



IMPACT OF INSTRUCTIONAL MULTIMEDIA LEARNING PACKAGE IN IMPROVING ENVIRONMENTAL LITERACY

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Abstract:

This study was designed to investigate the effect of instructional multimedia learning package in improving environmental literacy. The investigator attempted to study the difference between the chalk and talk method of teaching and teaching through instructional multimedia learning package in terms of environmental literacy test. 92 eighth grade students of which 46 students in control group and 46 students in experimental group were the sample of study and they were equally assigned to control and experimental groups by intelligence test scores. The control group sample were taught through chalk and talk method of teaching and experimental group through instructional multimedia learning package. The researcher used a self-prepared tool of Environmental Literacy Test (ELT), for collecting data and then analysis of data was done by SPSS. The t-test revealed that there is significant difference in the post-test scores between the control and experimental group. It was found that the post-test scores of the experimental group were significantly higher than those of the control group with regard to environmental literacy.

Key Words: Environment, Environmental Literacy & Instructional Multimedia Package

Introduction:

Earlier man had limited needs and so he led a harmonious life with nature. With the advancement of science and technology, man has tried to manipulate the environment according to his needs, comfort and security. This has caused depletion and degradation of natural resources (Rao & Reddy, 2007). So in order to maintain a balance between the environment and development, environmental literacy is necessary. Environmental literacy is an approach to learning and not a subject of study. Environmental literacy is very important for the child and adult for self-fulfillment and social development. It helps in the maintenance of life in this environment. It helps to understand and appreciate how the environment is used for man, a living and for promoting a material culture. It helps in appreciation and enjoying the nature and society (Santra, 2012). The need for the protection of environment in order to maintain the quality of life has been identified by many countries in the world. Environmental protection starts by creating awareness among the people so that it becomes part of people's life style. Environmental literacy addresses issues of population explosion, exhaustion of natural resources and pollution of the environment and shows on different ways of solving them (Vellaisamy, 2010). In fact, the multimedia can play an important role in realizing the environmental problems and related situations. Since multimedia can play a great role in bringing these situations to the classrooms with more concreteness, it is essential to make the students acquainted with these challenges. So the need of the hour demands environmental literacy in every individual that can bring about a change among them to think and act aptly to save the fading environment. Therefore, this paper intends to study the impact of instructional multimedia learning package in improving environmental literacy.

Review of Related Literature:

Sharma and Sharma (2014) investigated the relative effectiveness of multimedia and conventional classroom instruction in promoting environmental concerns. The findings revealed that there is a significant gain in the achievement of environmental concerns of the experimental group when taught by using multimedia method of instruction (MMLP). It was concluded that Multimedia method of instruction significantly improves the scores of the students of the experimental group in their achievement on environmental concerns and that the multimedia method of instruction is more meaningful and effective than the conventional classroom learning instruction. Singaravelu (2014) enlightens the effectiveness of Multimedia Package in learning communicative skill in English. The findings revealed that Interactive- Multimedia Package is more effective than conventional methods in improving communicative skill in English. Craig and Allen (2015) investigated the impact of curriculum-based learning on environmental literacy and energy consumption with implications for policy. This case study utilized a longitudinal design and mixed methodology to assess the effect of curriculum-based experiential learning on elementary school students' environmental literacy and energy-saving behaviors. This study found that the students significantly improved their environmental literacy. Normalizing kilowatt-hour

(kWh) consumption for weather, observed a decrease in energy consumption of more than 15% in student homes and more than 30% at the focal school. Shamuganathan and Karpudewan (2015) evaluated to model the environmental literacy of Malaysian pre-university students enrolled in a matriculation college. The result shows that Responsible Environmental Behavior (REB) is influenced by the students' attitude and belief towards performing REB and knowledge about the environmental issues. On the other hand, students' belief towards the environment does not influence the formation of REB. Furthermore students' knowledge also does not mediate the influence of belief on the REB. These findings imply that individual who possess certain desirable attitude, belief and conservation knowledge have more tendencies to engage in REB. The results suggest that the matriculation colleges should integrate approaches that could promote attitude, belief and conservation knowledge into the mainstream of education.

Objectives:

- ✓ To find out the significant difference in the pre-test scores between the control and the experimental group with regard to environmental literacy.
- ✓ To find out the significant difference in the post-test scores between the control and the experimental group with regard to environmental literacy.
- ✓ To find out the significant difference between the pre-test and the post-test scores of the control group with regard to environmental literacy.
- ✓ To find out the significant difference between the pre-test and the post-test scores of the experimental group with regard to environmental literacy.
- ✓ To find out the significant difference in the retention test scores between the control and the experimental group with regard to environmental literacy.

Hypotheses:

- ✓ There is no significant difference in the pre-test scores between the control and the experimental group with regard to environmental literacy.
- ✓ There is no significant difference in the post-test scores between the control and the experimental group with regard to environmental literacy.
- ✓ There is no significant difference between the pre-test and the post-test scores of the control group with regard to environmental literacy.
- ✓ There is no significant difference between the pre-test and the post-test scores of the experimental group with regard to environmental literacy.
- ✓ There is no significant difference in the retention scores between the control and experimental group with regard to environmental literacy.

Methodology:

Design of the Study: In this study, pre-test post-test equivalent group design was followed. The control group was taught using chalk and talk method of teaching and the experimental group was taught using instructional multimedia learning package. Both the groups were taught by the same teacher. Both the groups underwent pre-test, post-test. Thus, the effectiveness of the instructional multimedia package was found out by the post-test scores. Further, a retention test was conducted after a gap of fifteen days on the experimental group using the same Environmental Literacy Test to confirm the effectiveness of multimedia package.

Sample: For this present study, 92 eighth grade students of which 46 students in control group and 46 students in experimental group were the sample of the study and they were equally assigned to control and experimental group by intelligence test scores.

Tools Used: A self-prepared tool of Environmental Literacy Test (ELT) was used by the researcher which was standardized. ELT is an objective type test with 78 questions covering the topic selected for the experiment.

Statistical Techniques: Researcher used t-test for analysis of data.

Analysis of Data:

Null Hypothesis 1: There is no significant difference in the pre-test scores between the control and experimental group with regard to environmental literacy.

Table 1: Significant difference in the pre-test scores between the experimental and the control group with regard to Environmental Literacy

Scores Compared	Group	Size	Mean	S.D.	't' value	P value	Remarks
Pre-Test Scores	Experimental	46	26.85	7.545	0.000	1.000	NS
	Control	46	26.85	7.902			

NS – Not Significant at 0.05level

It is inferred from the Table 1 that, the calculated t-value (0.000) is less than the table value (1.96) which is not significant at 0.05 level. Hence the null hypothesis, "There is no significant difference in the pre-test scores between the control and experimental group with regard to environmental literacy" is accepted.

Null Hypothesis 2: There is no significant difference in the post-test scores between the control and the experimental group with regard to environmental literacy.

Table 2: Significant difference in the post-test scores between the experimental and the control group with regard to Environmental Literacy

Scores Compared	Group	Size	Mean	S.D.	't' value	P value	Remarks
Post Test Scores	Experimental	46	49.65	11.906	5.136	1.000	S
	Control	46	37.54	10.676			

S – Significant at 0.05level

It is inferred from the Table 2 that, the calculated t-value (5.136) is greater than the table value (1.96) which is significant at 0.05 level. Hence the null hypothesis, “There is no significant difference in the post-test scores between the control and experimental group with regard to environmental literacy” is rejected. It was found that the posttest scores of the experimental group were significantly higher than those of the control group with regard to environmental literacy. Hence it is concluded that multimedia package is more effective than the chalk and talk method of teaching. This has been shown in figure 1

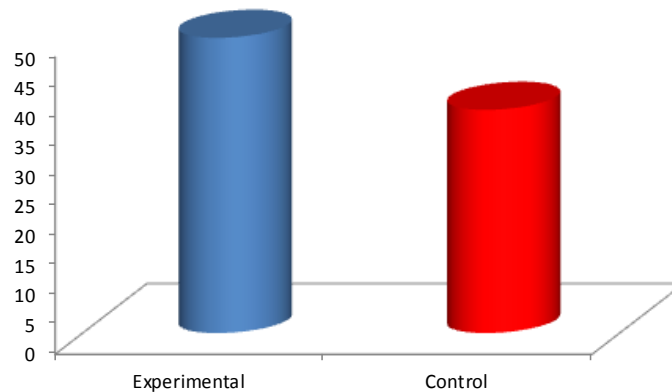


Figure 1: Significant difference in the post-test scores between experimental and control group with regard to Environmental Literacy

Null Hypothesis 3: There is no significant difference between the pre-test and post-test scores of the control group with regard to environmental literacy.

Table 3: Difference between the pre-test and the post-test scores of the Control Group with regard to the Environmental Literacy

Scores Compared	Group	Size	Mean	S.D	t value	P value	Remarks
Pre-test	Control group	46	26.85	7.902	8.687	0.000	S
Post-test		46	37.54	10.676			

S – Significant at 0.05 level

It is inferred from the Table 3 that, the calculated t-value (8.687) is greater than the table value (1.96) which is significant at 0.05 level. Hence the null hypothesis, “there is no significant difference between the pre-test and post-test scores of the control group with regard to environmental literacy” is rejected. It was found that the posttest scores of the control group were significantly higher than the pretest scores with regard to environmental literacy. This has been shown in the figure 2

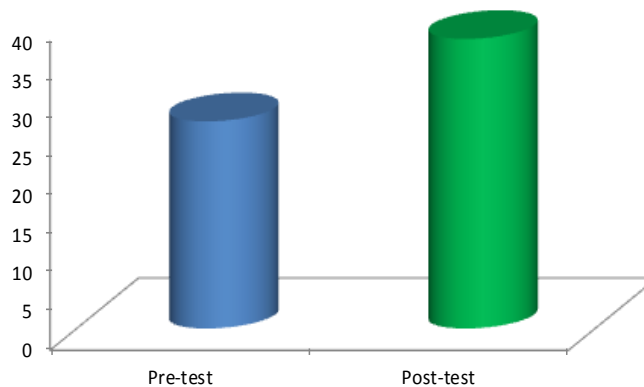


Figure 2: Difference between the pre-test and post-test scores of the Control Group with regard to the Environmental Literacy

Null Hypothesis 4: There is no significant difference between the pre-test and post-test scores of the experimental group with regard to environmental literacy.

Table 4: Difference between the pre-test and post-test scores of the Experimental Group with regard to the Environmental Literacy

<i>Scores Compared</i>	<i>Group</i>	<i>Size</i>	<i>Mean</i>	<i>S.D</i>	<i>t value</i>	<i>P value</i>	<i>Remarks</i>
Pre-test	Experimental group	46	26.85	7.545	17.371	0.000	S
Post-test		46	49.65	11.906			

S – Significant at 0.05 level

It is inferred from the Table 4 that, the calculated t-value (17.371) is greater than the table value (1.96) which is significant at 0.05 level. Hence the null hypothesis, “There is no significant difference between the pre-test and post-test scores of the experimental group with regard to environmental literacy” is rejected. It was found that the posttest scores of the experimental group were significantly higher than the pretest scores with regard to environmental literacy. This may be due to the fact that multimedia package is more effective than the chalk and talk method of teaching. This has been shown in the figure 3

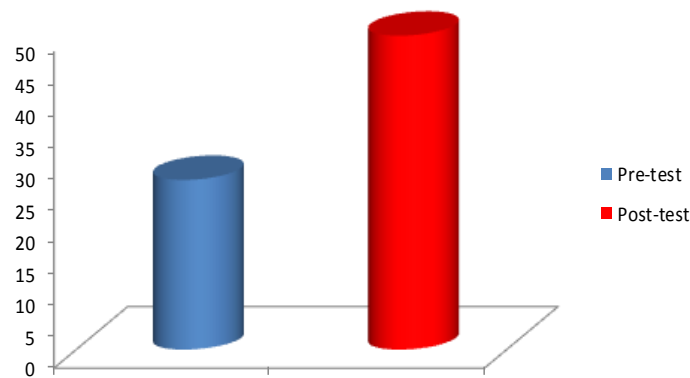


Figure 3: Difference between the pre-test and post-test scores of the Experimental Group with regard to the Environmental Literacy

Null Hypothesis 5: There is no significant difference between the post-test and the retention test scores of the experimental group with regard to environmental literacy.

Table 5: Significant difference in the retention test scores between the experimental and control group with regard to environmental literacy

<i>Scores compared</i>	<i>Group</i>	<i>Size</i>	<i>Mean</i>	<i>S.D.</i>	<i>'t' value</i>	<i>P value</i>	<i>Remarks</i>
Retention test scores	Experimental	46	43.30	13.641	4.074	0.000	S
	Control	46	33.43	9.159			

S – Significant at 0.05 level

It is inferred from the Table 5 that, the calculated t-value (4.074) is greater than the table value (1.96) which is significant at 0.05 level. Hence the null hypothesis, “There is no significant difference in the pre-test scores between the control and experimental group with regard to environmental literacy” is rejected. It was found that the retention test score of experimental group was higher than the control group with regard to environmental literacy. Hence it is concluded that multimedia package is more effective than the chalk and talk method of teaching. This has been shown in figure 4

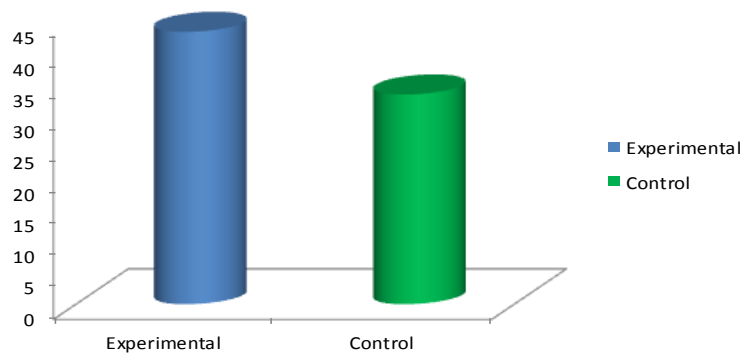


Figure 4: Difference in the retention test scores between the Experimental and Control Group with regard to Environmental Literacy.

Major Findings:

- ✓ Significant difference was not found in the pre-test scores between the control and the experimental group with regard to environmental literacy.
- ✓ Significant difference was found in the post-test scores between the control and the experimental group with regard to environmental literacy.
- ✓ Significant difference was found between the pre-test and the post-test scores of the experimental group with regard to environmental literacy.
- ✓ Significant difference was found between the pre-test and the post-test scores of the experimental group with regard to environmental literacy.
- ✓ Significant difference was found in the retention test scores between the control and the experimental group with regard to environmental literacy.

Conclusion:

This study concludes that there was no significant difference in the pre-test scores. But there existed a significant difference in post-test scores and retention test scores between the control and experimental group with regard to environmental literacy. This study also reveals that significant difference was found between the pre-test and post-test scores of the experimental group and the control group with regard to environmental literacy. This may be due to the fact that multimedia package is more effective than the chalk and talk method of teaching. In conclusion, students of the future generation shall be techno savants equipped with skills to function effectively on web world. Therefore, the teachers and teacher educators should be given appropriate training for inculcating technological skills needed for meeting the challenges of the environment. Multimedia has great potential and plays a vital role in environmental literacy.

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