

## EFFECTIVENESS OF WATER CONSERVATION AWARENESS PROGRAMME FOR PRIMARY SCHOOL STUDENTS

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### Abstract:

*Water is a critical natural resource for sustenance of life, economic growth of nations and for the preservation of human health. The present study aimed to explore the knowledge, attitudes and practices of primary school students about water conservation. Multimethod research design was adopted for the study. Thematic analysis was used to analyze the qualitative data collected during the survey. The results of the survey revealed a low understanding of water conservation awareness among primary school students. An interactive activity-based water conservation awareness programme (WCAP) was developed. Paired samples t-test was used to test the effectiveness of the programme.*

**Keywords:** *water scarcity, water conservation awareness programme; primary school students; sustainable development*

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### Introduction:

Water, a natural resource that is needed by all but available to people in varying amounts. Although three-fourth of the Earth's surface is covered by water, 97.5% is saltwater and only 2.5% constitutes freshwater. Out of 2.5% of freshwater only about 1% is available for human activities as the remaining 1.5% is found in glaciers and permanent snow cover. It has been estimated that half of the world's population could be living in areas facing water scarcity by as early as 2025 (WATER SECURITY FOR ALL, N.D.). Water is included as a topic in the school curriculum, but the focus is often on sources of water, water cycle and the varieties of ecosystems that are formed based on the type of water, namely freshwater ecosystem and marine ecosystem. A small section in the school textbook is assigned to water conservation.

### Rationale for Study:

Sustainable development can be achieved only if all the people on the Earth become aware of the concept and work towards realizing the 17 Sustainable Development Goals (SDGs) introduced by the United Nations in 2015 (Halkos & Gkampoura, 2021). Water conservation is linked to many goals of sustainable development such as SDG 2, SDG 4 etc. Water conservation, therefore, is not the sole responsibility of the government but the responsibility of every individual living on the Earth. Water conservation efforts involve knowledge, attitudes and practices (Mangala Praveena & Themudu, 2022) of individuals towards use of the precious resource conservatively. In this context, the aim of the present study was to explore the awareness about the need and the importance of water conservation and to develop a water conservation awareness programme (WCAP) for primary school students.

### Objectives of the study:

1. To determine the level of water conservation awareness among primary school students
2. To develop water conservation awareness programme for primary school students
3. To test the effectiveness of the developed programme

### Hypotheses:

**Null hypothesis ( $H_0$ ):** There is no significant difference between the means of pre- and post-test scores of primary school students.

**Research Hypothesis ( $H_1$ ):** There is a significant difference between the means of pre- and post-test scores of primary school students.

### Literature Review:

Freshwater is finite in quantity and unequally distributed throughout the world (Bhattacharyya et al., 2014). The demand for freshwater is increasing at an alarming rate. High demand and low supply of water results in water scarcity. Water scarcity results from either depletion of water resources or poor management in providing water supply (Valenzuela-Morales et al., 2022). Water scarcity is a major environmental crisis that impacts food availability, human and animal health, livelihoods and also the economic development of nations (Gupta et al., 2013). The population of India is expected to be approximately 1.64 billion by 2050 (Bhattacharyya et al., 2014). This is going to create stress on the available freshwater supplies in India. Creation of awareness among people and efficient water management techniques can avert the impending water crisis in India.

Realizing the significance of conserving freshwater supplies and ensuring water security for the citizens of India, the Indian government had launched the Jal Jeevan Mission (JJM), Amrut 2.0 Scheme, PM Krishi Sinchayee Yojna (PMKSY) etc. In addition to these programmes, many water conservation programmes have been developed and implemented in various metropolitan cities like Chennai, Mumbai, Bengaluru etc. “Shut the Tap” programme was implemented for school children in Chennai (Nayar & Kanaka, 2017). The main idea was to influence the family through the children. A seven sessions programme spanning three months was implemented in two schools in Mexico (Valenzuela-Morales et al., 2022). Consciousness and active participation of the community will positively impact the water conservation actions (Valenzuela-Morales et al., 2022) adopted by the Indian government.

### Research Methodology:

A multimethod research design was adopted for the study. The population of the study was all the students of Std. IV studying in English medium schools affiliated to S.S.C. board in Pune city. Snowball sampling method was chosen for the mini scale survey. 30 students constituted the sample of the survey. Purposive sampling technique was used for experimental research in this study. The sample for experimental method consisted of 40 students from Std. IV of M.C.E. Society’s English Medium School affiliated to S.S.C. board. The researcher developed a water conservation awareness programme of five sessions. The duration of each session was 90 minutes and was held once a week. The programme was implemented in the academic year 2023-24. Table 1 gives the framework of WCAP.

**Table 1: Framework of Water Conservation Awareness Programme**

S. No.	Topics covered	Multimedia and activities
<b>1.</b>	<b>Water on the Earth – The Elixir of Life</b>	Videos
	Four main sources of water and Amount of Water on the Earth	Chart
	Unequal Water distribution	Video
	Ground water availability	Storytelling followed by discussion
	Water Cycle - Explanation	Chart and Game; Students make snowflake mobile
<b>2.</b>	<b>Water Scarcity and Water Stress</b>	
	Reading aloud the book “The Water Princess” by Susan Verde	Class Discussion
	Causes of Water Scarcity	Pictures, Newsclips, Videos Students reflect on their classroom experience
	Water Scarcity as a result of human actions	Discussion followed by Poster making in groups Chart of human actions to be avoided in order to prevent wastage of water
	Consequences of Water Scarcity	Videos and Newsclips Students are given magazines and newspapers and asked to make a photo collage
<b>3.</b>	<b>Water Conservation</b>	
	Watch movie ‘Tapak Tapak’	Students write their reflections
	Need and Importance of Water Conservation	Videos, Cartoons, Making a Scrapbook
	Methods for Water Conservation Grey Water Reuse Rainwater Harvesting Becoming Water Wise – Simple Measures that can be taken to prevent wastage of water	Explanation; Students make a chart/model Role Play
<b>4.</b>	<b>Groundwater Pollution</b>	
	Concept of groundwater pollution	Videos, discussion
	Possible sources of groundwater pollution (industrial discharges, landfills, fertilisers and pesticides)	Students prepare a model
	Measures to prevent groundwater pollution	Gather information and prepare a chart in groups
<b>5.</b>	<b>Water Conservation Practices</b>	
	Simple practices to conserve water at home and in school	Brainstorming and listing
	Water consumption chart	Each student prepares a water consumption chart Students exchange charts and read other charts. They suggest measures to reduce water consumption.

**Data Collection Procedure:** Focus group interviews were conducted to find out the demographic characteristics and the extent of awareness of the students about water conservation. Based on the results of the data collected through survey, two water conservation awareness tests were developed by the researcher to be used as pre- and post-tests. Permission for data collection was sought from the principal of M.C.E. Society’s school and the parents.

**Tools of Data Collection:** Interview schedule was used for survey and water conservation awareness tests developed by the researcher were used as pre and posttests before and after the implementation of the programme respectively.

**Data Analysis:** Thematic analysis was used to analyze the data collected through survey. The focus group interviews were transcribed, patterns were coded and the emergent themes were used to conceptualize the concept of water consumption, water scarcity and water conservation. Paired sample t-test carried out at confidence level of 95% tested the effectiveness of the water conservation awareness programme.

**Results and Discussion:** The results of the paired samples test are shown below:

**Table 2: Paired Samples Statistics:**

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest scores	12.05	41	2.626	.410
	Post test scores	14.78	41	2.116	.330

**Table 3: Paired Samples t-test for Pretest and Post test scores of Primary School Students**

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Standard Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pretest scores Post test scores	-2.732	1.844	.288	-3.314	-2.150	-9.484	40	.000

Table 2 and Table 3 show the results of the paired samples t test for pretest and post test scores of primary school students. On average, the post test scores of primary school students were significantly greater ( $M = 14.78$ ,  $SE = 0.330$ ) than their pretest scores ( $M = 12.05$ ,  $SE = 0.410$ ),  $t(40) = -9.484$ ,  $p < 0.05$ .

From the test results, it is evident that there is a significant difference in the pre- and post test scores of primary school students. This means that the null hypothesis  $H_0$  is rejected.

The water conservation awareness programme was effective in increasing the primary students’ awareness in terms of knowledge, attitudes and practices about water conservation. In the present study, the students were not placed in real-life situations in which their water usage could be observed and recorded for a certain period of time. Therefore, it was difficult to assess the actual behaviour of students towards water conservation. Further research can be carried out to examine student practices of water conservation in summer camps or in boarding

schools. The collected data can inform the designing of water conservation programmes to ensure that the knowledge and attitudes that the students are acquiring during water conservation programmes is actually getting translated into practice and is being utilized to save water in daily life.

**Implications:** The present study shows that water conservation awareness can be learned by involving students in activity-based learning programme. The activities selected should be simple, interactive and appropriate for their age group. Real life problems, issues and challenges can be used as trigger events to generate discussion about water conservation among students. Water conservation awareness programme can be offered as short-term course for school going primary students with a component of project-based activity carried out in schools, NGOs or communities that are dealing with water issues.

**Conclusion:** The present study focussed on exploring the views of primary school students about the conscious usage of water for household purposes. It emphasized the dire need to conserve water for future generations. Thus, water security for India can be ensured through the successful implementation of government policies and missions related to conservation as well as by the rational use of water by communities.

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