

## **Environmental Awareness among Trainee Teachers at Tertiary Level in Pakistan: Need, Scope, Challenges and Opportunities**

Sohaib Sultan \* Muhammad Ajmal \*\* and Muhammad Farouq Lodhi \*\*\*

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### **Abstract**

The Environmental Awareness is a part of Millennium Development Goals by United Nations. Huge research work is being done on Environmental Science under the charter of United Nations to highlight threats to humanity under two famous domains Climate Change and Global Warming. Our religion also focuses on the importance of Environmental Education. The study focused to assess the perception of Trainee Teachers towards Environmental Awareness at Tertiary Level of Education in Pakistan and to compare the performance of control and experimental group of trainee teachers on Environmental Awareness at Tertiary Level. Mixed method techniques were applied to obtain the results. Two groups of 30 Trainee Teachers in each group from Federal College of Education, Islamabad were taken as the sample of the study for experiment. The questionnaire was developed on five point Likert scale. It was found that level of Environmental Awareness was very high in the results of Post Test as compared to Pre Test results. It was recommended that the Environmental Awareness should be made compulsory part of Tertiary Education.

**Keywords:** Environmental awareness, Millennium Development Goals, Tertiary Education

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\* Ph.D Scholar, National University of Modern Languages. Email: Sohaib.Sultan@ymail.com

\*\* Associate Professor, Allama Iqbal Open University. Email: drajmal@aiou.edu.pk

\*\*\* National Defense University. Email: mfkloodhi@yahoo.com

## Introduction

“And We have made the heavens as a canopy well guarded: yet do they turn away from the Signs which these things (point to)!” (21:32). “It is He Who doth show you the lightning, by way both of fear and of hope: It is He Who doth rise up the clouds, heavy with (fertilizing) rain!” (13:12). Allah Almighty has conveyed human beings for their survival the importance of environment. There is more responsibility of Muslim ummah globally to preserve ecology keeping in view the directions given in Quran. The initial identified writings concerned were Arabic remedial treatises written during the "Arab Agricultural Revolution", by writers such as Alkindus, Costa ben Luca, Rhazes, Ibn Al-Jazzar, al-Tamimi, al-Masihi, Avicenna, Ali ibn Ridwan, Isaac Israeli ben Solomon, Abd-el-latif, and Ibn al-Nafis. They showed concern with air pollution, water pollution, soil pollution, solid waste management and environmental assessments of certain localities.

The Environmental Education is a broad subject and getting popularity vigorously all over the world. The Environmental Education is comprised of major science subjects so its framework is extensive. The purpose of environmental education, dating back to the 1960s, has often been to produce more knowledgeable, motivated, and active citizens (Stapp, 1969). The researchers have been working on development of Environmental Science since 1960. Some international nongovernmental organizations have been contributing towards sustainability of environment from last fifty years. The United Nations Environmental Education Program (UNEEP) is a comprehensive charter to disseminate the concepts of preservation and conservation globally.

Globally the phenomenon of Environmental Science is discussed under two major domains which are Climate Change and Global Warming. The change in climate around the globe is a serious threat for the survival of creatures. The main cause of change in climate across the planet is the global warming which is increasing day to day due to human activities. The environmentalists have been investigating from last six decades that human actions are major source of environmental degradation.

Pakistan is facing threat of climate change at dangerous level now days. Pakistan has faced many floods during monsoon from the last decade. During current summer the megacity Karachi faced severe heat wave during last fortnight of June which was declared extraordinary by met department. Forests have been decreasing during the last three decades as the present forest area in Pakistan is 2.1% which was

4.2% in 1980. The water pollution is causing serious diseases in the public especially in towns and villages. The air pollution is touching highest dangerous levels according to international scales due to massive usage of electric appliances and auto vehicles. The agriculture areas are reported to be reduced due to excessive use of artificial fertilizers and pesticides. The concept of waste management is very poor in most of metropolitan cities of Pakistan just like in rest of third world countries in South Asia and Africa. The civic sense is almost near to nil which is discouraging. Overall the population growth is not under control which is a prime reason of creating maximum environmental issues.

As long as from the birth of human beings on earth they have always populated in dual world. Plants, animals, soil, air, water and trees are part of natural world by billions of years. But human beings have developed social institutions and artifacts by using science and technology. The long term effect from the environmental pollution can be seen when the ecosystem is not able to endure the pollution (Zaini Ujang, 2008).

“forest should be saved not because they are beautiful or because they shelter wild creatures of wilderness, but only to provide homes and jobs for the people (Muir: 1903).” Industrial output deforestation and waste disposal are being traced as major causes of climate change at national and international levels. The civic sense is considered as most important all over the world to preserve climate domestically and globally. Global warming is one of the leading threats world is facing today. The environmentalists are raising awareness mechanisms to save the climate from destruction but unfortunately, the desired results are still far ahead. On the other hand, the researchers declare that specific efforts are required at ground level to preserve the microclimate of any specific area. “In development activities has led to an imbalance in the microclimate of the city” published in express Tribune, March 3, 2016.

The environmentalists declare over population is one of the leading factor to destroy global climate. The human population was estimated a billion in 1804 but surprisingly it reached to three billions in 1960. Recently, the human population has been touching the figure of seven billions almost.

Tons of air pollutants are discharged by chemical and fertilizer factories along with huge refineries every day. The smoke is highly dangerous pollutant all over the world. The human activities are mainly responsible for enormous emission of smoke on daily basis. Millions of vehicles burn petrol and diesel which is a huge source of adding pollutants like sulphur dioxide, carbon monoxide, petrochemical

oxidants, nitrogen oxides etc. Different types of expertise are required during the process of waste management especially to reclaim resources from wastes. The procedure of waste management differs widely between rural and urban area, between industrial and residential areas, also between developed and developing nations. 'Recycling' is common in collecting and re-using beverage cans, plastic bottles, aerosol cans and steel foods, paperboard cartons, newspapers and magazines, and corrugated fiber board boxes. Global urgent need 'Civic Sense' is a broad subject but environmentalists agree that it is one of the important indicator of quality of life. Level of Civic Sense varies between developed and developing countries, and local communities within countries. A famous ecologist, Daniel B. Botkin argues that alternative energy sources are essential to preserve human civilization. The environmentalists believe that pollution free environment is possible only by using alternate energy resources instead of fossil fuels.

It is reported that almost 800 million people are undernourished in many parts of the world. In fact, the world is divided between rich and poor as there are many countries that have rich resources across the global while many countries don't have reasonable resources to fulfill their needs. The process of land degradation is fast during the last five decades. Globally over eight million hectares have been converted into factories, highways, shopping centers, reservoirs etc. while four million hectares are turned into deserts in the perspective of global climate change. It raises serious threats for the humanity to fulfill their needs regarding food and hunger otherwise it would be a blast after few decades. The presence of pathogenic organisms in water is very dangerous for human health because it affects the quality of water badly. Inadequate disposal patterns of human wastes, animal wastes, poor sanitation in towns and factory wastages are the major causes of production of pathogens in water due to which people suffer in dangerous diseases like hepatitis, cholera, typhoid, infectious diseases, bacterial and amoebic dysentery etc. The beauty of life is hidden behind the phenomenon of plantation and forestation. This is being reduced vigorously in most parts of the world which is declared as one of leading factor for climate change. The environmentalists recommend that government should pay head to increase the percentage of forest lands in all regions around world to ensure better living environment for living things. The public health awareness campaigns about good health maintenance should be launched by government and NGO's to promote better living conditions in cities, towns and villages.

### **Statement of the Problem**

The Environmental issues are severe in Pakistan but the level of awareness in public is negligible to handle such hazards. Although the environmentalists believe that by developing habits of care at gross root levels overall in the society the environmental violations can be minimized. For this purpose there is strong need to generate awareness in the young generation by strengthening the concepts of tertiary level of teachers regarding environmental preservation and conservation. In the following study, to obtain proposed outcome, the class trial was planned to conduct for generating Environmental Awareness among Training Teachers' at tertiary level.

### **Objectives of the study**

1. To assess the perception of Trainee Teachers towards Environmental Awareness at Tertiary Level of Education.
2. To determine the level of Environmental Awareness of Trainee Teachers before and after the experiment.
3. To compare the performance of control and experimental group of trainee teachers on Environmental Awareness at Tertiary Level.
4. To recommend the strategies to enhance the awareness of Trainee Teachers about Environmental Awareness at Tertiary Level.

### **Research Questions and Null Hypothesis**

1. What is the perception of Trainee Teachers towards Environmental Awareness at Tertiary Level of Education?
2. What is the level of Environmental Awareness of Trainee Teachers before and after the experiment?
3. What is the performance of control and experimental group of trainee teachers on Environmental Awareness at Tertiary Level?
4. What are the strategies to enhance the awareness of Trainee Teachers about Environmental Awareness at Tertiary Level?
5. H<sup>0</sup> There is no significance relationship between pre and post group of Trainee Teachers about Environmental Awareness at Tertiary Level.

### **Significance of the Study**

The study will be significant in enhancing the effectiveness of teachers' training curricula throughout Pakistan in general, and in Islamabad Capital Territory, in particular. The research would be instrumental in developing effective strategies towards teaching of ecological concerns at tertiary level of education hoping that the awareness would trickle down to a much larger number of students and eventually to masses. The research would, therefore, be productive for the developers of teachers' training curriculums in Pakistan in suggesting effective ways to develop contents in a qualitative manner. The current research had suggested innovative strategies and practices for the training of teachers in the perspective of 21<sup>st</sup> century concerns. This study would be helpful for policy makers, planners, managers, researchers and public at large for environmental awareness in Pakistan and open new avenues for societal change.

### **Methodology**

The descriptive as well as experimental research study was designed and mixed method and triangulation techniques were used to obtain the results. The trainee teachers of M.Ed. class were given exposition regarding basic environmental awareness. The lecture/discussion method was used to transfer information on Environmental issues to participants during periods of 90 minutes. Two groups of 30 Trainee Teachers in each group of Federal College of Education, Islamabad were taken as the sample of the study for experiment. The instrument was developed on five point Likert scale on the basis of review literature on the parameters as climate change, global warming, water pollution, air pollution, waste management, food security and hunger, water scarcity etc. The validity and reliability of the questionnaire was determined before its use. The data was collected through personal visits / teaching the Experimental Group by the researchers.

### **Findings of the Study**

1. The pre-test data of experimental group and control group of M.Ed. class were evaluated to draw comparisons to measure the awareness level before the conduct of teaching phase. The indication in the result was that mean score for pre test of experimental group was congruent to arithmetic mean for pre test of control group. The difference between Experimental Group and control Group Pre Test score was almost negligible.

It is inferred that both groups were at same level of awareness before the commencement of teaching process.

2. The post test data of experimental group and control group were evaluated to draw comparisons to measure the terminal ambient awareness level. The indication in the result was that arithmetic mean for experimental group was greater than arithmetic mean for control group. The gain in Experimental Group Mean Post Test score was significantly higher as compared to Control Group Mean Post Test score. It is inferred that gain is significant and attributable directly and solely to the treatment extended to the Experimental Group and not to the Control Group.
3. The performance level of experimental group and control group were almost identical at the pre test level before the conduct of the class experiment. The awareness level of both groups being at same level before commencement of the teaching process, the readings at the post test level are coordinated and referred to the same datum. The performance level of the experimental group was significantly higher than control group after the conduct of class experiment. On the strength of above inferences, quantitative evidence suggested rejection of the null hypothesis  $H_0^1$  that is “There is no significance relationship between pre and post group of Trainee Teachers about Environmental Awareness at Tertiary Level”.
4. A strong observation was recorded that maximum students were not aware of the basic concepts regarding Environmental Awareness during the conduction of pre test in both groups. The participants were eagerly asking about the nature of the subject. Later on it was observed that students of experimental group participated actively in the class trial by showing their maximum interest. Moreover, the students in the control group were also showing eagerness in the teaching learning process of Environmental Awareness. As students from control group were inquiring about the nature of subject from the researchers and students of experimental group throughout the conduction of class trial.
5. The subject of Environmental Awareness was not a regular part of studies at the institute so it was a challenge for researchers to assign home tasks as generally the students couldn't concentrate on such assignments and consider it over burden in case of non credit hours but the case was opposite here. The short assignments were awarded individually to every student and the responses were positive from maximum participants which was a great source of encouragement for the researchers.

## Discussion

The researchers undertook this particular study by the fact that the level of Environmental Awareness among masses in Pakistan is generally poor. The issue is strongly related with sustainable development in the Pakistani society. It would not be possible to collect the benefits of social development for any length of time, if it cannot be sustained. The present situation is reflected in total disregard for concerns like cleanliness, water management, water quality, air quality, nutrition, deforestation, urbanization etc. The Tertiary Level of Education is being run in conventional manners all over the country. The syllabus of Teachers Training Programs is based mostly on traditional subjects. There is a dire need to add new subjects in the system which should be based on modern educational and technological concepts. The subject of Environmental Awareness is a potent subject to support advanced educational purposes.

The Trainee Teachers attained desired Environmental Awareness through appropriate curricular contents. This highlights the need for developing custom-designed curricular material on Environmental Sustainability at local and national and international level. The teaching of environmental concerns at teachers training colleges will set up a chain reaction. The newly passed out teachers would enhance Environmental Awareness at large scale in schools, colleges and other educational institutions. Students at primary, secondary and tertiary level will carry this knowledge home and diffuse it to their parents, siblings and members of their community through informal discussions. Consequently, a large segment of society would be sensitized and mobilized to preserve and conserve environment in their respective community at local and national levels.

The performance of “would be teachers” was remarkable in certain fragments of the questionnaire with above average level which indicated that different persons are attracted to different aspects of environmental concerns. Hence, curriculum developers should keep the range of their topics diverse and the studies wide-based rather than making it too technical and narrow-based. The researcher feels strongly that workshops/ seminars/ conferences should be held frequently to spread awareness among population at large regarding environmental concerns. Universities should take lead in this regard and associate schools/colleges with them in this task. The workshops/seminars/conferences are expected to be a great source of launching nationwide campaigns for conservation of ecology and resources. The students participating in these activities were motivated to develop the habit of caring for the respective ecology around them through practical measures. The regard for



environmental sustainability will diffuse from them into Pakistani society. The chain process through education will serve the objective of obtaining a prosperous national destiny through high quality environment and standard of life just like in New Zealand, Australia, Germany, Norway, Sweden, Denmark etc.

The researchers concluded that a persistent formal educational process regarding Environmental Awareness, starting at tertiary level and permeating downwards into secondary and primary levels, will lead towards quality of life because small fraction of efforts at local level will be combined to produce large effect at national level. The objectives of the research were accordingly set and these being in a practical domain demanded a demonstration that was arranged through the class experiment.

### **Recommendations and Future Pathways**

1. A national development framework is needed for promoting environmental concerns and providing Environmental Protection to citizens positively. The researchers recommended that, to this end, as the first step, a formal regular course on Ecological Awareness should be added to various programmes at tertiary level. At secondary level contents may be diffused within in science subjects. At primary levels, doctrine may be included in teaching and inculcation of “manners.” The locally developed syllabi of environmental Awareness must incorporate contemporary lines of thought and action according to the latest perspective prevalent in the 21<sup>st</sup> century.
2. Teachers are the most effective agents of change in this campaign. The subject of Environmental Awareness should be made compulsory in teachers training programs to start a chain process for sensitizing teachers on national and global environmental issues. The regard would then spread from them to their students and diffuse through their students at primary and secondary levels into the society at greater radii.
3. The teachers should be trained properly by subject specialists/ experts from the field of Environmental Awareness because without this the “would be teachers” will not be able to transfer the real spirit of the concerns to their respective students. The properly initiated teacher would be able to deploy teaching strategies from the Ecological point of view qualitatively and quantitatively to mobilize younger generation.

4. The administration of Islamabad Capital Territory should take positive steps to practice essential environmental protection concepts in Islamabad. Targets should be set to achieve international standards of Environmental protection (like those adopted in Auckland, Sydney, Oregon, Vatican city, Oslo, Malta, Doha etc.) in Islamabad by developing comprehensive long and short term processes and requisite mechanisms in the light of ongoing researches.
5. Pakistan is a vast country area wise and its climate varies from province to province. The northern area of Pakistan comprises of hills while southern area have deserts also. With such diverse climatic conditions the scheme for Environmental preservation varies largely from area to area. The teaching of course work on Environmental Awareness should be adjusted to the climatic conditions of various regions of to cater for local environmental needs.
7. The curriculum is the pathway to prepare a common mindset of people for positive actions towards Environmental Protection. Modules should be prepared and constantly refined to align the curriculums for all the tiers of education. The researcher has prepared the modules which are now public domain property. It is for teacher now to use the proposed module and modify it as required for teaching purpose. The researchers recommended that Environmental Awareness would lead to attainment of higher quality of life amongst public at large.
8. Open and Distance Learning institutions like Allama Iqbal Open University should start awareness campaign for environmental education at mass level using distance education mode and mass media. All the universities and institutes of tertiary level education should develop departments, program and courses for environmental education. Further studies in this area may be conducted in different cultural contexts.

## References

- Ahmed, I. (2016, March 3). In development activities has led to an imbalance in the microclimate of the city. *The Express Tribune*. P.8.
- Asfaw, G. (2003). Program brief and introductory remark. Environment and environmental change in Ethiopia. Consultation Paper on Environment, no. 1, 4–8, Forum for SocialStudies, Civil Society and Environmental Policy Dialogue.

- Ashford, Lori. (2003). *Unmet Need for Family Planning: Recent Trends and their Implications for Programs*. Population Reference Bureau. Published online at <http://www.prb.org>
- Assefa, S., and T. Zegeye. (2003). Rural poverty, food insecurity and environmental degradation in Ethiopia: A case study from south central Ethiopia. Paper Presented at the Second EAF/IDR International Symposium on Contemporary Development Issues in Ethiopia, July 11–13, in Addis Ababa, Ethiopia.
- Aznar Minguet, P., and M.A. Ull. (2009). Education in basic competences for sustainable development: The role of university. *Revista de Educación, extraordinario*: 219–37.
- Berkes, F., J. Colding, and C. Folke. (2003). Introduction. In *Navigating social-ecological systems: Building resilience for complexity and change*, ed. F. Berkes, J. Colding, and C. Folke, 1-30. Cambridge: Cambridge University Press.
- Boyer, L., and W.-M. Roth. (2006). Learning and teaching as emergent features of Informal settings: An ethnographic study in an environmental action group. *Science Education* 90, no. 6: 1028–49.
- Brandt, W. (1980). *North-South: A program for survival*. Cambridge, MA: MIT Press.
- Bray, C. (2008). Program evaluation of the sustainability of teaching methods. *Environmental Education Research* 14, no. 6: 655–66.
- Brown, L., et al. (2002). *State of the World 2003*. Washington, D.C.: Worldwatch Institute.
- Brundtland, G.H. (1987). *Our common future. Report of the United Nations World Commission on Environment and Development*. Oxford: Oxford University Press.
- Chawla, L. (1999). Life paths into effective environmental action. *Journal of Environmental Education*, 31, 15–26.
- Chawla, L. (2008). Participation and the ecology of environmental awareness. In *Participation and learning: Perspectives on education and the environment, health and sustainability*, ed. A. Reid, B.B. Jensen, and J. Nikel, 98–110. New York: Springer-Verlag.
- Chawla, L., and D.F. Cushing. (2007). Education for strategic environmental behaviour. *Environmental Education Research* 13, no. 4: 437–52.

- Constanza, R., and S. E. Jorgensen, eds. (2002). *Understanding and Solving Environmental Problems in the 21<sup>st</sup> Century: Towards a New Integrated Hard Problem Science*. Elsevier Publishers.
- Cottrell, S. P. (2003). Influence of socio demographics and environmental attitudes on general responsible environmental behavior among recreational boaters. *Environment and Behavior*, 35, 347–375.
- Culen, G. R., & Volk, T. L. (2000). Effects of an extended case study on environmental behavior and associated variables in seventh and eighth-grade students. *Journal of Environmental Education*, 31, 9–15.
- Cunningham, W.P., and B.W. Saigo. (2001). *Environmental science: A global concern* (6<sup>th</sup> ed.). Boston: McGraw-Hill Companies.
- Daily Gretchen, ed. (2002). *The New Economy of Nature*. Island Press.
- Daudi, S.S. (1999). Environmental education as a vehicle to promote environmental Literacy in low literate communities of the world, International Workshop on Environmental Education in Asia and Beyond, October 11–15, Korea.
- Davis, Devra. (2002). *When Smoke Ran Like Water: Tales of Environmental Deception and the Battle against Pollution*. Basic Books.
- Dillon, J. (2003). On learners and learning in environmental education: Missing theories, ignored communities. *Environmental Education Research* 9, no. 2: 215–26.
- Eisler, A.D., H. Eisler, and M. Yoshida. (2003). Perception of human ecology: Cross-Cultural and gender comparison. *Journal of Environmental Psychology* 23: 89–101.
- Enger, E.D., and B.F. Smith. (2002). *Environmental science: A study of interrelationship* (8<sup>th</sup> ed.). Boston: McGraw-Hill Companies.
- Folke, C. (2006). Resilience: The emergence of a perspective for social–ecological Systems analyses. *Global Environmental Change* 16, no. 3: 253–67.
- Freeman, C., and O. Buck. (2003). Development of an ecological mapping methodology for urban areas in New Zealand. *Landscape and Urban Planning* 63(3):161-73.