD	Df	t-value	p-value
Knowledge on GT	With Experience	219	28.84	4.18	598	2.916	.004*
	Without Experience	381	27.79	4.31			
Curricular Aspect	With Experience	219	18.45	3.44	598	.604	.546
	Without Experience	381	18.28	3.37			
Sustainable Development	With Experience	219	18.41	2.73	598	.791	.429
	Without Experience	381	18.60	2.83			
Awareness on Climate Change	With Experience	219	15.63	2.90	598	.119	.905
	Without Experience	381	15.60	2.98			
Green Barriers	With Experience	219	22.65	5.65	598	1.025	.306
	Without Experience	381	22.16	5.59			
Applications of GT	With Experience	219	17.10	1.76	598	.512	.609
	Without Experience	381	17.17	1.79			
Awareness on Renewable Energy	With Experience	219	24.65	3.09	598	2.242	.025*
	Without Experience	381	23.98	3.73			
Green Technology (Tot)	With Experience	219	145.73	13.21	598	1.898	.058*
	Without Experience	381	143.58	13.42			

*** Significant at 0.05level**

Hypothesis – 3: There will be a significant mean score difference in Awareness on Green Technology between the groups based on Optional Subject among the selected B.Ed. Trainees.

Table – 3: Mean score difference in Awareness on Green Technology between the groups based on Optional Subject among the selected B.Ed. Trainees

Factors in Awareness on Green Technology	Optional Subject	N	Mean	SD	Df	t-value	p-value
Knowledge on GT	Arts Subjects	370	28.09	4.18	598	-.601	.548
	Science Subjects	230	28.31	4.46			
Curricular Aspect	Arts Subjects	370	18.08	3.32	598	-2.395	.017*
	Science Subjects	230	18.76	3.48			
Sustainable Development	Arts Subjects	370	18.54	2.85	598	.087	.931
	Science Subjects	230	18.52	2.70			
Awareness on Climate Change	Arts Subjects	370	15.81	3.01	598	2.188	.029*
	Science Subjects	230	15.27	2.83			
Green Barriers	Arts Subjects	370	22.11	5.72	598	-1.274	.203
	Science Subjects	230	22.71	5.44			
Applications of GT	Arts Subjects	370	17.13	1.75	598	-.266	.790
	Science Subjects	230	17.17	1.83			
Awareness on Renewable Energy	Arts Subjects	370	24.05	3.63	598	-1.535	.125
	Science Subjects	230	24.50	3.32			
Green Technology (Tot)	Arts Subjects	370	143.81	13.34	598	-1.274	.203
	Science Subjects	230	145.24	13.42			

*** Significant at 0.05level**

Hypothesis – 4: There will be a significant mean score difference in Awareness on Green Technology between the groups based on Type of Institution among the selected B.Ed. Trainees.

Table – 4: Mean score difference in Awareness on Green Technology between the groups based on Type of Institution among the selected B.Ed. Trainees.

Factors in Awareness on Green Technology	Type of Institution	N	Mean	SD	Df	t-value	p-value
Knowledge on GT	Self-Finance	452	28.08	4.30	598	.907	.365
	Govt	148	28.45	4.25			
Curricular Aspect	Self-Finance	452	18.44	3.57	598	1.244	214
	Govt	148	18.04	2.78			
Sustainable Development	Self-Finance	452	18.57	2.82	598	.625	.532
	Govt	148	18.41	2.72			
Awareness on Climate Change	Self-Finance	452	15.55	3.02	598	.778	.437
	Govt	148	15.77	2.72			

Green Barriers	Self-Finance	452	22.29	5.72	598	.386	.386
	Govt	148	22.49	5.28			
Applications of GT	Self-Finance	452	17.18	1.75	598	.928	.354
	Govt	148	17.03	1.87			
Awareness on Renewable Energy	Self-Finance	452	23.95	3.67	598	3.358	.001*
	Govt	148	25.06	2.88			
Green Technology (Tot)	Self-Finance	452	144.07	13.70	598	.931	.352
	Govt	148	145.25	12.35			

*** Significant at 0.05level**

Hypothesis – 5: There will be a significant mean score difference in Awareness on Green Technology between the groups based on Type of Institution among the selected B.Ed. Trainees.

Table – 5: Mean score difference in Awareness on Green Technology between the groups based on Computer Knowledge among the selected B.Ed. Trainees.

Factors in Awareness on Green Technology	Computer Knowledge	N	Mean	SD	Df	t-value	p-value
Knowledge on GT	operating knowledge	449	28.17	4.15	598	-.013	.990
	training passed	151	28.18	4.70			
Curricular Aspect	operating knowledge	449	18.28	3.24	598	-.732	.465
	training passed	151	18.52	3.83			
Sustainable Development	operating knowledge	449	18.49	2.80	598	-.537	.591
	training passed	151	18.64	2.78			
Awareness on Climate Change	operating knowledge	449	15.64	2.95	598	.466	.641
	training passed	151	15.51	2.94			
Green Barriers	operating knowledge	449	22.05	5.64	598	-2.149	.032*
	training passed	151	23.19	5.46			
Applications of GT	operating knowledge	449	17.09	1.80	598	-1.221	.223
	training passed	151	17.30	1.71			
Awareness on Renewable Energy	operating knowledge	449	24.14	3.58	598	-1.017	.310
	training passed	151	24.48	3.32			
Green Technology (Tot)	operating knowledge	449	143.88	13.33	598	-1.531	.126
	training passed	151	145.80	13.45			

*** Significant at 0.05level**

RESULTS AND DISCUSSION

Table 1 shows mean score difference in Awareness on Green Technology between the groups based on Educational Qualification among the selected B.Ed. Trainees. According to the table, the calculated t-value is not statistically significant at 0.05 level in all aspects of awareness on Green Technology and hence the hypothesis – 1 is rejected and hence the academic variable educational qualification does not have an impact on awareness on green technology of the selected B.Ed. trainees. Table 2 reveals mean score difference in Awareness on Green Technology between the groups based on Teaching Experience. According to the table, the calculated t-value is not statistically significant at 0.05 level in factors like curricular aspect, sustainable development, awareness on climate change, green barriers and applications of GT. But it is significant at 0.05 level in other factors like knowledge on GT, awareness on renewable energy and green technology as total and hence the hypothesis – 2 is accepted. Further, the academic variable teaching experience does influence on awareness on green technology. Table 3 shows mean score difference in Awareness on Green Technology between the groups based on Optional Subject of the selected B.Ed. Trainees. According to the table, except the factors like curricular aspect and awareness on climate change, the calculated t-value is not statistically significant at 0.05 level in all other factors including green technology as total and hence the hypothesis – 3 is rejected. Similarly table 4 shows mean score difference in Awareness on Green Technology between the groups based on Type of Institution. According to the table, except the factor awareness on renewable energy, the calculated t-value is not statistically significant at 0.05 level in all other factors including green technology as total and hence the hypothesis – 4 is rejected. Table 5 shows mean score difference in Awareness on Green Technology between the groups based on Computer Knowledge of the selected B.Ed. Trainees. According to the table, except the factor green barriers, the calculated t-value is not statistically significant at 0.05 level in all other factors including green technology as total and hence the hypothesis – 5 is also rejected. Thus, among the academic variables considered for the present investigation, the variable teaching experience only have an impact on awareness on green technology among the selected B.Ed. trainees. Apart from the above results, the followings are the comparison of mean score between the groups of academic factors like educational qualification, teaching experience, optional subject, type of institution and computer knowledge.

1.The UG students showed greater Mean score difference in Awareness on Green Technology between the groups based on Educational Qualification among the selected B.Ed. Trainees.

2. The student trainees with prior teaching experience showed greater Mean score difference in Awareness on Green Technology between the groups based on Teaching Experience among the selected B.Ed. Trainees. Further, the academic variable teaching experience does influence awareness on green technology among the selected B.Ed. trainees.

3.The student trainees of science option showed greater Mean score difference in Awareness on Green Technology between the groups based on Optional Subject among the selected B.Ed. Trainees.

4.The student trainees of Government Institution showed greater Mean score difference in Awareness on Green Technology between the groups based on Type of Institution among the selected B.Ed. Trainees.

5.The student trainees who have under gone training in computers showed greater Mean score difference in Awareness on Green Technology between the groups based on Computer Knowledge among the selected B.Ed. Trainees.

Based on the results and findings of the present study, it is concluded that there is difference in the awareness on Green Technology among the selected B.Ed. Trainees. The awareness on green technology differs based on the

Educational Qualification, Teaching Experience, Optional Subject, Type of Institution and Computer Knowledge. It is found that of all the Academic factors taken to consideration in the present investigation only the intervening variable teaching experience does influence awareness on green technology among the selected B.Ed. trainees. Hence, it is concluded from the present study that the teaching experience of the selected B.Ed. trainees only have an impact on awareness on Green Technology among the selected B.Ed. Trainees.

CONCLUSION

Our environment is being deteriorated every now and then due to serious factors like population explosions, uncontrolled consumption of precious environmental resources. Industrialization, carbonization and exploitation of biotic and biotic components of environment have resulted in the present day environment critical condition. In the past, because of lack of awareness about the environment nations developed in science and technology but at the expense of degradation of the environment. Man has made lot of progress in every field of science and technology but at the same time over use and misuse of environmental resources is destroying the same equilibrium of the environment. The environment has its own system of recovery but depletion of large amount of resources due to the activities of man has failed the self recovery system of environment in many areas. The World is looking ahead towards growth and development but on account of excessive human activities we have degraded out resources and vegetation. World education and environment specialist have repeatedly pointed out that any solution to the environmental crisis will require environmental awareness and understanding to be rooted in the education system at all levels. Environmental awareness provides power and understanding to take decisions for the effective use of environmental resources for social economic and cultural survival, growth and development. Studies on environmental awareness are of prime significance as our country is being modernized day by day by making use of the discoveries and innovations in the field of science and technology and by tapping the natural resources for better living of the society. On the basis of the views presented here, it can be concluded that environmental awareness and development of positive attitude and values towards natural environment is a must for prospective teachers, as only teachers can have capability to make their students aware of their natural environment.

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