EFFECTIVENESS OF SELECTED INSTRUCTIONAL APPROACHES IN DEVELOPING ENVIRONMENTAL AWARENESS AMONG IX GRADE STUDENTS IN PATNA DISTRICT, INDIA

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ABSTRACT

This paper aims to investigate the effectiveness of three selected instructional approaches viz. self-learning material, audio-visual and fun activity approach in order to develop the environmental awareness among the IX grade students. A standardised questionnaire on environmental awareness was used as a research instrument. Environmental awareness scores were analysed using descriptive statistics and an effectiveness index. A probability sample of 144 students (72 girls and 72 boys) was selected for the purpose. Research outcomes showed that most of the students had average or high level of environmental awareness. The value of effectiveness indices indicated that the fun activity approach was most effective followed by the study material approach and the audio-visual approach.

Keywords: environmental awareness, instructional approaches, Patna, IX grade students

INTRODUCTION:

In the end of the 20th century, the environmental concerns grew much greater, not only among the developed countries, but also in some developing and underdeveloped nations. The common reason was that the consequences of environmental damages to some vital resources became so apparent and horrifying that governments became worried and mass media found it of great value for their headlines; this is due to the public concern (Karimi, 2003). Environmental education has developed as reasonable way to answer the problems and concerns of environment. Several studies have been conducted in the world over to show the significance of environmental education and intervention programmes to develop environmental awareness in various forms. Aghi (1977) taught EVS to primary school children and found that it stimulated an interest among children towards the environment. However, Disinter and John (1988) reported that young adults attributed a large amount of their knowledge of environmental concepts, problems and issues to out of school experiences. Ballard and Pandya (1990) and Seever (1991) reported that direct experiences related to environmental education in earlier grade levels can increase environmental awareness of the students. Gurevitz (2000) emphasised that affective education leads to the development of specific kind of emotional engagements which may provide a more effective way of getting people involved in environmental action. Affective environmental education activities are specifically designed to engage children with the environment on a more emotional level. Purdie, Neil and Richards (2002) reported that exposure enhanced environmental awareness of young pupil. Greater the amount of natural exposure, greater the increasing awareness of primary school children (Wells, 2003). Kwan and Chan (2004) designed a meaningful issue based field inquiry using theory of learning and awareness (Marton and Booth, 1997) to open up the space of learning for students and concluded that it has brought meaningful learning to students for their environment according to the expectations of the current educational reforms in HongKong. Harjai (2008) reported that environment awareness and sensitivity among the primary school children having internal locus of control taught by experiential learning strategies is better than those students having external locus of control and taught by traditional learning method. Effective environmental education requires the recognition of appropriate and meaningful strategies to help students to discover more about natural world, assemble information, facts and solve the environmental related problems (Satapathy, 2010). The much- needed bonding between people and nature cannot be taught through a textbook within the four walls of a classroom. The key to solving the environmental crisis lies with the individuals who have to make environmental protection a part of their behavioural repertoire. Environmental protection can only be brought about through the conceptual realignment between our desire for wasteful exploitation of resources and their judicious utilization for sustainable development (Mishra and Mishra, 1993). Different research studies in the field of environmental education give an impetus to present investigation to get a preliminary idea of most effective teaching practice for developing environmental awareness among the students through an intervention so that they become more conscious about environmental pollution and degradation and subsequently develop among them an environment friendly behaviour.

NEED OF THE STUDY:

There is strong need to have informed environmental decision makers for solving environmental problems and in the management of the quality of the environment. The main objective of environmental education in schools is to sensitise and equip the young minds for healthy personal and social attitude towards environment. Hence, it is more necessary to investigate method of instruction which could be most effective to motivate learners to be a catalyst for environment protection and conservation. In the present study, the effectiveness of three selected instructional approaches namely self-learning material, audio-visual aid and fun activity are compared for developing environmental awareness among the IX grade students studying in different schools of Patna, the capital city in the Indian state of Bihar. Besides, this study becomes all the more significant when Environmental education is not going to be taught as an independent discipline in the curriculum for the IX grade students from the current session i.e. 2012-13 in most of the schools in Bihar.

OBJECTIVE OF THE STUDY:

To compare the effectiveness of three different instructional approaches in developing environmental awareness among the IX grade students of Patna district.

DATA AND METHOD:

The study focused to investigate the effectiveness of the three selected instructional approaches in developing

Environmental awareness among IX grade students studying in differently administered schools in Patna district. Keeping in mind the aim, study was designed so as to find the quantitative effectiveness of the selected instructional approaches during a three days intervention programme. The study applied a pre-test and a post-test experimental design.

SAMPLE:

The sample was selected during the month April, 2012 in two stages. First stage comprised of selecting schools from Patna District and in the second stage students studying in the IX grade from each selected school were sampled by simple random sampling.
The data for the current study was obtained from 144 students (72 girls and 72 boys) attending government and private schools.

MEASURING INSTRUMENT:

An Environment Awareness Ability Measure (EAAM) developed and standardised by Jha (1998) was used. The instrument consists of Fifty one test items which includes five dimensions of the environment, causes of pollution, conservation of soil forest, air etc., energy conservation, conservation of human health, conservation of wild life and animal husbandry. Three indices of reliability were determined. Split-half was found to be 0.61; secondly it was calculated by K-R method and was found 0.84 and thirdly, it was determined by test-retest method. Two test-retest reliabilities were determined; one after an interval of three months and other of six months and the values were found to be 0.74 and 0.71 respectively. The coefficient of correlation between Environment awareness ability measure scores and Environment Awareness Scale of Tarniji was found to be 0.83.
Out of fifty one statements forty three were positively worded and eight negatively worded. Each test item has two options for responding Agree/Disagree. A numerical weightage of one was assigned to the response category of Agree in the case of positive items and Disagree in the case of negative items. Norms for the EAAM is as follows:

Awareness level	Range of scores
High	37-51
Average	16-36
Low	0-15

PROCEDURE OF EXPERIMENTATION:

The investigation was carried out in three phases

PHASE 1: PRE-TESTING:

Investigator made selection of ten schools from the district by using simple random sampling. Investigator personally visited all the selected schools in order to acquaint the institutions about the environmental awareness programme. After getting consent from the schools, investigator prepared a list of the names of IX standard students for each school separately. From the list 18 students were selected from each school randomly by using random number tables.
In phase one of the experiment investigator assessed the environmental awareness of the selected participants by administering Environmental Awareness Scale.

PHASE 2: INTERVENTION:

Intervention programme was organized and carried out for 144 students studying in different schools of Patna in the Department of Education, Patna Women's College, Patna, India. Participants were randomly allocated to three different groups (A1, A2 and A3) in order to instruct them in three different instructional approaches. Group A1 was instructed through self-learning material, group A2 was taught through using audio-visual aids and the group A3 was instructed by using fun activities.

PHASE 3: POST-TESTING:

ASSESSMENT OF THE IMPACT OF THE INTERVENTION:

To assess the impact of intervention again Environment awareness ability measure questionnaire was administered to the participants as post-test.

It is logical to assume that an instruction approach can only elevate the level of a student to a higher stat of awareness. Thus, a student who is exposed to any instructional approach may remain in his state of awareness or transit to a higher level of awareness. Thus, a student in the low state of awareness may transit to the average state or the high state of awareness. Similarly, a student in the average state of awareness may remain in the average state of awareness or elevate to the high state of awareness after being exposed to an instructional approach. This is shown graphically in figure 1.

To assess the effectiveness of different selected modes of instruction the effectiveness index (EI) is defined as follows

$$EI = \frac{number\ of\ elevations}{total\ number\ of\ students\ that\ have\ scope\ for\ ellevation}$$

High			•
Average		•	×
Low	•	×	×
	low	**average**	**High**

RESULTS:

Based on the norms prepared for Environmental awareness scale the level of awareness for the students is assessed. The classification based on the pre-test scores gives information about environmental awareness among the IX grade students in the city of Patna before undergoing intervention (Table 1) .

In addition the classification based on the post-test scores for selected instructional approaches give a clue to the relative effectiveness of the instructional approaches. (Table 2, Table 3 and Table 4). As per the pre-test scores 0.69% students have a low level of awareness, 28.47% have an average level of awareness and 70.83% of the students have a high level of awareness. For the three selected instructional approaches the numbers of elevations are found to be 11 for each of the instructional approach (*Table 2, Table 3 and Table 4*).

The value of the effectiveness index is 0.73, 0.69 and 1.00 for study material approach, audio-visual approach and fun activity approach respectively. Based on the effectiveness index the three selected approaches can be ordered in the descending order of effectiveness as follows:

fun activity approach > *study material approach* > *audio visual approach*

DISCUSSION:

On evaluating the results on the level of environmental awareness, it was found that there was considerable increase in the percentage of the students in the high level of environmental awareness post-intervention (70.83% to 93.06%) whereas there was decrease in the percentage of the students from the low level (0.69% to 0%) and average level (28.47% to 6.94%). It evinces that intervention programme has positive effect in bringing environmental awareness among the students. Similar results were determined in the studies of Ballard and Pandya (1990); Gurevitz (2000); Purdie, Neil and Richards (2002); Wells (2003); Kwan and Chan (2004); Mehra and Kaur (2010) and Lee (2011). Further to investigate the effectiveness of the instructional approaches selected for the intervention results indicate that for the study material approach there was transition of the students from low level to average level and all the students which were earlier under low and average level showed transit from low and average level to high level for the fun activity approach. In order to quantify the effectiveness investigator calculated the effectiveness index (E.I), the value of E.I for Fun activity approach was 1 followed by study material approach 0.73 and audio-visual approach with value of 0.69. Thus it leads to conclusion that fun activity approach is the most effective in bringing environmental awareness relative to the other two other approaches selected. Probable reason for this could be that learning experiences which are direct i.e. with actual physical contact rather than indirect experiences that are regulated and contrived, symbolic occurring in the absence of actual physical contact have lasting effect on memory as students themselves explore and discover the knowledge.

CONCLUSION:

Play is an important way in which children freely engage in learning. It allows children to investigate the world on their own terms, and for their own purposes and is a key means by which children learn without being taught; it is also basic process of doing, exploring, discovering, failing and succeeding. Play activities allow

children to interact with the environment and discover and understand relationships through their own behaviour. Thus, the results of the present study suggests that action oriented and enjoyable teaching methodology should be utilised maximum in teaching learning of the environmental education to bring out lasting and positive behavioural change among children.

Table 1: The level of awareness based on the pre-test and the post-test scores

	pre-test score	post-test score
level of awareness	frequency (%)	frequency (%)
Low	1 (0.69 %)	0 (0 %)
Average	41 (28.47 %)	10 (6.94 %)
High	102 (70.83 %)	134 (93.06 %)

Table 2: changes in the level of awareness under study material approach

intial level	level after study material approach			L → A	L→ H	A→ H
	Low (L)	Average (A)	High (H)			
Low	0	1	0	1	0	×
Average	×	4	10	×	×	10
High	×	×	33	×	×	×

Table 3: changes in the level of awareness under audio-visual approach

intial level	level after audio-visualapproach			L → A	L→ H	A→ H
	Low (L)	Average (A)	High (H)			
Low	0	0	0	0	0	×
Average	×	5	11	×	×	11
High	×	×	32	×	×	×

Table 4: changes in the level of awareness under fun activity approach

intial level	level after fun activity approach			L → A	L→ H	A→ H
	Low (L)	Average (A)	High (H)			
Low	0	0	0	0	0	×
Average	×	0	11	×	×	11
High	×	×	37	×	×	×

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