AN ASSESSMENT OF ENVIRONMENTAL EDUCATION LITERACY: A STUDY OF PROSPECTIVE TEACHERS

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Abstract

For the people all over the world, alarming issues are related to environment. The community can deal with environmental challenges and issues if the people are environmentally literate. Current study examines environmental literacy and its relationship with other variables including participation, awareness and knowledge. The objectives of the study were to: i) investigate the prospective teachers' environmental literacy level. ii) explore the prospective teachers' awareness ,participation and knowledge about environment. iii) compare male and female prospective teachers' environmental literacy level. All the B.S Ed students studying at federal college of education were population of the study and simple random sampling technique was used for the selection of sample. The data were collected from B.SEd students and were analyzed through independent variable which was gender and dependent variable including three environmental literacy components those are knowledge, awareness and participation. The environmental literacy and the effect of environmental participation, awareness and knowledge on environmental literacy was analyzed through percentage, means score and t-test. The study concluded that for environmental literacy both the male and female prospective teachers have same attitude. Moreover, there is need to increase the environmental literacy generation as the environmental problems are increasing along with industrialization. In the light of current study it is recommended that training programs at different levels may be devised in order to improve environmental literacy.

Keywords: *Educational Literacy, Environmental Literacy, Awareness, Assessment, Progressive Teacher*

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1. Introduction

As compared to ancient times human actions have changed the world's eco-system in last 50 years. This transformation has brought unchangeable loss in life of people living on earth (Millennium Ecosystem Assessment, 2005). Human damages could be observed due to environmental population, deforestation, acid rains and global warming. These damages have been highlighted by general community as well as by scientists (Disinger & Roth, 1992).

Through responsible citizenship, avoidance of human destruction could be understood. The awareness regarding environmental issues can be enlarged through improvement in the approaches and information in this process. While on the other side it can be seen that as compared to earlier time nowadays the global environment and natural reserves are in worse quality. So, it has become need of the time to improve the environmental literacy in the community and incorporate the environmental education in 21st century. Through this way the resolution of environmental problem could be done (Hungerford & Volk, 1990). Because of the above mentioned issues this study was conducted in order to observe the environmental literacy of prospective teachers.

1.1. Statement of the Problem

Teachers play significant role for educational efficacy and environmental education. So, the preparation of environment education in teacher training programs is necessary for harmonious development. The current study was conducted in order to assess the literacy of environment in prospective teachers of B.SEd program as biology, physics and chemistry is the major subjects of their curriculum. These prospective teachers are supposed to teach at secondary level. The current study also explored the effect of gender on environmental literacy.

1.2. Objectives of the Study

The objectives of this study were to:

1. Assess the environmental literacy level of prospective teachers at federal level.
2. Find out the prospective teacher's knowledge on the environment.
3. Explore prospective teacher's awareness on the environment.

1. Find out prospective teacher's participation on the environment.
2. Compare the environmental literacy of male and female prospective teachers.

1.3. Significance of the Study

Teachers are source through which students get knowledge regarding changes of the society and existing system of education. So, it is right to say that the training of prospective teachers is significant in order to spread environment literacy. The finding of the study will be helpful for curriculum developers in the way that they could add the knowledge about environment literacy. This study will be helpful for program development and education planners to take appropriate actions.

2. Literature Review

2.1 Environmental Education

The awareness regarding environmental education develops the skills in people. There is requirement to give environment education so for this purpose researchers found the way out for this through education which helps in sustaining the resolution regarding environment (Hungerford & Volk, 1990). Environment citizenship was proposed for the purpose of removing crises prevailing in the environment (Hungerford & Peyton 1976, Hungerford, Volk & Ramsey, 1989).

2.2. Environmental Literacy

Michaels & O'Connor (1990) highlighted the term literacy which has broadened to the range of literature literacy, environment literacy, etc. after environment citizenship. In their research the researchers have highlighted literacy of environment as a solution of environmental issues. While, Stables & Bishop (2001) discussed it as an unclear term and extra attention should be given to it to make it different from reading environment just from the text.

2.3. Concept of Environmental Awareness

The awareness regarding environment is mostly taken as wider in scope. Many theorists have tried to develop the definition of environmental awareness but still there is no proper definition has been presented. Most of the given definitions include environmental attitude, knowledge and action (Pinquart & Silbereisen, 2007).

2.4. Environmental Knowledge

There are two aspects of environmental knowledge first getting knowledge regarding natural world, surrounding and their association with ecological matters and issues. Second is related to take any action in an environment in friendly manner (Grunenberg & Kuckartz, 2003). The knowledge described in environmental literacy was a wide range of knowledge including environmental related issues (Roper, 2005).

2.5. Environmental Attitudes

It was defined as a factual knowledge and motivation through emotional concern that results in the tendency to act (Stables & Bishop, 2001). While, in contrary to this it was defined as the environmental attitude of people which do not necessarily reflects their environmental behavior (Goldman, Yavetz & Peer, 2007).

2.6. Environmental Behavior

Another component prescribed by theorists was environmental behavior. Roth (1992) stated that the environmental literacy of individual should be visible through their actions. Goldman, Yavetz & Peer (2007) used the phrase mentioned by Roth as a synonym for environmental literacy.

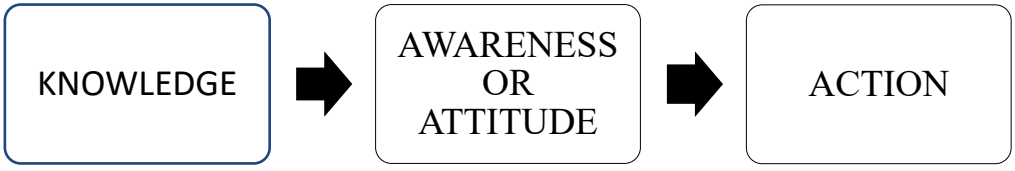

Figure 1: Model of Knowledge Attitude & Behavior by Hungerford &Volk (1990)

A study was conducted by Ramsey & Rickson (1977) which resulted in positive correlation between knowledge, attitude and behavior. While Culen (2001) conducted research and criticized that if this was considered as a model then inclination has done since past 30 years which was growing era for environmental awareness and knowledge.

2.7. Environmental Concern

Yilmaz, Boone & Andersen (2004) examined the environmental concern of elementary students of public sector school which was found to have direct connection with behavior. A Study conducted for finding out the environmental literacy of prospective teachers, knowledge of environment and adaptation of behavior are correlated (Tuncer, Tekkaya, Sungur, Cakiroglu & Ertepinar, 2009).

2.8. Related Researches

In the community or at work place the position of women and men is diverse. They are expected to have different concern as far as the protection of environment is concerned. A number of researches have been conducted in order to examine the differences of environmental literacy. The findings of the studies have shown that females have more environmental literacy as compared to males (Hunter, Hatch & Johnson, 2004; Hsu, 1997; Yilmaz, Boone, & Anderson, 2004; Tuncer, Tekkaya & Sungur, 2009). It was concluded that although females have more environmental literacy but they are not much active in positive participation in environmental issues (Tindall, Davies & Auboules, 2003). While in another study conducted by Ozden (2008) the results of the study indicated that no gender differences exists in people living in Spain and Germany. It was also concluded that pre-service teachers enrolled in teaching program at elementary level have taken science and environment courses due to their awareness about environmental literacy.

It was concluded that the students enrolled in environmental subjects including sciences, agriculture and geography have more environmental literacy than those enrolled in non-environmental subjects such as social sciences and literature (Goldman, Yavetz & Pe'er, 2006). Same findings were got from research conducted by Goldman, Yavetz & Pe'er (2007) regarding prospective teachers.

3. Research Methodology

The current study was descriptive and comparative in nature. A comparison of gender with environment literacy of prospective teachers was done.

3.1. Population & Sample

From the population sample was selected through simple random sampling technique. Moreover, 48 male and 53 female prospective teachers were selected as a sample.

3.2. Instrumentation

Self-developed questionnaire was validated through expert opinion. Pilot test was done for ensuring the total reliability of the instrument which was 0.83. The instrument was then used for the collection of data, which was based upon the variable of the study. And following table of specification was made for the study.

Table 1. Table of Specification

	Knowledge	Comprehension	No. of statements
1.Physics	3	3	6
2.Chemistry	6	4	10
3.Biology	6	5	11
	15	12	27

The questionnaire was based on five-point Likert scale. In the questionnaire firstly demographic variables were asked rest of the portion was based upon three variables of the environmental literacy including 5 items of awareness, 27 items of knowledge which was about current environmental issue and 17 items were regarding participation of respondents in environmental issues.

4. Collection & Analysis of Data

The data were collected through personal visits of the target college. For the analysis of the data mean, standard deviation and t-test was applied in order to examine the environmental literacy and the effect of gender on the variable of environmental literacy. Following data were collected:

Demographic Status

Table 2. Demographic status of the respondents

Variables	Range/ Categories	Frequency	Percentage
Age group	20-25	95	94
	26-30	6	6
	31+	0	0

Gender	Male	48	48
	Female	53	52
Disciplinary	Physics, Chem, Biology	47	47
Majors	Bio, Zoology, Physics	54	53

There were 94% of the respondents from 20-25 age group and 6% of the respondents were from 26-30 age. 52% of the total sample was female while 48% were males and 47% were having physics, biology and chemistry as major discipline whereas 53% were having biology, physics and zoology as their major.

Environmental Knowledge

Table 3. Environmental Knowledge of prospective teachers

No. of items	Correct answers	Score %	Per score %	Score Adequacy
5	24 and above	80–100%	12	Adequate
	20 -23	60-79%	26	Adequate
	Below 17	59% or less	62	Inadequate

Above mentioned table reflected the acceptable or unacceptable scores for corrected and uncorrected responses respectively. It was found that 38% of the respondents had scored adequate while 62% scored inadequately. So, insufficient awareness of respondents has been calculated.

Descriptive mean score of prospective teachers

Table 4. Environmental awareness & Environmental participation

Variables	Number of items	N
EAS	27	101
EP	17	101

Different statements were asked regarding environmental awareness and environmental participation. It was found that majority of the respondents have good environmental awareness as compared through the findings of the study it was found that the participation of the respondents belonging to any age or gender was at average.

Effect of Gender on Environmental Education Literacy

Table 5. Comparison on Environmental Knowledge

Gender	N	Mean	SD	Df	t-value	Sig.
Male	48	16	4	60	3.16	2.174
Female	53	18	6			

Significance level= 0.05

Table shows that mean score of female prospective teachers is 18 and of male prospective teachers is 16. The t-value is 3.16. The significance is 2.174. This indicates that female possess better environmental knowledge than male respondents.

Table 6. Comparison on Environmental awareness

Gender	N	Mean	SD	Df	t-value	Sig.
Male	48	18	3	84	1.13	0.258
Female	53	17	3			

Significance level= 0.05

Table indicates that mean score of male prospective teachers is 18 and of female prospective teachers is 17. The t-value is 1.13. This reveals that there is no significant difference between male and female about environmental awareness.

Table 7. Comparison on Environmental participation

Gender	N	Mean	SD	Df	t-value	Sig.
Male	48	61	61	84	0.347	0.730
Female	53	59	59			

Significance level= 0.05

Table shows that mean score of male respondents is 61 and of female prospective teachers is 59 and t-value is 0.347. This indicates that there is no significant difference between male and female about environmental participation.

5. Discussion and Conclusion

Through the current study the researchers tried to find out the environmental literacy of prospective teachers including: awareness, knowledge and environmental participation. Current study was a comparative study in order to find out the gender differences regarding the three variables/components of environmental literacy. The results of the current study showed that prospective teachers have insufficient knowledge regarding earth work including biological diversity and ecosystem. Same results were found in the study conducted by Zelezny, Chua and Aldrich (2000) that the environmental knowledge of prospective teachers is not enough. Result of another study conducted by Berberoglu and Tosunoglu (1995) showed that the students studying at university level do not have much awareness related to environment. One of the major reasons of prospective teachers' low grades may be due to lack of courses in their program regarding environmental knowledge while in some issues regarding environment students had great knowledge. The attitude of prospective teachers was positive one and had good concern of knowledge of some areas including air, water pollution and desertification. They also expressed their positive feeling regarding the environmental problems in their lives including the issues of drinking of quality water, air pollution etc. Vlaardingerbroek and Taylor (2007) found that prospective teachers were much concerned about environmental issues and were well aware about the significance of relationship between human beings with the environment.

The current study depicted that that most of the female prospective teachers were having better environmental knowledge as compared to males. Moreover, both the genders have same awareness of environment and both have same participation in the environment. Same findings were concluded by MacDonald and Hara's study (1994) revealed that the environmental literacy of both the gender is insufficient. Both the genders have equal participation and environmental concern, while females have better environmental knowledge as compared to males.

6. Recommendations

Through the current study following recommendations can be made:

1. The environmental participations were found to be weak so appropriate teaching technique; field trips for prospective teachers may be arranged.
2. Prospective teachers can develop the environmental awareness in the next generation so; seminars or problem solving skills may be arranged for prospective teachers.
3. Campus activities were found to be less so for the promotion of environmental knowledge campus activities may be promoted for instance recycle centre may be initiated for this purpose.

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