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DEVELOPMENT OF AN ENVIRONMENTAL SENSITIVITY SCALE FOR SECONDARY SCHOOL STUDENTS



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ABSTRACT

This paper explains the procedure of developing and standardizing an environmental sensitivity scale constructed by the investigator to measure the environmental sensitivity of secondary school students. The scale has been constructed by using Likert's method of summation to obtain a five point judgment on each item. After critical study related to environmental education and environmental sensitivity five areas namely wildlife and forests, environmental pollution, population explosion, health and hygiene and conservation of environment were selected for constructing the tool. The pilot study had 90 items, related to all the five areas mentioned above. The newly constructed scale had face validity, content validity and reliability.

KEYWORDS : *Environmental Sensitivity Scale , procedure of developing and standardizing .*



INTRODUCTION:-

Environment is simply, the world in which we live. It is not merely the atmosphere and other physical factors surrounding us, but is the complex of all factors which not only affect one organism all the time. But now days many activities done by human being like building construction, water exploitation, urbanization, throwing out the waste materials, smoke of factories make damage to environment in a large scale. Human beings have recently been spending a great amount of resources of

nature for increasing and improving life quality. This situation has started to threaten the environment where we live. Today environmental problems arose from the lifestyles of human being. As a result of these, public health has been endangered and ecological balance has been lost slowly. There is a great need that the society should not only be aware of the present deteriorating environmental conditions but it should also feel the responsibility to save the environment. Environmental problems have reached up to a level where almost everyone is conscious of them. The raising consciousness has also given rise to a wide spread responsiveness to the idea for the need to do something about it. Environmental problems are not the problems of developing countries like India alone but are the concern of the whole globe. Hence, it is the need of the hour to make the whole society conscious

about the ecosystem and ecological balance. This consciousness for environment is known as environmental sensitivity. Environmental sensitivity is a set of affective characteristics which result in an individual viewing the environment from an empathetic perspective (Paterson, 1982). It is apparently slow to develop and is most closely correlated with those who grew up in close proximity to a natural setting. Individuals who are sensitive to the environment possess a basic appreciation and concern for the natural environment. So, we can say that Environmental sensitivity refers to an empathetic perspective towards the environment. It includes the affective domain as well as the cognitive domain. Sensitivity towards the environment refers to the attributes of feelings, beliefs and emotions about environmental concerns viz. population explosion, health and hygiene, environmental pollution, wildlife & forests and concern for the conservation of environment. Individuals must have some cognitive knowledge of the environment to develop an intelligent concern for their natural surroundings. Education is a powerful medium for changing our behavior. Thus, this is a crucial time to realize that environmental sensitivity and environmental friendly behavior should be cultivated among masses particularly among adolescents through education. For the awareness of the society about the environment, it is essential to work at grass root level so that the whole society can work to save the environment. For this purpose, it is essential to educate and train children regarding the significance of healthy environment. When the students learn about the functioning of ecosystem and about environmental action strategies that contribute to their maintenance, they develop more environmentally responsible behavior on a daily basis. Therefore, environmental education has been recently strongly emphasized and has been taken into consideration when planning school curriculum by the developed and developing countries. Further, environmental education has been recently attracted much attention by most people such as children, teachers and parents, and by governments and organizations.

In Indian Education System, the subjects related to environment take place in the science and technology education course, social studies course and life studies course as one or two units. Since the environmental education is interdisciplinary in nature, it is meaningful to integrate environment related issues and topics into different courses. As claimed by Howe and Disinger (1988), the development and acquisition of environmentally responsible behavior can be perceived as the chief aim of environmental education. It is really needed to make the students understand the environmental problems and cause-effect relationship to take action for the environment and show responsible citizenry behaviors for the environment. So, one powerful way of raising awareness and developing responsible behavior of students in relation to environment is education. As it is clear from the research studies (Leeming, 1995) that when the environmental education starts at early ages, the children later tends to demonstrate environmental responsible behaviors necessary for protecting and sustaining the environment. In today's contemporary society, it is crucial to take responsible action for preventing and solving environmental problems. So, it would be practical and meaningful to integrate environmental related concepts into curriculum and developing environmental education program for formal and non-formal education. These environmental concepts are likely to influence the development of children' environmentally responsible behavior. Therefore, environmental sensitivity must be the responsibility of any part of the society. When studies conducted both in India and abroad, were examined it was found that the studies concerning environment and scale development related to the measurement of environmental awareness and sensitivity were rarely seen. The analysis of the studies further pointed out that a little attention is given to environmentally responsible behavior. Now more though it is essential that teacher should have knowledge of environmental issues, sensitivity towards the environment, and proper attitudes towards the environment and should develop

appropriate programme for enhancing environmental sensitivity and awareness among school students related to the environment

Thus, it will become important for secondary school teachers to know the students' awareness and sensitivity regarding environment in their classes and to identify the students whose sensitivity is low and high. In this study, with the purpose of measuring the secondary school students' sensitivity to environment, it was tried to develop "Environmental Sensitivity Scale for secondary school students".

The Characteristics of the Environmental Sensitivity Scale for secondary school students

"Environmental Sensitivity Scale for secondary school students" was developed by investigator to determine the environmental sensitivity level of the students (11-16 years old) who attend secondary schools from sixth grade to tenth grade. "Environmental Sensitivity Scale for secondary school students" consists of 70 items. While forming the items, related literature was extensively reviewed and the items were tried to be formed considering the behaviours of students regarding environment awareness and sensitivity. Student's awareness of environment concerning the nearest environment of the students and the behaviours for protecting the environment.

The scale is Likert type five point rating scale and the student who answers the statements chooses one of the alternatives such as (5) strongly agree (4) agree (3) don't know (2) disagree (1) strongly disagree, considering the demonstration level of the behaviour that each statement expresses. Therefore, by adding the total scores obtained, only one score is reached related to student's environmental sensitivity. Thus, when all the statements are answered, the possible scores that a student can get from the scale ranges from 70 (the lowest) to 350 (the highest). While the high score obtained from the application indicates that the level of the student's environmental sensitivity is high and that student is sensitive to environment, the low score indicates that the level of the student's environmental sensitivity is low and the environmental sensitivity of the student is not adequate.

There is no time limitation in the application of "Environmental Sensitivity Scale for secondary school students". However, in the application of the scale, 35-40 minutes can be enough.

PROCEDURE FOR DEVELOPMENT OF THE TOOL (ENVIRONMENTAL SENSITIVITY SCALE FOR SECONDARY SCHOOL STUDENTS)

STEP-I. Preparation of preliminary draft

The first part of the scale was captioned by general information, which includes the variables: name, gender, age, class, school and locale. The second part of the scale was framed after reviewing literature and many related studies done in the field of environmental education and environmental sensitivity both in India and in other countries. Then the next step was to ascertain specific areas in which the Environmental sensitivity of the students was to be assessed. After discussion with the experienced teachers of the subject concerned the Environmental sensitivity areas were specified. Following areas, reported as correlated to environmental sensitivity were selected. Five areas namely wildlife and forests, environmental pollution, population explosion, health and hygiene and conservation of environment were selected for constructing the tool. Then the points related to Environmental Sensitivity of students were noted and on the basis of these points, some statements were prepared. While formulating and editing the statements utmost care was taken that each statement should depict complete thought, double barreled statements were avoided, language of the statements was kept simple and clear, and statements were in the form of simple sentences. The list of these 115 statements was given to faculty members of Department of Education and subject experts in schools for screening and for their expert comments. On the basis of their expert comments, twenty five irrelevant statements were dropped and the vagueness and ambiguity of a few were removed.

Thus, the remaining 90 statements were ready for inclusion in the preliminary draft of the scale. The items belonged to five different areas of Environment. The statements formed were mixture of positive and negative statements. Each statement has five alternatives. The instructions for filling up the scale were given with it and the respondents were required to put tick mark (?) against the appropriate alternative response

STEP-II. Pre-Tryout of the Scale

After constructing the environmental sensitivity scale, a pilot test was conducted on a random sample of 150 secondary school students of Ganganagar District, Rajasthan State. For the purpose of pre-try out, preliminary draft of the Environmental sensitivity scale was administered on 150 school students of class IX. They were also requested to note ambiguous/unintelligible or irrelevant items. On the basis of the feedback given by the students and observation of the investigator few statements were dropped. In this way 85 statements were retained after pre try out of the scale.

STEP- III. Try out of the Scale

The scale with 85 statements was again administered on 100 school students of class IX and the students were requested to follow the instructions given in the scale. The responses given by the students were used for the purpose of item analysis. The items were scored on the basis of five point rating scale as the scale was designed on the lines of Likert method.

STEP- IV. Item analysis

The procedure used to judge the quality of an item is called item analysis. Item analysis is carried out to eliminate inconsistency of items. The judgment for selecting an item is based up on the discrimination index of the item. To determine the discrimination index, the investigator arranged the subjects in ascending order according to the magnitude of their scores. The top 27% were selected as upper group and bottom 27% were selected as lower groups which were used for item analysis. To find out the discrimination index of each item, test of significance was applied to both scores. Mean, standard deviation and t-values were calculated for each of the higher and lower groups.

Thus, using the t-value, the significance for each item was tested at 0.05 level of significance. The items having value of 1.96 or more were selected.

STEP- V. The final form of the Scale

The final form of the Environmental sensitivity scale contained only 70 statements/ items. It consists of 52 positive statements and 18 negative statements. It is Likert type five points rating scale. Each item has five response alternatives (5) strongly agree (4) agree (3) don't know (2) disagree (1) strongly disagree.

It is a self administering tool with instructions printed on the first page of the scale. Space for alternative response is also provided in the format against each statement. There is no time limit and there is nothing right or wrong about these items.

STEP- VI. Scoring of the Scale

The Environmental sensitivity scale for senior secondary class students contains five possible responses to each item i.e. strongly agree, agree, don't know, disagree, strongly disagree. The respondents were instructed to tick mark any one of the five choices for each item. Tick mark on choices strongly agree, Agree, don't know, disagree, strongly disagree give the scores of 5, 4, 3, 2 and 1

respectively for positive items. In case of negative items scoring is reversed i.e. 1, 2, 3, 4, 5 respectively. The total score obtained by a student on scale measures his/her Environmental sensitivity. The range of scores is from 70 to 350 with higher score indicating the high environmental sensitivity and vice versa.

STEP- VII. Administration of the scale

The environmental sensitivity scale is a self administered tool. There is no time limit for the test.

STEP- VIII. Estimating Reliability of the scale

The reliability of the environmental sensitivity scale was estimated by spilt half method. First the test was divided into two equivalent halves. One half represented performances on the odd numbered items and other half performance on the even numbered items. Then correlation coefficient between the two sets of scores was calculated and after applying spearman brown formula the reliability co-efficient was found to be 0.89.

Thus, the reliability score obtained through split half method was found to be high and much faith can be placed in the results obtained through the scale.

STEP- IX. Estimating Validity of the scale

The validation process is logical and rational. In the present study Content validity and Face validity were ensured.

Content validity

Content validity is concerned with the content of the scale. Content means the substantive constituents of materials, their factual and informational component. It was ensured that the contents of the environmental sensitivity scale were appropriate and in accordance with the mental age and exposure of the students.

Face validity

Face validity is a property of a test intended to measure something. The test is supposed to have face validity if it 'looks like it is valid' and 'it is going to measure what it is supposed to measure.'

In the present environmental sensitivity scale an attempt was made to ensure face validity and content validity through consultations with supervisor, subject experts of the secondary schools, education experts from Kurukshetra University, Kurukshetra from the very beginning to the final selection of the statements. On the basis of the constructive comments by the experts, the items were modified/ eliminated. Thus the face validity and content validity were duly ensured.

CONCLUSION

The environmental sensitivity scale to measure environmental sensitivity developed and standardized by the investigator can be used to study the environmental sensitivity of the secondary school students. It helps to find out and analyze various factors associated with the low and high level of environmental sensitivity, so that necessary steps can be taken to create an environment in which the emphasis can be given to enhance the environmental sensitivity of students regarding environmental aspects and issues.

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