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An Empirical Study of the Relationship between Environmental Awareness, Gender and Subject Area among the Secondary School Teachers

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Abstract

Education brings awareness and is essential for action. In this direction Environmental Education provides an understanding of the multi-dimensional problems of depleting resources and ever-increasing populations. Environmental Education is a way of creating knowledge, understanding, attitudes, skills, abilities and awareness towards the environment and its protection. The basic purpose of Environmental Education is to provide individual and social groups sufficient scope so that they can acquire awareness and knowledge, develop attitudes, skills and abilities and participate in solving real life environmental problems. Though these days a section of intelligentsia is becoming conscious, about depleting resources, deteriorating standards of life due to ever increasing serious problems of pollution, poverty, population and illiteracy, however, still a large section of our society has a very low awareness and sense of civic responsibility and growing tendency of indifference and negligence, which is in one way the other prevents them from thinking positively well in advance. It is essential, that the teacher should himself be fully aware of the environmental problems and day to day activities related to the environment. The teacher has to internalize a change in his/her role from one of "giver of Knowledge" to one of "facilitator in the learning process". In this study, the Secondary School teachers have been chosen, because Secondary level is a crucial stage when students are found more active, inquisitive and enthusiastic and also the author felt that the most pressing need of Environmental Education was found at the Secondary level of Education. The present research paper attempts to study the effect of Gender and Subject Area on the Environmental Awareness of Secondary School Teachers.

Key words : *Environmental Awareness, Environmental Education, Environment, Teacher Education*

Introduction

"There is enough in the nature for man's need

but not enough for man's greed."

M.K.Gandhi[2]

The increasing population and industrialization has added fuel to the fire by creating tremendous pressure on the natural resources. This has resulted in environmental crisis due to the erosion of many environmental problems like pollution, climatic changes, Ozone layer depletion, global warming, acid rain, loss of Biological Diversity, deforestation, waste disposal and other environmental hazards. Global concern for environment & eco- friendly development programs led to the need of Environmental Education. Thus Environmental Education covering the knowledge of Environmental problems has become a global issue. It is well established that most environmental degradation are of, anthropogenic nature.

Education brings awareness and is essential for action. In this direction Environmental Education provides an understanding of the multidimensional problems of depleting resources & ever- increasing populations. Environmental Education is a way of creating knowledge, understanding, values, attitudes, skills abilities and awareness towards the environment & its protection. The school system provides the largest organized base for Environmental Education and action. With children in their plastic age, school offers an effective instrument for inculcating in them the desirable Environmental ethics. Teacher is the mediator of disseminating the knowledge & awareness about the environment and is one of the important factors, which is bound to affect this program. The teacher can provide a vital link in the delivery of Environmental knowledge, its associated problems and their solutions. Thus awareness about the Environmental problems and remediation skills led to the international concern and efforts for Environmental Education.

According to Annual Report of the Ministry of Environment and Forests for 2003-04, the Joint Forest Management (JFM) programme has been adopted in 27 states, covering an area of 17.3 million hectares and involving eight million families. It has brought about a welcome change in the relationships between local communities and forest officials, besides improving the condition of forests, reducing encroachments and increasing the income of local people, the target is to cover all the 1,70,000 villages on the fringes of forests during the Tenth Five year plan 2002-2007(Padmanabhan, 2005)[8]. To be specific the basic purpose of Environmental Education is to provide the individual and social groups sufficient scope so that they can acquire awareness and knowledge, develop attitudes, skills and abilities, and participate in solving real-life environmental problems. The perspective should be integrated following an interdisciplinary-approach, and should be holistic in nature. Purpose of Environmental Education is therefore not to introduce a new subject as such, but to evolve a new approach to education to integrate the concept of preserving environment with the existing content of a subject discipline. Therefore, it may be assumed that Environmental Education is an approach, which is expected to provide the necessary methodology to integrate the consciousness about environment (both in applied and basic/theoretical aspects) with education, engineering, Socio-economics, ethics, law and other applied disciplines, so that the knowledge will be holistic. Therefore Environmental awareness and Environmental Education should be spread and addressed at the grass- root level and this can be only achieved when the school teachers have necessary & up-to-date information about the environment & its related issues. The Government as well as the school teachers should spread the Environmental Education awareness by attacking the problem of Environmental degradation through a multidimensional approach including all economical, social, cultural, aesthetic as well as the political factor, because merely shutting up of big polluting industries, cleaning up of neighborhood, or the protection of a few endangered species of plants & animals would not suffice. An important document called a “Citizens report”, prepared by a team of young & knowledgeable persons on the basis of “ on the spot studies”, “ personal interviews”, & “ official records” attempts to evaluate every aspect of the country’s environment. Unless educational efforts for developing Environmental awareness and Environment based knowledge among teachers are undertaken urgently, our children would be ignorant about environmental degradation and pollution and therefore could become victims of Environmental hazards. Hence, the present study has been

undertaken to find out the Environmental Awareness of secondary school teachers in relation to their Gender and their Subject-Area.

Statement of the Problem

The problem chosen for the study may be stated as follows:

"An Empirical Study of the Relationship between Environmental Awareness, Gender and Subject Area among Secondary School Teachers".

Definition of Important Terms:

The use of various terms in the study may create ambiguity and confusion. To avoid ambiguity the important terms used in the present study are clearly defined.

1. Environment

In the Dictionary of education, C.V.Good (1973)[4], defines, "Environment as a general term designating all objects, factors and conditions that affect the individual through such stimuli as one is able to receive".

2. Awareness

According to the dictionary of Education edited by Carter.V.Good[4], "Awareness is the act of having or showing realization, perception or knowledge. It is the sum of all experiences that are known to a person at a given time".

3. Environmental Awareness

According to Belgrade Charter- "Environmental awareness means the act of having or showing realization, perception or knowledge about the environment and its related problems. It is a total behaviour pattern and sensitivity to the environment in its totality and problems related to environment." Environmental awareness may be defined as to help social groups and individuals to gain a variety of experiences in acquiring a basic understanding of environment and its associated problems.

Objectives of the Study

The present study has the following major objectives given below: -

1.) **To study Environmental Awareness among Secondary School teachers.**

2.) **To establish a relationship if any between Environmental Awareness and Gender.**

3.) **To establish a relationship between Environmental Awareness of Secondary School teachers and the subject which the teachers are teaching.**

4.) **To develop a tool in the form of** 'Environmental Awareness Questionnaire' **for measuring and studying Environmental Awareness among Secondary School teachers teaching in various schools of Aligarh district of Uttar Pradesh.**

Hypotheses

The hypotheses which have been constructed for the purpose of this present study are as following:-

Ho.1 The Male Secondary School teachers do not differ significantly on Environmental Awareness in comparison to their Female counterparts.

Ho.2 The Male Secondary School teachers of Science group do not differ significantly on Environmental Awareness in comparison to their Female counterparts.

Ho.3 The Male Secondary School teachers of Social Science group do not differ significantly on Environmental Awareness in comparison to Female Secondary School teachers of Social Science group.

Ho.4 The Male Secondary School teachers of Science group do not differ significantly on Environmental Awareness in comparison to Male Secondary School teachers of Arts group.

Ho.5 The Female Secondary School teachers of Science group do not differ significantly on Environmental Awareness in comparison to Female Secondary School teachers of Arts group.

Ho.6 The Male Secondary School teachers of Science group do not differ significantly on Environmental Awareness in comparison to Female Secondary School teachers of Social Science group.

Ho.7 The Female Secondary School teachers of Science group do not differ significantly on Environmental Awareness in comparison to Female Secondary School teachers belonging to Social Science group.

Ho.8 The Male Secondary School teachers belonging to Arts group differ significantly on Environmental Awareness in comparison to Female Secondary School teachers of Arts group.

Ho.9 The Female Secondary School teachers of Social Science group do not differ significantly on Environmental Awareness in comparison to Female Secondary School teachers of Arts group.

Ho.10 The Male Secondary School teachers belonging to Social Science group do not differ significantly on Environmental Awareness in comparison to Male Secondary School teachers belonging to Arts group.

Ho.11 The Science group Secondary School teachers do not differ significantly on Environmental Awareness in comparison to their counterparts in Social Science group.

Ho.12 The Science group Secondary School teachers do not differ significantly on Environmental Awareness in comparison to their counterparts in Arts group.

Ho.13 The Secondary School teachers of Social Science group do not differ significantly on Environmental Awareness in comparison to their counterparts in Arts group.

Sample of the Study

The present study was conducted on a sample of 250 (N = 250) Secondary School teachers of various Secondary Schools. These Secondary School teachers were selected from different disciplines of study viz; Science, Social Science and of Arts.

Tools of the Study

For carrying out the present study the investigator found no satisfactory tool available for measuring the Environmental Awareness of Secondary School teachers. Therefore, the

investigator himself developed a tool in the form of a questionnaire for measuring the Environmental Awareness of Secondary School teachers.

The tool used in this study was **"Environmental Awareness Assessment Scale" (EAAS*)***. This Scale explores the understanding of Secondary School teachers about the importance of environment in which they live and how far the efforts of Government, mass awakening programmes of NGO's and other agencies through Mass media, electronic media and print media could achieve their goals. For preparing the **"Environmental Awareness Assessment Scale",** the investigator consulted a large number of primary and higher Secondary textbooks containing topics on various aspects of environment, prepared by the State Government and Central Government (CBSE). Apart from this, magazines, resource books of Environmental organizations like the "The Annual Surveys" on environment and newspapers. Thus, an **"Environmental Awareness Assessment Scale",** was constructed based on the twelve dimensions of environment as a whole.

Thus, with the availability of the resources which were available at hand, the various areas of "Environmental Awareness Assessment Scale" which have been mentioned above were taken. Overall a list of 84 items was finally selected for the inclusion in the "Environmental Awareness Assessment Scale". A **Biographical Information Blank (BIB)** was also prepared along with the EAAS by the investigator to gather personal information about the Secondary School teachers selected in the sample. The Biographical Information Blank includes name, Age, Sex, Religion, Academic Streams, Grade (TGT/PGT), Subject taught and Teaching Experience (in years).

Statistical Techniques used

The following statistical techniques have been used by the investigator for the treatment and analysis of the data.

1) The 't' statistical techniques has been used to find out the significance of difference in the degree of Environmental Awareness of the selected sample on the basis of Gender and Subject Area,
2) Karl Pearson's Product Moment Correlation Coefficient (r) has been applied so as to find out the correlation between various variables.

Data Analysis and Findings of the Study

Data analysis reveals the following findings of the study which are as following:

1. Evironmental Awareness of Secondary School teachers (Total sample).

A look on the scores of Secondary School teachers (total sample) reveals that there average score is 53.08. This meant that the Secondary School teachers had a moderate level of Environmental Awareness. Amongst all, the highest score achieved was 67, out of a maximum of 84, whereas, the lowest score achieved was 35 only.

The frequency distribution of scores of the total sample has been presented in table 1

Table 1 Frequency distribution of the scores of the total sample on

Environmental Awareness (EA)

S. No	Class-Interval	Frequency f	Mid-Point x	fx
1.	35-40	6	37.5	225
2.	40-45	31	42.5	1317.5
3.	45-50	61	47.5	2897.5
4.	50-55	46	52.5	2415
5.	55-60	54	57.5	3105
6.	60-65	40	62.5	2500
7.	65-70	12	67.5	810
		Σf = 250		Σfx=13270

Table 2 Percentile Rank of Secondary School Teachers on Environmental Awareness (EA)

Scale

S No.	Class Interval	Frequency	% of Total	Cummulative Frequency	Percentile Rank
1.	65-70	12	4.8	250	98
2.	60-65	40	16	238	87
3.	55-60	54	22	198	68
4.	50-55	46	18.4	144	48
5.	45-50	61	24.4	98	27
6.	40-45	31	12.4	37	9
7.	35-40	6	2.4	6	1
		Total=250			

A detailed study of scores achieved by the sample and their percentile rank distribution reveals the following:-

1. The highest frequency, i.e.; 61 falls under the percentile rank, 27. It means that highest percentage of teachers, i.e.; 24.4 have scored between 45-50 which shows below average or poor performance by the Secondary School teachers on the Environmental Awareness Scale. (Table No 2)
2. Only 42.8 % of the total sample as got a percentile rank above 48. They fall between 68 to 98. Thus, it can be interpreted that only 42.8% Secondary School teachers are satisfactorily aware of the environment, and the rest are not so aware.(Table No. 2).
3. Only 39.2% of the total sample has got a percentile rank below 48. They fall between percentile rank of 27 to 1. Thus it can be interpreted that only 39.2% Secondary School teachers are below the percentile rank of 48 and are having not so satisfactory awareness of the environment.(Table No. 2).
4. Further analysis reveals that only 12 secondary school teachers are there whose scores fall between 65-70. (Table No. 2) .These are the teachers who have got the percentile rank of 98. Thus, it can be said that only 4.8% Secondary School teachers are such who are having very high awareness of the environment and its issues.

5. Further, it can be noticed that 40 Secondary School teachers are such who fall between percentile rank of 98 & 68 (Table No. 2). That is, 16% of Secondary School teachers are such whose scores fall between 60-65 and have got the percentile rank of 87, which shows that these secondary school teachers are having quite high awareness of the environment.
6. It is also found that 54 Secondary School teachers are such who have got the percentile rank of 68 and constitute 22% of the sample. Thus, only 22% Secondary School teachers of the total sample are such who are having just above average performance on the Environmental Awareness Scale or are said to have highly satisfactory Environmental Awareness (Table No. 2).
7. It can also be further be noticed that 61 Secondary School teachers, (which are maximum in number) have percentile rank of 27(Table No. 2). This shows that 24.4% of the total sample of teachers has below average or poor performance on the Environmental Awareness Scale.
8. Further analysis reveals that 31 secondary school teachers constituting 12.4% secondary school teachers have a percentile rank of just 9 and their scores fall between 40-45. (Table No. 2)Thus, it can be interpreted that these Secondary School teachers are not having satisfactory Environmental Awareness.
9. Further, it is observed that only 6 Secondary School teachers (2.4%) are such who have Percentile rank of 1.They scored between 35-40 (Table No. 2). It means that these lowest percentage of teachers, have performed very poorly on the Environmental Awareness Scale and they have got almost nil or no awareness of the environment (Table No. 2).

Now taking up the detailed analysis and findings of the effect of independent variables namely; Gender, Type of Subject, on the dependent variable that is Environmental Awareness the researcher came out with following results which have been presented in the forthcoming (tables 3.1-4.3).

3. Relationship between Environmental Awareness (EA)) and Gender of Secondary School teachers.

The following tables (3.1 to 3.10) show a detailed picture of Environmental Awareness of Male Secondary School teachers in comparison to Female Secondary School teachers.

Table 3.1 EA of Male Secondary School Teachers in comparison to Female Secondary

School teachers (Total sample).

S.No	N Total Size	EA	Mean Value	S.D	't' Value
1.	121	Males (Total)	55.983	7.38	7.86*
2.	129	Females (Total)	49.481	5.57	

***Significant at 0.05 level of confidence.**

As depicted from **Table 3.1** the calculated't' value is 7.86, which is significant at 0.05 level of confidence. It confirms that there exists a significant difference in the Environmental Awareness of Male Secondary School teachers and Female Secondary School teachers. Therefore, it can be seen here that Male Secondary School teachers are more environmentally aware than Female Secondary School teachers. Thus gender contributes significantly to Environmental Awareness of Secondary School teachers. Thus the Hypothesis Ho.1 stands rejected.

Table 3.2 EA of Male Secondary School Teachers of Science group in comparison to Female Secondary School teachers of Science group.

S.No	N Total Size	EA	Mean Value	S.D	't' Value
1.	56	Male (Science)	61.017	3.20	11.21*
2.	60	Female (Science)	51.833	5.24	

***Significant at 0.05 level of confidence.**

It can be noticed from the **Table 3.2** that the't' value, 't' = 11.21 was significant at 0.05 level of confidence. A significant value of't' assures that there exists a significant difference in the Environmental Awareness of Male Science Secondary School teachers in comparison to Female Science Secondary School teachers. Thus, on comparing the means, it can be said that Male Secondary School teachers of Science group are more aware and conscious of the environment as compared to Female Science Secondary School teachers. Hence, the Hypothesis Ho.2 stands rejected.

Table 3.3 EA of Male Secondary School Teachers of Social Science group in comparison to Female Secondary School teachers of Social Science group.

S.No	N Total Size	EA	Mean value	S.D	't' Value
1.	41	Male (Social.Sc)	54.341	7.10	4.76*
2.	49	Female (Social.Sc)	48.306	4.73	

***Significant at 0.05 level of confidence.**

It can be seen from the **Table 3.3** that the't' value of 4.76 is significant at 0.05 level of confidence. This leads the investigator to interpret that there exists a significant difference in Environmental Awareness between them. Hence, the Hypothesis Ho.3 stands out to be rejected. It is clearly evident from the results that Male Secondary School teachers of Social Science group are more aware of environment than Female Secondary School teachers of Social Science group.

Table 3.4 EA of Male Secondary School Teachers of Science group in comparison to Male

Secondary School teachers of Arts group.

S.No	N (Total Size)	EA	Mean Value	S.D	't' Value
1.	56	Male (Science)	61.017	3.20	15.47*
2.	24	Male (Arts)	47.041	4.55	

***Significant at 0.05 level of confidence.**

From the **Table 3.4**, it can be seen that the't' value of 15.47 is significant at 0.05 level. This shows that there exists a significant difference in Environmental Awareness between Male Secondary School teachers of Science group and Male Secondary School teachers of Arts group. Hence, the Hypothesis Ho. 4 stands rejected. Thus, here, it is clearly evident that Subject Area contributes significantly to the Environmental Awareness of the Secondary School teachers.

As depicted in the **Table 3.5,** it can be seen that the't' value of 4.81 is significant at 0.05 level of confidence. This shows that there exists a significant difference in Environmental Awareness between Female Secondary School teachers of Science group and Female Secondary School teachers of Arts group. Hence, the Hypothesis Ho.5 stands rejected.

Table 3.5 EA of Female Secondary School Teachers of Science group in comparison to Female Secondary School teachers of Arts group.

S.No	N Total Size	EA	Mean Value	S.D	't' Value
1.	60	Female (Science)	51.833	5.24	4.81*
2.	20	Female (Arts)	45.299	5.07	

***Significant at 0.05 level of confidence.**

Further, It can be seen from the **Table 3.5** analysis, that the Female Secondary School teachers of Science group are more aware of the environment in comparison to Female Secondary School teachers of Arts group. Here, the Subject area is the main cause of difference. Here it can be noticed that the Subject area contributes significantly to the Environmental awareness of the Secondary School teachers.

Table 3.6 EA of Male Secondary School Teachers of Science group in comparison to Male Secondary School teachers of Social Science group.

S.No	N Total Size	EA	Mean Value	S.D	't' Value
1.	56	Male (Science)	61.017	3.20	6.16*
2.	41	Male (Social.Sc)	54.341	7.10	

***Significant at 0.05 level of confidence.**

It can be seen that the Table't' value,'t' = 6.16 is significant at 0.05 level of confidence. Thus, it confirms that there exists a significant difference in Environmental Awareness of Male Secondary School teachers of Science group and Male Secondary School teachers of Social Science group. Hence, the Hypothesis Ho.6 stands rejected. Thus, it is concluded that Subject Area has a greater role to play in developing Environmental Awareness of Secondary School teachers. Therefore, what ever difference in awareness is there, it is due to Subject Area and not due to gender, as gender here, has no role to play among Male Secondary School teachers.

Table 3.7 EA of Female Secondary School Teachers of Science group in comparison to Female Secondary School teachers of Social Science group.

S.No	N	EA	Mean Value	S.D	't' Value

	Total Size				
1.	60	Female (Science)	51.833	5.24	3.62*
2.	49	Female (Social.Sc)	48.306	4.73	

***Significant at 0.05 level of confidence.**

It can be seen from the **Table 3.7** that the't' value of 3.62 is significant at 0.05 level of confidence. This assures that there exists a significant difference between Female Secondary School teachers of Science group and Female Secondary School teachers of Social Science group. Hence, the Hypothesis Ho.7 is completely rejected. Thus, it is clearly seen from the **Table 3.7** analysis that Subject Area has a greater role to play in developing Environmental Awareness of Secondary School teachers. Therefore, what ever difference in awareness is there, it is due to Subject Area and not due to gender, as gender here, has no role to play among Female Secondary School teachers.

From the **Table No. 3.8** it can be seen that the Table value of't' which is, t = 1.17, is non-significant at both the levels of confidence.

Table 3.8 EA of Male Secondary School Teachers of Arts group in comparison to Female Secondary School teachers of Arts group.

S.No	N Total Size	EA	Mean Value	S.D	't' Value
1.	24	Male (Arts)	47.041	4.55	1.17*
2.	20	Female (Arts)	45.299	5.07	

***Not significant at 0.05 level of confidence.**

Further, from the **Table 3.8**, it is seen that there is negligible difference between the Mean values of Male Secondary School teachers of Arts group and Female Secondary School teachers of Arts group. Thus, it is confirmed now that the difference in Means between the two groups is a matter of chance error and that the difference in mean value is not due to actual variation. Thus, the Hypothesis Ho.8 stands rejected. Thus, it can be seen clearly from the above analysis, that gender does not contribute to the Environmental Awareness of the Secondary School teachers. Here,'t' value, 't' = 1.17 is the lowest 't' value obtained among all the comparative groups, when the Environmental Awareness of the Secondary School teachers is compared.

Table 3.9 EA of Female Secondary School Teachers of Social Science group in comparison to Female Secondary School teachers of Arts group.

S.No	N Total Size	EA	Mean Value	S.D	't' Value
1.	49	Female (Social.Sc)	48.306	4.73	2.31*
2.	20	Female (Arts)	45.299	5.07	

***Significant at 0.0 5 level of confidence.**

It can be seen from the **table 3.9** that the't' value, which is = 2.31 is significant at 0.05 level of confidence. Hence, the Hypothesis Ho.9 stands rejected. Thus, here, Subject Area contributes significantly to the Environmental Awareness of the Secondary School teachers and gender does not have any role to play.

As presented in the **Table 3.10** that the Table't' value, t = 4.45 is significant at 0.05 level of confidence. This gives clear indication that there exists a significant difference in

Environmental Awareness between Male Secondary School teachers of Social Science group in comparison to Male Secondary School teachers of Arts group. Hence, the Hypothesis Ho.10 stands rejected

Table 3.10 EA of Male Secondary School Teachers of Social Science group in comparison to Male Secondary School teachers of Arts group.

S.No	N Total Size	EA	Mean Value	S.D	't' Value
1.	41	Male (Social.Sc)	54.341	7.10	4.45*
2.	24	Male (Arts)	47.041	4.55	

***Significant at 0.05 level of confidence.**

Thus, here, Subject Area does contribute significantly to the Environmental Awareness of the Secondary School teachers and gender does not make any difference.

4. Relationship between Environmental Awareness (EA) and Subject Area of Secondary School teachers.

The forthcoming tables (Table 4.1 to Table 4.3) presents Subject-wise comparison of Secondary School, teachers on the Environmental Awareness.

Table 4.1 EA of Secondary School teachers of Science group in comparison to Secondary School Teachers of Social Science group.

S.No	N (Total Size)	EA	Mean-Value	S.D	't' Value

1.	116	Science	56.267	6.34	5.70*
2.	90	Social. Sc	51.055	6.65	

***Significant at 0.05 level of confidence.**

It can be seen from the **Table 4.1** that value of 't' = 5.70, is significant at 0.05 level of confidence. Therefore, it can be said that there exists a significant difference between Secondary School teachers of Science group in comparison to Secondary School teachers of Social Science group. Hence the Hypothesis Ho.11 stands rejected.

Table 4.2 EA of Secondary School teachers of Science group in comparison to Secondary School Teachers of Arts group.

S.No	N (Total Size)	EA	Mean -Value	S.D	't' Value
1.	116	Science	56.267	6.34	9.42*
2.	44	Arts	46.250	4.87	

***Significant at 0.05 level of confidence.**

It can be seen from the **Table 4.2** that the 't' value, 't' = 9.42, is significant at 0.05 level of confidence. This confirms that there exists a significant difference between Secondary School teachers of Science group in comparison to Secondary School teachers of Arts group. Hence the Hypothesis Ho.12 stands rejected.

Table 4.3 EA of Secondary School teachers of Social Science group in comparison to Secondary School Teachers of Arts group

S. No	N (Total Size)	EA	Mean Value	S.D	't' Value

1.	90	Social.Sc	51.055	6.65	4.24*
2.	44	Arts	46.250	4.87	

*** Significant at 0.05 level of confidence.**

It can be seen from the **Table 4.3** hat the 't' value,'t' = 4.24, is significant at 0.05 level of confidence. This confirms that there exists a significant difference between Secondary School teachers of Social Science group in comparison to Secondary School teachers of Arts group. Hence, the Hypothesis Ho.13 stands rejected.

Educational Implications

Teachers play a pivotal role in generating knowledge and assimilating it as well. They also play a significant role in generating awareness among students of any issue of concern. Secondary School teachers are concerned with such a group of students which are supposed to be a greater human resource and potential for nation as well as for the whole world. The effective implementation of Environmental Education requires large number of teachers who are knowledgeable and skilful to deal with Environmental Education in a meaningful way. This would also require some training to handle child centred and activity based curriculum. The role of teacher in Environmental Education includes teacher as a (Srivastava, Nalini, 2006)[10]:

i) Planner
ii) Sustainer
iii) Rewarder
iv) Value investigator

Teachers have a great impact on society as they interact with young and growing minds that are easily influenced by their teachers' views. Since teachers play a major role in the education of children, their own education becomes a matter of viral concern. Teacher education must, therefore create necessary awareness among teachers about, and through the environment. Therefore the effectiveness of Environmental Education relies heavily on the knowledge, skills, and attitudes of the teacher. Efforts have been made for integration of Environmental Education into teachers training curriculum. The teachers themselves should possess enough environmental awareness, positive Environmental attitude and skills of

achieving objectives in relation to their students. For this purpose, it is also needed to have a adequate Environmental Education programmes for pupil teacher in their training course. As most of the teachers are unaware about environmental decay and about the results of their present life style, it is the need of the hour to make them aware of environment and this can be done only by formal education, by introducing various programmes and including the proper content in their study subjects.

The results of this study can be applied in educational systems for modification of curriculum, teaching methods and for inculcating environmental values in teachers as well as students. Thus, from the results, it can be seen that not much awareness has been developed in Secondary School teachers, so there is a paramount need to develop awareness in teachers also. Government and Policy makers should think seriously about the problem and should launch Environmental Education and Environmental Awareness programmes in order to generate awareness about the environment in Secondary School teachers. National Council of Teacher Education (NCTE) has also recommended that Environmental Education components may be incorporated in the pre-service training of the teachers.

Both the pre-service and in-service teacher education programmes should be strengthened and for this basic strategies include:-

1. Reviewing and modifying the existing pre-service and in-service education programmes in view of the need for making Environmental Education their integral part and providing theoretical and practical inputs specifically focusing on environment related issues and concerns.
2. Sensitizing teachers and student teachers with planning, organizing and conducting of projects, activities and case studies in Environmental Education and enabling them to generate desired action amongst the learners.
3. Providing exposure to different kinds of projects already in progress in the community.
4. Developing skills to establish closer community contacts &
5. Using co-scholastic activities in other subjects as a medium of teaching Environmental Education.
6. Environmental Education should be made a compulsory subject in the school curriculum.

The results of the present research paper would thus prove that environment and its awareness should be there among Secondary School teachers, particularly among Female Secondary School teachers. This can be done by launching mass Environmental Education programmes and schemes promoting and generating awareness of the environment and its related issues.

Conclusion

The findings of the present investigation may be summarized according to the objectives of the present study. The summary of main points of this present study is as following:

1. A small percentage of Secondary School teachers (24.4%) show a low performance on the Environmental Awareness Scale (Table 2).
2. Only 42.4 % Secondary School teachers are satisfactorily aware of the environment (Table 2).
3. Only 4.8 % Secondary School teachers are such who are having very high awareness of the environment and its issues (Table 2).
4. 16% Secondary School teachers are such who are having quite high awareness of the environment (Table 2).

When the relationship between Environmental Awareness and Gender of Secondary School teachers was analyzed, following conclusions were drawn:

1. From the analysis of the Table 3.1 it is found that the Male Secondary School teachers are found to be environmentally more aware than Female Secondary School teachers. Thus, Gender contributed significantly to the Environmental Awareness of Secondary School teachers. It is so because the Male Secondary School, teachers have greater exposure to environment and its related concepts. Also they are able to devote more time to studies and academic work. While on the other hand the Female Secondary School teachers are not having

so much exposure to environment and its related topics due to house hold and domestic activities.

2. From the in-depth analysis of the results (Tables 3.2 & 3.3), it was found that a significant difference exist between Male Secondary School teachers of Science and Social Science group in comparison to their Female counterparts. Thus, Male Secondary School teachers of Science and Social Science group are more aware of the environment and its related problems then their female counterparts. This is so because the Female Secondary School teachers' in spite of studying science are not much aware because in practical situations with regard to the matter of environment they lag far behind. They also do not have much exposure to environment and its related problems, as most of the time they are engaged in domestic and house hold chores and other family activities. While on the other hand, Male Secondary School teachers are directly dealing with environment and its related concepts and have more exposure and interaction with day-to day environmental problems. Further, they are able to devote more time to study current affairs magazines, journals and newspapers on current environment and other environmental problems (Tables 3.2 & 3.3).

3. From the analysis of the Tables 3.4 & 3.5, it was found that a significant difference exists in Environmental Awareness between Male and Female Secondary School teachers of Science group in comparison to the Male and Female Secondary School teachers of Arts group. This is so because, here, the Male and Female Secondary School teachers of Science group, from the

very beginning of their careers, that is, in the student life itself, have studied about topics on environment like Environmental pollution, Ecology, Ecosystem, Ecological Balance, Food web, Food-chain, Biosphere and other environmental problems, therefore their understanding of the environmental issues is much higher than their counterparts in Arts stream. Thus, from the tables 3.4 & 3.5, it is clearly evident that Subject-Area contributes significantly to the Environmental Awareness of both Male and Female Secondary School teachers.

4. From the Analysis of the Tables 3.6 and 3.7, it was found that there exists a significant difference in the Environmental Awareness between Male and Female Secondary School teachers of Science group in comparison to their counterparts in Social Science group. Therefore, it is concluded that Male and Female Secondary School teachers of Science group are more aware in comparison to their counterparts in Social Science group. This can be attributed to the fact that, since from the very beginning of their careers, Science stream Secondary School teachers are more serious and devoted in their studies, as they know that being of Science group, they have to work hard in order to achieve success in life. Also, since they are of Science background they have studied in their high school and Intermediate subjects like, Environmental pollution, Ecology, Ecosystem, Ecological Balance, Food-web, Food chain, Biosphere and other environmental problems, therefore their understanding of the environmental issues is much higher than their counterparts in Social Science group. Generally, also, it is seen that Female Secondary School teachers of Social Science group find difficulty in

understanding the concepts of scientific nature. Since, from the school days the Female Secondary School teachers of Social Science group have studied Social Science subjects such as History, Civics and Political Science, as a result their grasp on the topics of Science is not up to mark in comparison to their counterparts in Secondary School teachers in Science.

Therefore, it can be seen that from the analysis of Tables 3.6 & 3.7, that Subject Area has a greater role to play in developing Environmental Awareness of Male and Female Secondary School teachers and whatever the difference in awareness is there, it is due to the Subject Area and not due to Gender, as gender here, has no role to play among Male and Female Secondary School teachers.

5. From, the analysis of the Table 3.8, it is concluded that their exists no significant difference in Environmental Awareness between Male Secondary School teachers of Arts and Female Secondary School teachers of Arts group. The reason of such a result can be attributed to the fact that Females generally have low exposure than Males, as Females are mostly confined in their homes and are engaged in other house hold and domestic activities. While on the other hand, those Females who are in job, they find less time to read newspapers, magazines and journals on environment related issues and problems, and also they are not able to seek information from audio-visual media such as television and Radio etc, as they are very busy in house hold chores and activities. The Females apart from the School work, does not get enough time to look into the problems of the environment. Thus, it can be seen clearly from the table 3.8

analysis, that Gender does not contribute to the Environmental Awareness of the Secondary School teachers. Here, the 't' value , 't'= 1.17 is the lowest value obtained among all the comparative groups, when the Environmental Awareness of the Secondary School teachers is compared.

6. From the analysis of the tables 3.9 & 3.10, it can seen that there exists a significant difference between the Environmental Awareness of Female and Male Secondary School teachers of Social Science group in comparison to their counterparts in Arts stream. Further, from the in depth analysis of the tables 3.9 and 3.10, it can be concluded that the Female and Male Secondary School teachers of Social Science group are more aware of the environment in comparison to their Female and Male counterparts of Arts group. Here, the Subject Area is the main cause of the difference. Since, the very beginning of their academic careers, the Social Science stream teachers have studied about concepts of environment like Environmental pollution, Ecology, Ecosystem, Ecological Balance, Food-web, Food-chain, Biosphere and other environmental problems, therefore their understanding of the environmental issues is much higher than their counterparts in Arts stream. Also, generally, the intelligence level of Secondary School teachers of Social Science group is more in comparison to intelligence level of Secondary School teachers of Arts group, due to which their understanding capacity is also high. The Male and Female Secondary School teachers of Social Science group are also able to grasp the topics related to environment and its problems more easily in comparison to their counterparts. Thus, here, Subject Area contributes significantly to the Environmental Awareness of the Secondary School teachers and Gender does not have any role to play.

When the relationship between Environmental Awareness and Subject Area of Secondary School teachers was analyzed, following conclusions were drawn:

7. From the analysis of the tables 4.1, it has been observed that a significant difference exists between Secondary School teachers of Science group in comparison to Secondary School teachers of Social Science group. It is therefore, concluded that Secondary School teachers of Science group are more aware of the environment as compared to Secondary School teachers of Social Science group (Table 4.1). Such a difference in awareness may be due to the reason that Science Secondary School teachers are in regular touch of environmental concepts, issues and recent developments taking place in the field of Environmental Education. On the other hand, Social Science teachers are not so well aware of environmental problems and related issues.

8. In-depth analysis of the table 4.2 reveals that there exists a significant difference between Secondary School teachers of Science group and Secondary School teachers of Arts group. Secondary School teachers of Science group are environmentally more aware as compared to Secondary School teachers of Arts group (table 4.2). The reason for such a vast difference in awareness is due to the fact that Scicne teachers are constantly in touch with latest developments & issues in the field of environment & environmental problems through magazines, National & International journals, newspapers, Radio, Television and books and since they are from Science background, they are more devoted in their academic area and have

more curiosity in gaining knowledge in comparison to Secondary School teachers of Arts group.

9. It can be noted from the analysis of the table 4.3 that a significant difference exists between Secondary School teachers of Social Science group and Secondary School teachers of Arts group. Such a difference is obtained due to the fact that Social Science Secondary School teachers are more exposed to journals, newspapers, reading books and are in regular touch with current affairs through various magazines and thereby their general knowledge and awareness of environment and its related issues is very high. While, on the other hand, Secondary School teachers of Arts group have less exposure to journals, newspapers and other reading books, Thus, it is very natural that Secondary School teachers of Arts group are not so well aware of environmental problems and related issues in comparison to the Secondary School teachers of Social Science group.

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