

AWARENESS OF CLIMATE CHANGE IN POSTGRADUATE STUDENTS

ABSTRACT

The present study focused on awareness of climate change in postgraduate students. The investigators used the normative survey method for the study. The sample consisted of 100 postgraduate students of Bharathiar University, Tamil Nadu. Simple random sampling technique was used for the selection of sample. The investigators adopted the tool namely Climate Change constructed and validated by Lorraine Whitmarsh (2003) to assess the postgraduate students' awareness of Climate Change. The collected data were analysed by applying descriptive and inferential statistical techniques. The major findings of the study revealed that the postgraduate students in Bharathiar University have high awareness of climate change.

INTRODUCTION

The growing problems of climate change are becoming high by threatening to sustainable economic development and the totality of human existence (Adejuwon, 2004). It leads to loss of polar ice caps, rising of sea level, failure of monsoon etc which are very severe problems in the 21st century. Unless we undertake immediate solutions for these problems climate change will be a great threat to the entire human society. Hence, there is an urgent need to create awareness of climate change among students who will take the message to future generations. Awareness of climate change is manifested through familiarity with, perception about, and intuitive knowledge about climatic events. The awareness of climate change helps to understand and address the impact of global warming, encourage change in their awareness and behaviour and adopt the climate change related trends.

climate change will be very instrumental in the climate adaptation and mitigation process (Leiserowitz, Maibach, and Roser-Renouf, 2009; Shome and Marx, 2009). So, there is an urgent need to sensitize the students regarding global warming and climate change.

NEED AND SIGNIFICANCE OF THE STUDY

Climate change is one of the major problems due to environmental degradation. It harms human and all living species, both directly and indirectly, in a variety of important ways. Direct effects can include earth system change, including rising temperatures, increasing climate variability, increased rainfall and snowfall in some areas and drought in others, and high frequent severe weather events, all of which have considerable potential to affect human health. Understanding the views, awareness, and beliefs on

This study was designed to assess the level of climate change awareness among postgraduate students. The findings of this study will not only aid in understandings postgraduate students' knowledge of climate change, but also inform climate change policy planning in India. This study will provide a framework for future research on climate change education as an important tool for awareness creation. Furthermore, limited studies have been conducted on climate change in India. To the best of the researchers' knowledge, there have been only a few studies of this nature undertaken in India; hence the study filled this perceived gap. Since the researchers have concern towards environment they want to understand the level of the students' awareness of climate change. Hence, the researchers have chosen the title "Awareness of Climate Change in Postgraduate Students" for the present study.

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OBJECTIVES OF THE STUDY

The present study has the following objectives:

- To assess the level of awareness of climate change among postgraduate students with respect to gender, locality, and faculty.
- To study the significant effects and interaction effects of gender, locality and faculty of postgraduate students on their awareness of climate change.

HYPOTHESES

Based on the objectives the following hypotheses were formulated:

1. There is no significant difference in the mean scores of postgraduate students in their awareness of climate change with respect to (a) Gender, (b) Locality, and (c) Faculty.
2. (a) There is no significant effect of (i) gender (ii) locality and (iii) faculty on the awareness of climate change in postgraduate students.
 - (b) There is no significant interaction effect between gender and locality on the awareness of climate change in postgraduate students.
 - (c) There is no significant interaction effect between gender and faculty on the awareness of climate change in postgraduate students.
 - (d) There is no significant interaction effect between locality and faculty on the awareness of climate change in postgraduate students.

DELIMITATIONS OF THE STUDY

The present study has the following delimitations;

- i. The investigators selected only 100 postgraduate students.
- ii. The investigators selected only students studying in Bharathiar University, Tamil Nadu.

MATERIALS AND METHODS

In the present study, the investigators used the simple random sampling technique for data collection.

Tool: The investigator adopted a tool namely Climate

Change constructed and validated by Lorraine Whitmarsh (2003), University of Bath. The scale contains 37 items with five point Likert scale ratings. Out of these, 19 were positive statements and 18 were negative statements. The reliability of the awareness scale is found to be 0.651.

Sample: A total sample of 100 postgraduate students in various University Departments of Bharathiar University Coimbatore. Simple random sampling technique was used for the selection of the sample.

Data collection: The investigators sought permission from the Heads of various Departments of Bharathiar University and visited each postgraduate student personally and collected the data from the respondents. The investigators distributed the tool to the postgraduate students and assured them that their responses would be kept confidential and used for research purpose only. Clear instruction was given to enable them to give their responses meaningfully. The gathered responses were scored by the researchers.

Statistical Analysis: The collected data were analysed by using descriptive and inferential analysis. The statistical techniques 't' and factorial ANOVA test were employed for analysis and interpretation of the data.

ANALYSIS OF THE DATA

Table 1
POSTGRADUATE STUDENTS' CLIMATE CHANGE AWARENESS

N	Mean
100	127.71

The above table shows the mean awareness of climate change in postgraduate students. The mean value is greater than the mid value and hence, the postgraduate students in Bharathiar University have high awareness of climate change.

Hypothesis 1:- There is no significant difference in the mean scores of postgraduate students in their awareness of climate change.

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of climate change and (c) Faculty.

DIFFERENTIAL CLIMATE CHANGE AWARENESS OF POSTGRADUATE STUDENTS BY GENDER, LOCALITY AND FACULTY (B) LOCALITY AND FACULTY

Variables	Categories
Gender	Male
	Female
Locality	Rural
	Urban
Faculty	Science
	Arts

*signifi

The table 2 shows the difference between male and female students in their mean awareness of climate change (1.879, 1.310, 1.789) hence the null hypothesis is rejected at 0.05 level.

Hypothesis -2:- There is no significant interaction effect between gender (ii) locality and faculty on the awareness of climate change in postgraduate students.

(c) there is no significant interaction effect between gender and faculty on the awareness of climate change in postgraduate students.

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of climate change with respect to (a) Gender, (b) Locality, and (c) Faculty.

Table 2

DIFFERENCE IN THE AWARENESS OF CLIMATE CHANGE IN POSTGRADUATE STUDENTS BASED ON THEIR (A) GENDER (B) LOCALITY (C) FACULTY

Variables	Categories	N	Mean	SD	t-Value	Sig
Gender	Male	54	126.70	12.380	0.879	0.382
	Female	46	128.89	12.439		
Locality	Rural	65	126.52	12.031	1.310	0.193
	Urban	35	129.91	12.924		
Faculty	Science	60	129.50	12.492	1.789	0.077
	Arts	40	125.03	11.894		

*significance at 0.05 level

The table 2 shows that there is no significant difference between male and female, rural and urban, arts and science students in their mean score with reference to their awareness of climate change. The calculated t- values (0.879, 1.310, 1.789) are less than the table value (1.96). Hence the null hypothesis 2 (a), 2 (b), 2 (c) are accepted at 0.05 level.

Hypothesis -2: - (a) There is no significant effect of (i) gender (ii) locality and (iii) faculty on the awareness of climate change in postgraduate students, (b) there is no significant interaction effect between gender and locality on the awareness of climate change in postgraduate students. (c) there is no significant interaction effect between gender and faculty on the awareness of climate change in postgraduate students, and (d) there is no significant interaction effect between locality and faculty on the awareness of climate change in postgraduate students.

Table 3

THREE WAY FACTORIAL ANOVA - EFFECTS OF GENDER, LOCALITY AND FACULTY ON POSTGRADUATE STUDENTS IN THEIR AWARENESS OF CLIMATE CHANGE

Variables	Type III sum of squares	df	Mean Square	F	Sig
Gender	106.456	1	106.456	0.729	0.395
Locality	174.677	1	174.677	1.197	0.277
Faculty	103.651	1	103.651	0.710	0.402
Gender * Locality	3.424	1	3.424	0.023	0.879
Gender * Faculty	58.631	1	58.631	0.402	0.528
Locality * Faculty	45.463	1	45.463	0.311	0.578
Gender * Locality * Faculty	592.209	1	592.209	4.057	0.047*
Error	13430.461	92	145.983		
Total	1646189.000	100			
Corrected Total	15204.590	99			

*significance at 0.05 level

The above factorial Anova in table 3 reveals that there is no effect of gender ($F(1, 92) = 0.395, p > 0.05$), locality ($F(1, 92) = 0.277, p > 0.05$) and faculty ($F(1, 92) = 0.402, p > 0.05$) on the awareness of climate change in postgraduate students. Hence, the formulated null hypothesis 2(a) is accepted and there is no significant effect of gender, locality and faculty on postgraduate students' awareness of climate change.

The above table also proves that there is no significant interaction effect between gender and locality ($F(1, 92) = 0.879, p > 0.05$), gender and faculty ($F(1, 92) = 0.528, p > 0.05$), and locality and faculty ($F(1, 92) = 0.578, p > 0.05$) and those have no effect on awareness of climate change in postgraduate students. Hence, the formulated null hypotheses 2(b), 2(c), 2(d) are accepted.

However, there is a significant interaction among gender, faculty and locality ($F(1, 92) = 0.047*, p < 0.05$) and this interaction has significant effect on the awareness of climate change in postgraduate students.

Female urban science students (132.33) have higher awareness of climate change than male rural science students (130.21), male urban arts students (129.57), female rural arts students (129.11), female rural science students (125.62), male rural arts students (118.87, male urban science students (126.50), and female urban arts students (127.67).

Male rural sciences students (130.21) have less awareness of climate change than female urban science students (132.33) and have better awareness of climate change than male urban arts students (129.57), female rural arts students (129.11), female rural science students (125.62), male rural arts students (118.87, male urban science students (126.50), and female urban arts students (127.67).

Male urban arts students (129.57) have less awareness of climate change than female urban science students (132.33) and male rural science students (130.21), and have better awareness of climate change than male urban arts students (129.57), female rural arts students (129.11), female rural science students (125.62), male rural arts students (118.87, male urban science students (126.50), and female urban arts students (127.67).

FINDINGS

1. Postgraduate students of Bharathiar University have high awareness of climate change
2. Awareness of climate change does not differ in terms of their gender, locality, and faculty.
3. Female urban science students have high awareness of climate change.
4. Male rural science students have better awareness of climate change than male rural arts students.
5. Male urban arts students have better awareness of climate change than male urban science students.
6. Female rural arts students have better awareness of climate change than female rural science students.
7. Female urban science students have better awareness of climate change than female urban arts students.

EDUCATIONAL IMPLICATIONS

This paper sets out a report of an investigation designed to establish the level of awareness of climate change in postgraduate students of Bharathiar University. The results of the study have the following implications:

- i. The higher awareness of climate change in postgraduate students is an evidence that the young student community pays high attention to climate change related phenomena. Proper guidance needs to be provided to make them aware of climate change at the practical level.
- ii. The present study shows that female urban science students have the highest awareness of climate change and male rural arts students have a very low awareness of climate change. Providing awareness programmes and intervention programmes about climate change may help to sensitize the students.
- iii. The educational institutions should also provide specialized education programmes related to climate change for different target students to make them understand climate change related problems.

CONCLUSION

Climate change is one of the very severe environmental problems and all human beings are knowingly or unknowingly responsible for climate change; and all are affected in various ways. Teachers and scientists are the prime sources for solutions to climate change related problems. Keeping this in mind, the researchers and teachers made this study to understand the level of awareness of climate change in postgraduate students. This study may be useful for environmental educators, teachers and policy makers to prepare various types of awareness programme for the students at various levels.

REFERENCE

1. Acikalin, F. S. (2013). Middle school students' conceptions of environmental issues. *International Journal of New Trends in Arts, Sports & Science Education*, 2(4), 23-27.



2. Intergovernmental Panel on Climate Change – IPCC. (2007). *Fourth Assessment Report: Climate Change 2007: Working Group II: Impacts, Adaption and Vulnerability*. Retrieved from http://www.ipcc.ch/publications_and_data/ar4/wg2/en/ch9s9-5-1.html
3. Jamelske, E., Barrett, J., & Boulter, J. (2013). Comparing climate change awareness, perceptions, and beliefs of college students in the United States and China. *Journal of Environmental Studies and Sciences*, 3(3), 269-278.
4. Lawler, J., & Patel, M. (2012). Exploring children's vulnerability to climate change and their role in advancing climate change adaptation in East Asia and the Pacific. *Environmental Development*, 3, 123-136.
5. Liarakou, G. et al. (2011). What Greek secondary school students believe towards climate change? *International Journal of Environmental & Science Education*, 6(1), 79-98.
6. Owolabi, H. O. et al. (2012). Assessment of junior high school students' awareness of climate change and sustainable development in central region, Ghana. *Educational Research Journal*, 2(9), 308-317.
7. Spellman, G., Field, K., & Sinclair, J. (2003). Assessing UK higher education students' awareness of global climatic change. *Weather*, 58, 212-219.
2. Chandran. (1996). Influence of select cognitive socio familial variables on process outcomes in chemistry of secondary school students of kerala. Unpublished M.Ed thesis, University of Kerala.
3. Dokme, L., & Aydinli, E. (2009). Primary school student's performance on basic science process skills, *Procedia-Social and Behavioural Sciences*, 1(1), 544-548. Retrieved on 9/8/2011 from [http //www. science direct.com](http://www.science direct.com).
4. Haukoos, G. D. (1983). The influence of class room climate on science process and content achievement of community college students, *Research in Science Education*, 20(7), 629-637.
5. Joseph, Celene. (1998). A Study of process outcomes in physics in relations to some cognitive affective social and environmental variables, Unpublished Ph. D thesis, Mahatma Gandhi University.
6. Joseph, C, & Suresh, K. P.(2001). Process outcomes in relation to select affective correlates of secondary school students. *Journal of Indian Education*, 26(4), 87-91.
7. Myres, E, B. (2004). Effects of investigative laboratory integration on student content knowledge and science process skill achievement across learning styles, Unpublished Ph. D Thesis, University of Florida.
8. Nay. et al (1971). A process approach to teaching science. *Science Education*, 52(2), 197-207.
9. Ramesh. (1984). Development of objective based science curriculum and to study its efficiency in the acquisitions of process skills among high school science students, In M.B. Butch(Ed) *Fourth Survey of Research in Education*. Vol 1. New Delhi. NCERT.
10. Walters, B. Y., & Soyibo. (2001). An analysis of high school students performance in five integrated science process skills. *Research in Science and Technology Education*, 19(2), 135-145. Retrieved on 18/4/2012 from [http// www.sciencedirect.com](http://www.sciencedirect.com).

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skills. As this is the situations schools and teachers need to take extra care and effort to fill the gap. As these are the skills that promote future scientists, training in these skills must be taken as an important educational goal. Schools must provide facilities and opportunities for the children to explore science skills. Teachers can be more attentive to provide special assignments, awareness, learning experiences to equip our students for the future.

REFERENCE

1. Bruner, J. S. (1963). *The Process of Education*. Cambridge: Harvard University Press.