

# **CREATING AWARENESS ON ENVIRONMENTAL HYGIENE AMONG WOMEN AND CHILDREN**

**BY**

**A. VENMATHI**



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C E R T I F I C A T E

This is to certify that this Dissertation entitled "Creating Awareness on Environmental Hygiene Among Women and Children" submitted to the Avinashilingam Institute for Home Science and Higher Education for Women (Deemed University), Coimbatore, for the award of Degree of Doctor of Philosophy in Family Resource Management, Avinashilingam Institute for Home Science and Higher Education for Women (Deemed University), Coimbatore, under my supervision and guidance and the Dissertation has not formed the basis for award of any Degree/Diploma/Associateship/Fellowship or similar title to any candidate of any University.

*Saithyanathan Muthu*  
Signature of the Guide

## D E C L A R A T I O N

I hereby declare that the matter embodied in this Dissertation is the result of investigation carried out by me in the Department of Family Resource Management, Avinashilingam Institute for Home Science and Higher Education for Women (Deemed University), Coimbatore, under the supervision of **Dr.(Mrs.) Sathyavathi Muthu, M.Sc., Dip.Ed., M.Phil., Ph.D.,** Reader in Family Resource Management, Avinashilingam Institute for Home Science and Higher Education for Women (Deemed University), Coimbatore, and it has not been submitted for the award of any Degree/Diploma/Associateship/Fellowship etc., of any other University or Institute.



Signature of the Candidate

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A kindness done in the hour of need may look small;  
but outweigheth the whole world.

- Thiruvalluvar

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# INTRODUCTION

## INTRODUCTION

India as a developing nation has to concentrate on three 'E's - Education, Economy and Environment. While concerted efforts have been taken to improve the education and economy of the nation, the upgrading of environment has been brought to limelight only recently.

Environment is highly dynamic, multidimensional and an interdisciplinary concept which encompasses various elements concerning human settlements, water, air and land, which consequently influences all forms of life in one way or other (Oberai, 1992). Environment is the bundle of resources which support, develop or enrich human life (Khoshoo, 1984 and Jathol, 1991).

Singh (1988) opines that high quality of environment, which offers the most favourable living circumstances for people of diverse interests; an environment conducive to good health and the well-being of all its inhabitants; and an environment in which human needs such as need for food, shelter, education, recreation and aesthetic stimulation, are most adequately met with proper sanitation.

The quality of environment in India is rather substandard due to the dual problems - population growth and poverty - giving rise to almost all environmental problems like denudation of forests, overgrazing, sewage pollution, poor environmental hygiene, malnutrition and communicable diseases (Dwivedi and Kishore, 1984 and Adiseshiah, 1989). Rangarajan (1984) opines that the environmental problem is not a problem of nature but it is a human problem.

Vohra (1984) points out that as far as India is concerned, environmental problems relate to slums, overcrowding, very poor housing, insanitation, lack of adequate water supply, overflowing population and absence of civic sense among the people. Due to poor infrastructural facilities and opportunities for employment, large scale migration from rural areas to urban areas has been taking place contributing to the growth of slums in cities which has further enhanced the heavy pressure on land and water resources thus encouraging overcrowding, poor housing and insanitation. There are over 5,79,000 human settlements in India among which only 3000 are urban and others are in rural areas where the environmental problems are rampant mostly on account of insanitary, unhygienic living conditions and overuse or misuse of natural resources.

Environmental problems prevailing in rural areas often differed from those of the urban areas.

With a large rural population, India experiences a heavy pressure on environment. Proper management of the environment is the need of the hour in order to create equilibrium between environmental hygiene and health. The sanitary conditions in rural areas are very poor. The absence of toilet facilities has led to openfield defecation which in turn contaminates rivers and water bodies and consequential adverse effect on health (Kamble, 1984). Because of lack of proper waste disposal system, the sullage water from kitchens and bathrooms are let out into the street and the solid wastes - garbage, rubbish and dirt are thrown outside the house or dumped on street side thus providing a breeding place for flies and mosquitoes.

Though environmental decay has become a global challenge today (Gupta, 1991), these environmental problems in India are not the side effects of excessive industrialization but reflections of the inadequacy of development. The rich countries may look upon development as the cause of environmental destruction, but in India it is one of the primary means of improving the environment for living or for providing food, water, sanitation and shelter (Dwivedi and Kishore, 1984).

Environmental hygiene is imperative to improve the quality of life of people and enable them to lead healthy and satisfactory life. Environmental hygiene is the quality of living that is expressed in the clean home, the farm, the neighbourhood and the clean community (Krishna, 1976). Srivastava (1989) and Devadas (1989) stress that the quality of life should be improved and enhanced. Raju (1987) clearly brings forth that health is one of the major indicators of quality of life.

Health, the most basic and primary need of human beings is both an input and an output. Only a healthy nation can progress in socio-economic, scientific, literary and cultural spheres (Srinivasan, 1984 and Rameswaran, 1989). The hygienic condition of the individual home influences the health of the nation. Health of individuals can be promoted only through a sound home environment. Health is not just the absence of disease that depends on the number of doctors and hospitals but it is the ability to enjoy life which is facilitated by a hygienic environment.

Health surveys conducted in different regions of India show that about 70 per cent of mortality and morbidity among rural population can be attributed to the direct or indirect effects of poor environmental conditions in the

villages(Park and Park, 1991). According to World Health Organisation (1976), the causal factors of inadequate water supply or sanitation is responsible for approximately 80 per cent of all sickness and disease in the developing countries especially in India. Lack of protected water supply and indiscriminate defecation are the two most important causes for health hazards (Garelick, 1987). Provision of safe and convenient water supply and proper excreta disposal are therefore primary requirements for improving the health of the people (Novick, 1987 and Kurup, 1993). Sanitation is not mere construction of latrine. In the real sense the term sanitation covers the whole field of controlling the environment with a view to prevent disease and thereby to promote health (Park and Park, 1991).

The UN conference on 'Human Environment' held in Stockholm in 1972 has stressed the need to improve quality of life by improving environmental hygiene. The major components of environmental sanitation according to Ministry of Rural Development (1993) are safe handling of drinking water, disposal of waste water, garbage and human excreta, home sanitation, personal and environmental hygiene and community sanitation. Any plan intended to enhance the quality of life and health of people through environmental

improvement should show initial provision of basic amenities like abundant potable water, safe disposal of garbage, sullage and sewage, storm water drainage, pavement of lanes, street lighting and community bathrooms and latrines (WHO, 1982).

Improvement in environmental hygiene is an inevitable and immediate need of the day especially for the rural and slum areas. Sanitation is a way of life; it must come from within the people; it is nourished by knowledge and grows as an obligation and an ideal in human relations. Village sanitation can be improved only when people understand the importance of personal hygiene and its interdependence on general cleanliness (Markandan, 1985). Every individual needs to be taught the art of healthy living with proper sanitary practices. The responsibility for individual's health rests with themselves and their health practices (WHO, 1982 and Schmidt, 1989).

A large number of even the intelligentsia in the country are unaware of the inherent problems of environmental hygiene. To bring about a socio-cultural change among people, creating awareness, using strategies based on preventive, corrective and restorative measures on environmental hygiene need to be evolved (Sharma, 1988).

Programmes to create public awareness about environmental issues and to stimulate public participation in activities for environmental protection should form a key component of all forms of developmental plans (Biswas and Bannerjee, 1984). Unless, the people are educated and made aware of the importance of environment, the dangers inherent with environmental pollution, the strong linkage between safe water and health related assets and their cost, there will not be improvement in environmental hygiene (Srivastava, 1990 and Jathol, 1991).

Vohra (1984) and Srivastava (1990) claim that formulation and implementation of a sustained media campaign to inculcate greater awareness about environmental issues among the general public is felt imperative to make them realise the direct relationship between, water, health and productivity. Thus to bring about environmental awareness among the ignorant masses as well as ill and misinformed intelligentsia, Chib (1988) insists on initiation of educational programmes.

Environmental education movement has to be a movement of the people, by the people and for the people. Thus the preservation of the rich heritage of the environment rests finally with the people, without whose

co-operation, it will be impossible to achieve the objective of improving environmental hygiene (Benjamin, 1982).

Majority of people in our country are either illiterates (47.89 per cent) or are unaware of environmental problems. Therefore, environmental education and awareness should be a long and continuous process so that it may take root in the national perception. Every individual should be environmentally conscious and aware of his or her duties and responsibilities to safeguard the environment for today and tomorrow.

Environmental awareness should aim at realisation of problems, and subsequent change in knowledge, feeling and behaviour of the people. Awareness of problems and their solutions can be brought about only through education and training at every level. Environmental education means the educational process dealing with man's relationship with his natural and cultural surroundings and as such highlights the relationship between population, industrialization, urbanization, transportation, pollution, resource allocation, depletion and conservation of energy and technology and urban/rural development and planning to the total biosphere. Thus environmental education becomes an

integral part of the strategy of eco-development, environmental improvement and protection as well as prevention of environmental degradation (Trivedi and Raj, 1992).

Further, environmental hygiene education should aim at not merely imparting knowledge and understanding of man's total environment and of the method and their application for improving the near and distant surrounding but it should also aim at inculcating skills, attitudes and values necessary to understand, appreciate and improve environmental hygiene.

The role of environmental education is to create new patterns of behaviour in individuals, groups and society as a whole towards better living condition. Therefore the paramount need to create consciousness about the environment is visualised. It must permeate all ages and sections of the society, beginning with the childhood. Environmental education should be a continuous life process beginning from the pre-school level and continue through all formal and non-formal stages.

The non-formal education sector includes general public - youth and adult, individually or collectively -

from all segments of the population, who are part of the environmental as well as non-environmental vehicles and the backbone of all social processes irrespective of the type of society (Sharma, 1987 and Hartmann et al., 1989). In non-formal education women have a vital role in environmental management and development. Their full participation is therefore essential to achieve sustained development (The Rio-Declaration, 1992).

Women's role in environmental projects is crucial to national progress. Women are to be awakened in the field of environmental hygiene as they play a significant role in environmental development and management. To quote Jawaharlal Nehru, the architect of India, "Once women are on the move the family moves, the village moves and the nation moves". In accordance with the above citation only if women are motivated, trained and sensitized about environment best results are possible in the operation and maintenance of environmental programmes.

Moreover, without the active involvement of women, many sanitation and environmental development schemes have fallen in despair. Lack of knowledge and awareness of the women on these issues is reflected directly by their indifferent attitude towards programmes related to

environmental hygiene. Therefore proper media of communication must be adopted to create awareness among women and general public because communication reach people directly and make them think in a wider perspective (Vohra, 1984 and Watson and Hill, 1991). The media of communication are the means of educating people including pre-school, primary, secondary and higher education students as well as teachers and environmental professionals in training and implementation.

Apart from the non-formal education, formal stream of education should be developed to create awareness on environmental hygiene among younger generation. Therefore environmental consciousness should be created by teaching it in schools and colleges. The National Policy on Education (1986) also recommends inclusion of environmental consciousness as an integral component of the entire educational process.

Formal environmental education should be considerably strengthened at all levels through commendable inputs into the relevant curriculum, sponsoring of publications and conducting training-cum-workshops (Biswas and Bannerjee, 1984 and Vohra, 1984). As Vohra (1984) foresees, the future environmental problem will not be so

serious and rampant if the present younger generation are better educated in this regard because, the children are the precious resources for future development of the nation. Today's children are tomorrow's world. Hence the need of the day is to rear healthy children, who constitute approximately 42 per cent of the total population.

Motivation to provide environmental and health education to school age children has evolved from the belief that appropriate knowledge can help in improving environmental hygiene and sanitation. Positive influence during the formative years can result in far reaching benefits in adult life. If children are socialized into behaviour that is conducive to healthy living, they can influence those around them, thereby enhancing the sanitation of their family and community. Children are viewed both as recipients and transmitters of environmental knowledge (Chetna, 1990).

Government and many voluntary agencies are making tremendous efforts by initiating programmes such as Intensive Sanitary Programme, Minimum Needs Programme, Social Forestry Projects and Integrated Rural Development Programme to tackle the problem of environmental degradation. But these efforts have not envisaged the desired results.

It is always felt that such programmes are more or less target oriented and not people oriented. People's participation again is often very passive and does not produce the expected dividends because they are basically unaware of the programmes. Non-availability of infrastructure, lack of follow up activities and involvement of local agencies, and improper co-ordination between local organisations are few other lacunae adding to their indifferent attitudes towards environment.

Creating awareness among people on protecting the environment in the best way possible, has become an imperative need. Efforts should be directed towards improving the present situation and must be the aim of researchers who concentrate on environmental protection and preservation.

In this connection, apart from the governmental agencies, schools and universities have a distinctive role to play (Khoshoo, 1984). The campaign for cleaner cities and neighbourhood will acquire special significance if universities and educational institutions get involved in it (Devadas, 1985).

As indicated in University Grants Commission (UGC) guidelines, the university should assume a major

responsibility for the Environmental Education, Population Education and Carrying Science to Villages (Subbarao, 1982 and Devadas, 1985). The programmes for university and school students such as National Service Scheme, National Cadet Core, Scouts and Guides can be used to fulfil the guidelines of UGC.

Rural development programmes necessarily have to cover all aspects of life. There is a felt need to introduce in rural areas the science and technology that will protect the environment, preserve and heighten the beauty, preserve peace and security of the rural landscape and increase employment and productivity. Involvement of universities in this area would produce far reaching results by spreading the knowledge through formal and non-formal education (Santappa, 1980).

No great strides are possible all on a sudden in this direction. Therefore all forms of extension methods - individual, group or mass, with different media of communication - should be coupled to motivate and create awareness among people on the importance of environmental hygiene. The adult and continuing education of UGC has environmental education as one of its essential components, which needs to be implemented effectively in educating the masses.

Tiwari Committee (1980) which was set up to suggest the administrative and legislative measures that ought to be taken for the protection of the environment, identified a five-point framework to be included in a programme for environmental protection. The framework included the implementation and proper management of land and water, natural living resources, environmental pollution, human settlements and environmental education and awareness. In the present study, the problems related to the improvement of environmental hygiene in human settlements and creating awareness through formal and non-formal media were taken into consideration.

When compared to the magnitude of the problem, the researches conducted so far, on children's cognitive understanding of environmental issues, women's consciousness for corporate cleanliness and social environment and importance of hygiene and sanitation are regrettably scarce. Moreover a few researches conducted if any have attempted only at finding out the awareness of children and women about environmental concepts. There is paucity of information regarding awareness creation among women and children using different media of communication. Hence this research study on "Creating awareness on environmental

# REVIEW OF LITERATURE

## II REVIEW OF LITERATURE

The literature pertaining to this study has been reviewed under the following broad headings:

- A. Indian environmental scenario
- B. Environmental hygiene and quality of life
- C. Women in environmental protection
- D. Facets of environmental education
- E. National environmental strategies

### A. Indian environmental scenario

Healthy, clean and pure environment is a precious gift of nature to the humanity. In relation to man, the environment constitutes of air, land, water, flora and fauna because these regulate man's life (Chatterjee, 1990 and Ravindranath, 1990). Environment is the bundle of resources which support, develop or enrich human life.

Man has played a very important part in shaping his environment. The degradation of the environment was caused mostly by his activities such as burning of wood, smelting of ores, tanning leather, primitive methods of sewage disposal and so on (Sawyer, 1982 and Bajwa, 1987). All man's activities disturb the eco-balance by deteriorating the environmental conditions (WHO, 1972 and Bahl, 1993).

India is a vast country with diverse climatic topographical and hydrological characteristics (Pearson and Pryor, 1978). Concern for the environment has been a part of India's social and cultural heritage says Malhotra (1987).

The Indian environment has been viciously affected and destroyed in the last century due to unrestricted felling of the forests leading to floods, soil erosion, and heavy siltation of dams (Mukherjee, 1988 and Ray, 1987). The cutting down of trees to build houses and roads, the burning of fuels, the emission of vehicular smoke and fumes are all directly associated with growing population (Bandyopadhyay, et al., 1987 and CAPART, 1988).

Deforestation leads to soil erosion, local climatic change, reduced rain fall, increased drought condition and starvation (Agarwal 1984; Dayal 1983; Sudhakar 1988; Suchitra 1988 and Roy 1988).

The vagaries of the climatic conditions, poverty and allied problems have made a number of people live under substandard conditions. This situation often affects the physical and social environment (Reddy, 1980 and Srivastava and Srivastava, 1988).

The physical environment in which many Indians live - overcrowding, congestion, presence of rodents and

arthropods - are most injurious to their health conditions. Many evils and health problems can be traced to such environment. Contaminated water supplies, unhealthy housing and sanitation and unhygienic disposal of human waste are among the principal situations (Veena 1985; Salim 1986; HUDCO 1986; Parvathamma and Sathyanarayana 1987; Mathew 1991; Mathur 1991 and Srikant 1992).

Increasing urbanisation has also lead to increase in crime, congestion, pollution and to greater number of squatter settlements. Urban concentrations intensify the deficiency of housing, transport capacity and food storage and distribution (Arunabh, 1989). In turn there is increased pressure on housing, water supply, sanitation and roads. The expansion in economic activity designed to all round shortage is also contributing to the environmental crisis (Mascarenhas, 1986). Further population growth leads to worse housing and environmental conditions (Ray, 1987 and Padmanabhamurthy, 1992).

In Metha's (1988) opinion the population explosion created strains over ecological systems. As the number of people tend to increase every day, the volume of pollution spirals upwards correspondingly (Soundararaj, 1983).

The nature of discomforts in a house includes inability to have regular baths, wash clothes and clean the

house, all of which have a direct impact on the well-being of the people, especially where women and children still continue to be the disadvantaged category (Pandey, 1989 and Kamath, 1992).

The nature and extent of people's access to water supply and sanitation is as important as the cultural interface of this sector with shelter, education, health and economic status. Nearly 90 per cent of the Indians use methods of human waste disposal which are unhygienic (Pandey 1989; Jain 1992 and Kamath 1992).

From the sanitary view point, provision of bath and water closet is very essential with an independent approach. These space requirements cover some of the most important problems relating to the design of the house regardless of the kind of family living in the dwelling (HUDCO, 1981; CBRI, 1986 and Narain, 1991).

Poverty itself is one of the main causes of environmental problems (Biswas, 1987). The poorest people live without essential requirements such as pure water, shelter, clothes and food.

Shetye and Chaphekar (1982), Singh and Singh (1988) and Agarwal and Narain (1992) enumerate the causes for the problems of environment in India as, lack of

sanitation, improper sewage disposal, low level of literacy, rapid growth of population, high incidence of diseases, over strained health facilities and public utilities which impair the quality of life.

Human activities like industrial production, vehicular transportation and domestic use of fuel result in the release of large quantities of harmful pollutants into the atmosphere, which caused air pollution (Karma, 1987; Suchitra, 1988 and Khoshoo, 1988). The common sources of air pollution in India are thermal power stations, fertilizer factories, textile mills, traffic and households (Bains and Bajiva, 1987). Sen (1981) and Mohan (1989) feel that the environmental pollution can be attributed to several factors like urbanization, industrialization, automation, unsound planning, increasing population and lack of general awareness in the masses. The discharge of waste (domestic, municipal, industrial, agricultural and mining) often without any treatment into bodies of water render the water unfit for use for many purposes (Deshpande, 1987 and Henry et al., 1990).

Among the variety of pollutants of these modern days, noise is one significant pollutant that sufficiently attracts the attention and concern of mankind (Anantharaman and Manavalan, 1992). The growing population, heavy traffic,

urban crowd and electrical entertainment have become the sources of noise pollution (Kameswaran, et al., 1982 and Shah, 1988).

Soil pollution in India is the result of insanitary habits, various faulty industrial and agricultural practices and incorrect method of disposal of solid and liquid wastes (Ghosh, 1987). Gupta (1992) threatens that if these pollutions - air, water and soil - are not checked, it would become difficult to achieve the goal of health for all by 2000 A.D.

The provision of safe and adequate water supply and hygienic disposal of wastes is a basic necessity for the healthy living of the community (Venugopalan 1983 and Tebbutt, 1983). In the view of Birdie (1987) India, due to its economic position is not possible to have the water carriage system in all the towns, villages and cities. Most of the cities manifest the two extremes of sanitation - modern sewer systems for affluent areas and the most undesirable manual system for other areas. In a few areas where water supply is available, the manual scavenging systems have been replaced by septic tank and soak pits (Chand, 1990).

Keeping the environment clean needs vigorous efforts. Disposal of human waste is one among the various important problems to be solved as indicated by Wilson(1981)

and Raj (1986). The latrine facility is a far off dream even in many small towns. As a result, men as well as women and children use adjoining places of settlement for nature's call and pollute them (Danois, 1980 and Kamble, 1984). This is a common picture in all villages of India. Latrine is the most urgent and important requirement of the villages to control communicable diseases like diarrhoea, dysentery, worms and virus. Moreover roadside drains are generally abused by children and adults by passing stools, particularly at night hours, thus creating foul smell and more unhygienic conditions (Holdgate, 1979 and Garg, 1982). Heaps of garbage with dung of animals and leftovers pollute the environment particularly in villages and slums steeped in poverty, ignorance and squalor, bringing about an unbearable sight (Nair, 1985).

India lives in its villages. So India's environmental concerns should start in the villages. Much of the ill health in the country is due to defective environment. Minimal sanitation facilities have created a number of acute environmental problems (Hewawasam, 1987). The basic problems of safe water supply and sanitary disposal of human excreta are yet to be solved. In rural areas environmental pollution starts at home. More than 80 per cent of the pollution is caused by ignorance of the rural people about the proper use of sanitary facilities,

dumping of household waste around the house, pollution of main pathways with human waste, stagnant water around the house and poor personal hygiene causing degradation of the environment.

Villagers had generally a fairly high sense of personal cleanliness derived through tradition and habit. Unfortunately, some of these good habits are being given up under a false sense of modernity. Therefore, the value of all good old personal habits, and cleanliness should be re-emphasized and wherever necessary new good habits included (Reid, 1982 and Juyal, 1988).

In the villages a small population have access to sanitation facilities. The maintenance and proper use of latrine is poor due to blockage and damage of the tap and lack of water facilities (Koren, 1974 and Chand, 1990). Villagers do not have even protected drinking water facilities, so they drink water from open wells, tanks and streams where there is a possibility of inflow of night soil and other pollutants. Construction and use of latrine is not a felt need of the people in the villages even though it is most essential for rural health (Centre of Science for Villages, 1980).

Slums have grown up in all the major industrial cities of India. The cities have become over crowded,

noisy, dirty and violent as a sequel to rapid growth of industrialization which brings in its wake influx of large number of persons into the cities creating all sorts of problems pertaining to housing, water supply, sanitation, health and hygiene and above all law and order (Desai and Pillai, 1973 and Seetharamu, 1983). The growth of slums really poses a challenge to environmental planning and provision of shelter to the city's population (Swamy, 1972 and Rao and Tewari, 1976).

The present environmental situation presents four major areas of concern, that is, preservation of species, provision of sanitation and drinking water, control of industrial pollution and better management of natural resources (Bewtra, 1979 and Vohra, 1988).

Sanitation planning in India is approximately 50 years old. Even though government has taken up measures to improve the sanitary condition, the improvement is not worth mentioning because of slow pace of participation of people and lack of awareness among people and the importance of environmental hygiene (Srivastava, 1990 and Kurup, 1993). Efforts should be made to link population planning with developmental planning and environmental action to ensure equitable distribution of the benefits of economic growth (Khanna and Kulkarni, 1992).

## B. Environmental hygiene and quality of life

Man like all other species is dependent upon his relationship with the environment for his safety, health and very survival (Schaefer, 1974). Therefore the welfare and existence of human race is dependent upon the proper interaction of man and his nature of environment (Mohan, 1989).

Both aspects of man's environment - the natural and the man made-are essential to his well-being and to the enjoyment of basic human rights; even the right to live itself. The human environment is considered as composing of those external, physical, chemical, biological and social influences that have a significant and detectable effect upon the health and the well-being of the individual or of communities of people (Ghosal, 1982). Moreover such natural resources are unequally distributed over the earth which affect the quality of life (Dwivedi, 1993).

Environment is our essential resource for development. It's optimum utilization and wise management is necessary for progress and national planning (Chawan, 1984). The development processes that degrade the human environment are also those which degrade the human conditions. Hence it becomes essential to examine the interrelationship between the natural conditions and human activities and to focus attention on the quality of life.

Man lives on earth. A strong relationship exists between the environment on earth and his life. It has an objective impact on the quality of life at several levels (Khoshoo, 1988). The quality of life refers to the quality of the social and physical (both man made and natural) environment in which people pursue the gratification of their wants and needs. It encompasses the character of the external and experimental environment in which people live. Sepru (1987) and Puri (1987) put forth that, hygienic environment is the most essential pre-requisite of human life.

The rules of health and hygiene as proposed by Swami Sivananda (1957) are:

"Live in well ventilated rooms  
Cultivate clean habits  
Breathe pure air, drink pure water  
Eat wholesome and good food  
Appreciate the value of sanitation  
Eat not unwashed fruits and vegetables  
Acquire a knowledge of hygiene and sanitation  
You will have wonderful health and  
Vitality, peace, prosperity and longevity".

The main purpose of environmental hygiene is to maintain such environments that will not affect the public health and quality of life of people in general (Schreyer, 1980).

The US Federal Environmental Protection Agency defined quality of life as the state of well-being of people as individuals or groups as well as the characteristics of the environments in which people live. Several indices of quality of life have been computed wherein different components of factors have been included for various studies. Housing and environment quality are the two major indicators of quality of urban life.

Environmental hygiene deals with the disposal of all kinds of refuse in towns, villages and slums, the making and cleaning of roads, drains, sewers, latrines, stables and cattleshed and the construction of houses. It also deals with the supply of water, prevention of pollution of water and air, the notification of infectious diseases and the measures envisaged to prevent their spreading.

India is still lagging far behind many countries in the field of environmental health. Today, the country is facing serious challenges to save its environment from degradation as the very survival of life is threatened (Gupta, 1992). Much of the ill health in the country is due to defective environment (Park and Park, 1991). Environmental degradation undermines development and damages health. Illhealth through unhygienic environment leads to poor quality of life (Mehta, 1988).

Health has an obvious and fundamental influence on human welfare (Meyer and Sainsbury, 1975). If the health of the population can be improved, this could have a major impact on overall welfare distributions (World Bank, 1975). For a healthy living, it is necessary to have a proper system of waste water, storm water and sewage disposal system and thus creating a clean environment. An efficient sewage disposal system should be capable of collection, conveyance and disposal of all types of waste products of any community in a quick, safe and satisfactory manner (Vazirani and Chandola, 1986).

The improvement of the quality of life through health for all human beings by improving the quality of environment was identified by the Vancouver Conference as the first and the most important objective of every human settlement policy, embracing the human needs of food, shelter, clean water, health and social security.

Goyal (1990) points out that health is a function of several factors including nutrition, personal hygiene, family life, collective living, environmental conditions and access to social services including health and medical care. In the rural environment in order to improve the health of the population, the following specific programmes should be formulated :

Improvement of environmental sanitation  
Improvement of rural and urban water supply  
Control of communicable diseases  
Organization of institutional facility for  
providing health services, and  
Introduction of family welfare programmes

Research in all aspects of rural housing, particularly in the improvement of environment and application of improved technology should be pursued effectively. There should be greater dissemination of results of the research efforts all over the country by means of intensive demonstrations and pilot projects followed up by considerable amount of extension work through the community health worker. Only then, balance synthesis of two vital aspects - economic development of rural areas and betterment of quality of life of rural masses - can be achieved.

Lakshman and Narayan (1984) and Santhanam (1989) consider sanitation as an equally important aspect like water supply. If water is the mirror of health, as an old proverb says, it can also become a source of disease, when sanitation breaks down (Ngoma, 1992). Clean drinking water and improved environmental hygiene can check the transmission cycle of water borne and air borne diseases

which claim a heavy toll of life and can bring dramatic changes in health levels in rural India. Hence assured and adequate supply of pure drinking water is a must for every villager (Moshin, 1985).

Along with rural water supply, much greater attention should be given to the programme of rural sanitation especially to the sanitary disposal of the excreta in the villages. The word sanitation includes aspects like safe disposal of human excreta, waste water and of any other organic and inorganic matters. Of all these, the most important is the safe disposal of human excreta which is responsible for helminthic infection and communicable diseases and has an adverse effect on quality of life of the individual (Sivanandan, 1993).

It is important that the community health worker should create awareness about rural sanitation problems among the people and introduce the use of sanitary latrines in schools and camps, for groups of houses and where ever possible, in individual houses. Considerable attention needs to be given to these aspects since the provision of safe and adequate water supply and hygienic disposal of waste is a basic necessity for the healthy living of the community and to improve the quality of life of people (Venugopalan, 1983 and Tebbutt, 1983).



The lack of closed or underground drainage for the disposal of domestic sewage and industrial effluent, inefficient removal and disposal of garbage, lack of water closet and the want of consciousness regarding environmental hygiene affect the quality of life of people by causing sickness, suffering and death in the community (Chandrasekar 1970). Sewage treatment is costly and hundreds of millions of litres of raw sewage are channelled into the rivers of India every day (Consortium of Rural Technologies, 1992). Construction of pucca drain in the village is the crying need for improving the environment in the village. The advantages of having proper drainage are so many since there is a direct impact on control of diseases and epidemics which take a heavy toll in the villages.

Population explosion is the cause for global ills including environmental degradation (Chib, 1988). The increasing population may outstrip earth's ability to provide sufficient food and simultaneously impair that ability through environmental degradation (Karpagam, 1992). It has increased the consumption of resources leading to their depletion and also makes it harder to provide safe or sufficient water supply, garbage disposal, sanitation and housing for the community (Singh, 1988). Excessive growth will only increase diseases, economic inequity and environmental abuse. Population control by human means must

be moved to the top of the human agenda, if posterity should enjoy the fruits of development.

In India, environmental problems of the greatest importance are those which arise out of poverty. Rural poverty, rapid population growth and environmental degradation seem to go hand-in-hand (Singh, 1988). Biswas and Biswas (1987) is of the opinion that poverty itself is one of the main causes of environmental problems. Many of the urban and rural hygiene problems can be solved if each citizen decides not to throw garbage on the streets and use streets as latrines. Therefore it is imperative that effective general justice programmes which are result oriented are designed and implemented to inculcate better civic responsibilities in the rural masses.

### **C. Women in environmental protection**

Protection of environment has become a crucial issue. The awareness on the effects of environmental degradation on human well-being is gradually gaining momentum in a limited structure. This should be made nation-wide by involving people especially women and children in all environmental programmes at different levels.

Creating awareness and sensitizing the communities are important features of any environmental programme. The local communities must be involved in planning, decision making, implementation and management of the programmes (Ravindranath, et al., 1991). Environment is not a problem of nature, it is a human problem. Therefore public participation has to take place with a purpose that has to be the people's welfare (Rangarajan, 1984).

Among various popular movements and campaigns for protecting environment, the people's movement for conservation is more effective. Though it is not a simple task, it is increasingly felt that many environmental improvement programmes are not taking firm roots because of the slow pace of participation of rural community in general and women in particular (Srivastava, 1990).

Devadas (1992) states that women are responsible for a number of activities connected with the maintenance of good health; purchasing, preparing and serving food; providing a clean and safe environment, water supply and personal hygiene; procuring preventive and curative health services. Women are the crucial link between the family and the traditional and modern health systems.

Women constitute one half of the population, that is, one half of the country's human resources. As women

citizens, workers and mothers, their contribution to economic and social development is vast. Women play an important role in shaping the personalities of the nation's young human resources (Bradfield, 1969 and Devadas, 1975).

The position of women in a society is an index of its civilization. Women must be recognised as powerful agents in development and involved more actively and productively in the development process for the eradication of poverty and for economic and social success.

Development is conceived as dynamic because it implies change from one level of existence to another level which is always better. The various aspects of the dynamics of development as stated by Muthayya (1980) are :

- Awareness : gaining knowledge is one of the pre-requisites for the subsequent process of development
- Perception: Perception of changes in the villagers over a period of time are indicators of the extent of awareness and involvement in the process of change
- Affects : Affect constitutes the feelings and emotions with regard to any object, person or programme
- Attitudes: Attitudes of villagers are measured in terms of values, capability, responsibility and commitment

Women's role in national economy has become significant through a combination of factors such as education, self-image and family responsibilities (UNESCO, 1992). Women today are coming out of their seclusion and are showing greater responsibilities in national reconstruction (Nuna, 1990).

From time immemorial, women have occupied a unique place in the history of human civilization (Rajamony, 1992). Women play a central and often a crucial role in family life and in population and developmental activities (UNESCO, 1992). Women are a key human resource in development programmes. They are the agents of change to bring about better quality of life and environmental improvement. They have an important role to play in redressing problems such as poverty, hunger, rapid population growth and environmental degradation which affect the quality of life.

It is the 'women' who are most acutely affected by degradation in natural resources. It is therefore crucial to involve women's participation in any environmental education and other programmes, development and implementation. Women's health status is basic to their advance in all fields of endeavour (Department of Women and Child Development, 1988). Good health is the plank on which a woman's ability to work, to give birth and look after

children, to attend to household work and to participate in many other domestic, agricultural and community work, rests. The woman is the key to the provision of health services for the family and society. The mother is the central figure who provides the child, care, hygiene, nutrition and even primary health care (Kumar, 1990).

The focus of health education is on people and on action. It's aims are to encourage people to adopt and sustain healthy living practices, to use judiciously and wisely the health services available to them and to make their own decisions both individually and collectively to improve their health status and environment. It may not be possible to discuss health education in water and sanitation programmes without involving women in designing, implementing, maintaining and evaluating the programmes. The education of women and children and their knowledge about the aspect of environmental hygiene are important factors in the impact of water and sanitation services. Women must play a larger role in community decisions and participation in this field.

World Development Report, 1992, clearly points out that newer approaches, relevant to the situation, will need to be developed for children and women, regarding health, family planning, nutrition, rural development, slum

improvement, sanitation and hygiene, contamination of water, food, fuelwood and fodder. As domestic managers women have a vital role to play in environmental hygiene programmes.

Since women are intimately linked and are more directly affected by housing and environmental conditions, it is vitally necessary to understand and identify their basic needs. The needs of women requiring specific attention in the matter of dwelling design relates to the facilities inside the house which would help reduce drudgery involved in performing the daily domestic chores: provision of a well laid cooking place with a smokeless chulah and proper ventilation and provision for a sanitary latrine. Mathur (1987) envisages that the package of essential services that go to improve housing environment for women include provision of drinking water, sanitary disposal of waste, drainage of waste and rain water and paved streets. Unless adequate attention is given to provision of essential services, the health of family and also the community is jeopardized.

Women's traditional role in the family is changing under the impact of demographic pressures and economic compulsions. As a result, more and more women would have to seek work. In such a situation, the economic role of women cannot be isolated from the total process of development.

The participation of women in a country's development is an essential pre-condition for the advancement not only of women but of the country as well.

Development of women is a matter of vital concern in developing countries. Massive poverty is a major factor inhibiting the development and seriously impairing the development of women in particular. In an environment of acute poverty made worse by a rapidly growing population, women have many health problems like high maternal and infant mortality, maternal morbidity, lower expectation of life at birth, malnutrition, mental disorders, etc., which are linked to their socio-economic status and role in society.

In spite of the fact that women have a major contribution to make to socially productive work, their needs and capacities have yet to be reckoned with fully by involving them in the development process. Traditionally, women have had a significant role in resource management including housing management. It is important to recognise this role and provide for women's participation in development programmes, incorporating their needs in schemes for improvement of housing and environmental conditions in the following manner as suggested by Mathur (1987) :

- \* Identify the needs of women in relation to housing and community facilities and build them in an integrated manner into development programmes
- \* Integrate environmental factor into the development planning for women and harmonise their requirements with those of others living in the same settlements.
- \* Involve women at all levels of decision making and bring about their participation in programme implementation so as to ensure that the benefits of housing, essential services and community facilities are directed to women in general and to the poor and vulnerable in particular.

Women's traditional involvement, according to Wijk and Sijkesina, 1985, demonstrates that women have a potential role to play in such projects, which will benefit both the project and the women themselves and which will contribute to wider development.

Ghosh (1987) indicates that the time has come to realise the role of women, who can play if motivated and trained, a significant role in the operation and maintenance of environmental hygiene programmes. Women can play three distinctive roles, in general development programme and in environmental conservation projects :

- \* a catalytic role - they can be responsible for initiating thought and action regarding specific issues on environment
- \* a consultative role - they can give advice to the government and other agencies regarding the strategies and objective of specific efforts on environmental hygiene
- \* an implementative role - they can physically participate in the implementation of programmes and projects on environmental hygiene

Women from all walks of life must come forward to co-operate with health and municipal authorities to keep their surroundings clean. An effective movement to keep our surroundings off pollution must be headed by better housing facilities. A strong public opinion should be built to resist the location of industries like, cement, steel and fertilizer plants in or near residential areas.

The conservation of natural resources and the recycling of wastes as a subject must be introduced in schools. Women must bring about an awareness among the children. Women's organisations must also lay emphasis on reorientation of education in order to achieve ecological balance and improve environmental hygiene.

The citizens' groups and women's associations must initiate several activities through group discussion in order to build an effective public opinion and bring about greater awareness among the public. Women who are social scientists, political and social workers and leaders of public opinion, must take steps to devise measures for increasing the public awareness. There should be a concerted effort on the part of women's associations to press the government for implementing the antipollution programme and to go in for devices to safeguard children's health from all kinds of pollution (Vijayalakshmi, 1982). In developing this social habit, women's organisations and institutions engaged in voluntary welfare work must include antipollution as one of the items in their programme or plan of work (Srivastava, 1990 and Ministry of Rural Development, 1993).

The habit of keeping the surroundings clean by protecting it from pollution must be inculcated in the tender minds of children by none other than the mother's themselves. The activities of women towards environmental hygiene, if properly planned, are capable of stirring up a mini cultural revolution. The eradication of poverty being the vital aspect of the antipollution campaign, the need for utilizing it for better socio-economic prosperity must be spearheaded by women's clubs and other voluntary organisations.

Women's groups should demand that the special cell which is set up in the government for processing the applications for licensing - for setting up steel, cement and other chemical based industries and, fertilizer plants - must give careful thought before granting licences. The location of these industries will no doubt be conditioned by the availability of raw materials and transport facilities. Yet the processing of application has to take into account the quantum of air and water pollution and the damage it would cause to the natural environment and to the health of the people in the area. The execution of antipollution measures must be guaranteed before the industrial complex is given licence.

During the last few decades of this century the role of women in human society has been gaining better recognition and support. As a result women are entering into a variety of occupations and professions. Investing resources in women pays off in the form of higher per capita income, lower infant and maternal mortality rates, slower population growth, better use of natural resources, hygienic environment, a stronger economy and a better quality of life for all.

Indian women have fought more valiant battles, have made greater sacrifices and have exhibited greater love than men on environmental protection. Indian women shall

rise against all cruelties perpetuated against mother nature leading to environmental pollution or ecological imbalances. If rural women are educated properly they can protect their home environment and village environment from degradation (Sharma, 1988).

Education has clearly emerged as a critical factor which has impact on the health and welfare of women. Majority of women in our country are illiterates (60.6 per cent), uneducated and unaware of environmental problems. They must be educated first, made literates and made aware of local environmental problems so that they will change their ways of living. If women are made aware of these problems and their effects on human health, they can protect the environment from further degradation.

#### **D. Facets of environmental education**

The existing quality of environment and its impact on all the living organisms on the planet have greatly stirred the consciousness of the scientists, philosophers, educationists and futurologists (Subbarao, 1982 and Padmanabhamurthy, 1991). The outcome of this global awareness was the Stockholm Conference in 1972. The Conference recommended the conscious participation of every human being in conserving the environment (Nandy, 1989 and Oberoy, 1992).

Environmental awareness as a pre-requisite for action, calls upon individuals, groups, communities, national governments and international bodies to promote the cause of environmental conservation (Bandhu and Berberet, 1987). Unless people become more aware of environmental problems and understand their magnitude, they will be unable to participate effectively in decision making. Not only the laypublic in rural, tribal, slum and urban areas, but also women and students and teachers in schools, colleges and universities, as also planners, decision and policy makers, programme implementors and research and development workers need to be educated about environment.

This realization thus emerged highlights EDUCATION which is a sub-system of the total societal system - as the only means through which people could be made aware of and motivated to act for the cause of environment (Pillai, 1981 and Ravindranath, 1991).

Environment education can be defined as a process of learning about the existing situation, through which sufficient knowledge can be gained to understand environmental problems and contribute towards solving them. It does not stop with acquiring information about environment but also helps to acquire attitudes and values conducive to environmental protection and understanding of the interdependence of nature and people (Rao, 1988).

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The perspective should be integrated, interdisciplinary and wholistic in character (Khoshoo, 1988 and Srivastava, 1989).

The general goals of environmental education as given by Bandhu (1987); Dwivedi et al., (1987); Chittibabu, (1987); Fegebank, (1988); Srivastava (1989) and Trivedi and Raj (1992) are : to

- ° foster clear awareness of and concern about social, economic, political and ecological interdependence in urban and rural areas
- ° provide every person with opportunities to acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment
- ° create new patterns of behaviour among individuals, groups and society as a whole towards the environment
- ° be a source of guidance to the people to act as more responsible citizens with an increased civic sense

Trivedi and Raj (1992) are of the opinion that environmental education is of help to children in several

ways, while :

- ° programming learning experiences from simple to complex
- ° proceeding from indefinite ideas to definite ones
- ° proceeding from the concrete to the abstract
- ° ordering of learning experiences from the empirical to the rational
- ° undergoing the process of self development

Besides these environmental education creates a pleasurable excitement in children. It makes the child's education problem-based.

Environmental education should aim at producing responsible citizens thereby creating a constituency of environmentally oriented people, who are knowledgeable regarding the biophysical and man made environment, its problems, possible solutions and concerted action. Educational institutions like universities and colleges have to shoulder such a challenge and show necessary leadership (Dwivedi et al., 1987). Environmental education is a life long continuing process and has to be imparted at all levels and it is through education process that man's attitude towards environment is to be shaped (Bandhu, 1987; Dwivedi et al., 1987 and Jain, 1988).

Environmental education helps to understand the intimate relationship between the quality of the environment and human well-being and has an important role to play in the direction of preserving the environment and ensuring the quality of life (Bandhu, 1987). It should be carried out at three main levels - individuals, group and general public - through mass media communication. The environmentalists are not giving sufficient attention to educate the 'school children' who are future leaders of the country and who under the age of 15 constitute 42 per cent of the total population.

Mahajan (1988) rightly points out that if environmental education is imparted to this major group, it will be highly beneficial to the society. While on one hand, the gap between educational products and environmental necessities are becoming much wider to threaten the existence of mankind in this planet, facilities available in the modern classroom situation, improvement in communication system and availability of textual knowledge on the other hand fail to incorporate ideas of natural study, field study or outdoor education. Therefore the dire need to start comprehensive environmental education programme for the school children has been realized.

To be marked as an initiative, the United Nation's concern over environmental crisis and educational programme

since 1970, have laid the foundation for introduction of environmental studies in the school curriculum at various levels (UNESCO, 1977 and NCERT, 1981). The UNESCO had henceforth drawn up guidelines for incorporating environmental education within the general frame work of education after the International Government Conference on Environmental Education conducted in collaboration with United Nations Environment Programme (UNEP) in 1975.

Since the primary objective is aimed at development of both the individual and the society, focussed attention is bestowed on awakening man about major problems of life, development of necessary skills and attitudes for improvement of life. Hence environmental studies encompasses both physical and social environment (UNESCO, 1977; UNESCO, 1980; Raina, 1980 and Vidarat, 1980). The content related to science, social science and environment are placed under a broad title 'Environmental Studies' (Ravindranath, 1991).

Jeter (1982) and Madhyastha (1982) have highlighted environmental studies as an interdisciplinary subject which includes socio-economic, political, natural, biological, anthropological, economic, aesthetic and cultural aspects of human life. It is often remarked that environmental studies as a subject of study in the school is the education for the environment, of the environment and by the environment.

Educational programme should incorporate changes in education from the primary grades to the university level, but these alone will not bring about the desired results (Willgoose, 1962). Teachers must alter their methodology and undergo retraining in order to look at environmental problems from a proper perspective and to motivate students to respect and appreciate their environment. Dworkin (1974) and Krishnan (1991) rightly put forth that environmental education should be made a subject of compulsory study.

Research on environmental studies had received momentum throughout the world since 1970. Under the leadership of UNESCO, regional workshops, seminars and conferences are being organised from time to time to provide new direction to the programme. With the introduction of the subject in the school curriculum, researches in the areas of formulating objectives, selection of contents, methods of teaching, development of instructional materials, teacher training programmes and evaluation procedures have been initiated in different countries. The subject has now occupied central place both in the formal and non-formal systems of education and influenced design of their own curriculum (UNESCO, 1980). Systematic work in this regard has already been started in U.K., U.S.A., India and in other Asian countries (NCERT, 1981).

Different education commissions and committees set up by the Government of India at various times after Independence have also stressed for the close link between education and environment. Since 1973, text books on general science and social studies and instruction materials introduced at different stages of school education have been reorganised to include the environmental facilities and necessities. The National Council of Educational Research and Training, New Delhi, also has taken the lead to make these subjects environment-oriented at the national level (NCERT, 1970).

The education commission (1964-66) stated that a curriculum should be related to the quality of teachers, the facilities available in the school and the needs of the students with reference to their socio-economic background (Ministry of Education, 1966). The commission also pictured environment as the real laboratory of the school where children will develop necessary skills of observation, collection of data and drawing conclusion (NCERT, 1970). With the thrust given to environmental education in the New Education Policy (1986) attempts have been made to reorganise the content and methodology of school instruction. At the lower primary stage, upto class V, environmental education has been introduced in most of the

States as integrating themes anchoring concepts of both natural and social phenomena. A centrally sponsored scheme of environment orientation to school education was started from 1988-89 with a view to bring in a synthesis between educational programmes of local environmental situation (India, 1991).

The Ministry of Environment and Forest, offers cent per cent financial assistance to the State, Union Territories and voluntary organisations who are involved in the field of environmental education. Project activities include review of curricular and extra-curricular materials, preparation of general informative books, brochures, posters and audio visual materials, adoption of monuments by schools for study and upkeep and study of ecological problems in the neighbourhood. Voluntary organisations are also involved in innovative projects.

Priority is accorded by the Ministry to promote environmental education, create environmental awareness among various age groups of the country's population through several programmes and mass media campaign as well as to disseminate messages through environmental information system (ENVIS) network to all concerned. Special emphasis has also been given to non-formal education through seminars, symposia, workshops, training programmes, eco-camps

and audio visual shows. The Ministry has been organising a National Environmental Awareness Campaign (NEAC) since July, 1986 to create environmental awareness (India, 1991).

Bhatnagar and Anand (1988) strongly put forth that the messages of environmental protection, ecological conservation and biological preservation has to reach each and every hearth and home. Only then there shall be environmental awareness.

Communication technology applicable to the imparting of instruction is on rapid progress (Agarwal and Mishra, 1993). Until and unless, the environmental rehabilitation work is turned into a mass movement, the spectacular result may not be expected to educate the general public. Mass media of communication should be effectively used. According to Kanagarajan (1988) and Park and Park (1991) the common mass media which can be used to spread the message on environmental hygiene are television, radio, print media and movies.

Khoshoo (1989) points out that at present radio and television are both urban biased and urban-based on content, medium and practice. Therefore, different centres of Doordarshan should daily telecast programmes related to ecological-betterment and environmental well-being in regional languages at proper time. Different stations of

Akashvani can broadcast talk and features relevant to the context.

(Cinema halls all over the country daily attracts a large number of viewers of different ages, educational levels, occupational status and income groups. Undoubtedly these are the sections which need to be informed. Chib (1988) is of the opinion that cinema houses should be instructed to exhibit documentaries dealing with environmental disruption, ecological crisis and illeffects of unhygienic conditions of the environment.)

#### **E. National environmental strategies**

The programmes relating to environmental protection and economic development are by and large interlinked and complementary to one another. As such, in India, some aspects of environmental protection, namely soil conservation, public health, protection of forests and wildlife, industrial hygiene, water supply and sanitation have been included in the development programmes right from the initiation of the Five Year Plans. However, the concern for integration of environmental considerations in the process of planning for economic development was for the first time explicitly articulated in the Fourth Five Year Plan (1967-74).

In order to provide a point in the structure of the government where environmental aspects could receive close attention, the National Committee on Environmental planning and Co-ordination (NCEPC) was established in 1972 (Biswas and Bannerjee, 1984). The committee was involved in a number of activities leading to important policy decisions, laying down of standards and guidelines to safeguard the environmental quality.

The major objectives of the NCEPC are promoting research in environmental problems and establishing facilities for such research wherever necessary. The research programme of NCEPC has been implemented through Indian National Man and the Biosphere Committee (MAB) and the Environmental Research Committee (ERC). The general areas of environmental pollution and its impact, environmental aspects of human settlements, rural environment and other related subject areas are covered by the Environment Research Committee (ERC). The ERC also encourages action and demonstration projects which would serve to transfer the research results to the fields. The projects funded by the ERC include studies on air and water pollution monitoring and control, instrumentation, energy use, settlement planning, pesticide studies and environmental education.

The Man and the Biosphere Programme is in unison with the International effort initiated by the UNESCO. Under this programme, the primary objective is to study the impact of human interference on the natural eco system. So far, over 120 projects have been funded under the Environmental and Ecological Research Programme through the MAB and ERC. In addition, several other agencies such as University Grants Commission, Council of Scientific and Industrial Research (CSIR) and Department of Science and Technology (DST) have funded a number of research projects in various sectors of environmental concern.

The NCEPC has been in contact with the National Planning Commission in evolving a mechanism for assessment of environmental implications arising out of development projects and in providing necessary safeguards. NCEPC strongly felt the need for setting up nodal agencies at the level of states and union territories for incorporation of any environmental concerns in the development planning of different regions. At the instance of the NCEPC, high level environmental boards have been constituted in various States and Union Territories. Particular emphasis has been placed by the NCEPC on programmes for stimulation of environmental awareness, through formal and non-formal means. From time to time, the institution has also organised seminars and workshops on subjects of environmental concern.

On the advice of NCEPC, a National Fellowship Award on Environmental Science has been instituted. The Pitambar Pant Award, as it is named after the first chairman of NCEPC, is intended to promote excellence in environmental research. A source book entitled Environmental Activities containing details of environmental information from various sources in the country has also been brought out. It has also advised the government on programmes for co-operation in the field of environment with international agencies such as United Nations Environment Programme (UNEP), United Nations Education, Scientific and Cultural Organisation (UNESCO) and International Union for Conservation of Nature and Natural resources (IUCN), as well as through bilateral and multi-lateral agreements.

**Legislative measures and administrative machinery :**

In accordance with the Directive Principles (articles 48 and 51-A) of Indian Constitution, protection and improvement of the national environment is an obligatory responsibility of the State and every citizen of India (Singh, 1984 and Trivedi and Raj, 1992). The constitutional directives and development policy have provided a strong base for enactment of legislative measures as required for environmental protection. There are several laws enacted from time to time which are directly or indirectly related to environmental protection. Among them, the more recent

ones are the Insecticides Act, 1968, Wildlife Protection Act, 1972, Water (Prevention and Control of Pollution) Act, 1974, Water Pollution Cess Act, 1977, Forest Conservation Act, 1980 and the Air (Prevention and Control of Pollution) Act, 1981.

In recognition of the need for a fresh comprehensive look at the administrative and legislative aspects of environmental protection, the Government of India constituted a high powered committee, known as Tiwari Committee, 1980, headed by the Deputy Chairman of the Planning Commission. The Committee in its report recommended that a Department of Environment (DOE) should be set up to provide explicit recognition to the pivotal role that environmental conservation must play for sustainable national development. Through the creation of the department, an administrative set up has been identified in the structure of the government for dealing with various aspects of environment and ecologies (Vohra, 1984).

Programmes to increase public awareness about environmental issues and to stimulate public participation in activities for environmental protection will form a key component of the Department of Environment. Particular emphasis will be given for communication programmes for target groups such as village panchayats, district and

municipal authorities, state and central legislators and administrators. Apart from the use of non-formal means for public education, formal environmental education will be considerably strengthened at the primary, secondary and tertiary levels through inputs into the relevant curriculae, sponsoring of publications and training workshops.

The Department of Environment will sponsor a number of field action programmes. These will include demonstration projects that illustrate successful tools, techniques and methodologies for environmental protection in fields such as land reclamation, low cost pollution control, recycling/reuse of waste materials and mass communication of environmental messages.

The economic situation in the country calls for a scientific and systematic effort for identifying and quantifying wastes of every kind. Kashkari (1975) and Browning (1977) consider waste as a vital natural resource that comprises a large share of utilized resources which is abundant in homes. Even materials which have tremendous economic potential are treated as waste material which ultimately creates problems of disposal and end as pollution agents, opines, Devadas (1979). She further adds that waste either in liquid or solid form should be considered as the resource to be put back into ecological cycle. Waste recycling is an answer to draw out utilizable waste

materials for checking environmental pollution and meeting the scarcity of raw materials. Panoni et al., (1975) opined that recycling, a new concept emerging in recent times is the key answer to solve the problems of waste disposal.

**Development plans of environmental significance :**

Soil and water conservation programmes were initiated during the First Five Year Plan (1951-56) period and they have been progressively intensified over the successive plan periods.

The importance of forest conservation and afforestation can hardly be overemphasized from the view point of economic usefulness and ecological benefits. Several authors like Bhattacharya (1980); Tiwari (1983); Relwani (1984); Agarwala (1985); Swadeshi (1985); Achaya (1986) and Mouli (1988) point out the effects of deforestation as diminution of rain fall, lowering of atmospheric humidity, exposure to dry winds, increased evaporation, release of wind blown sands, removal of fertile top soil by erosion, interference with water supply, frequent flood and drought conditions, pollution of the environment and finally desertification. Efforts made in the past for rehabilitation of the degraded areas have met only with limited success. Programmes of social forestry and economic and industrial plantations have been under

implementation for some time in different states with varying degrees of effectiveness. Forest Development Corporations have been established with a view to expand and speed up afforestation programmes by utilising institutional finance.

In 1984, a forest policy was formulated, the main objective was to preserve a minimum area under forests. The feeling that forests must be saved from destruction because of their direct and indirect benefits to society culminated in the issue of a memorandum by the Government of India in 1985.

An important role of forestry in India is to contribute produce which can be of immediate use for a great majority of the population living in the rural areas. Forests supply not only fuelwood but also small timber, for agricultural implements and construction material, for handicrafts, fodder, grazing and numerous minor forest products.

The National Commission on Agriculture recommended that all efforts be made to develop forests on available land and to engage local communities, individual farmers and all departments having land available for tree plantation for the benefit of the local people. As a conservative

measure Forest Conservation Act was passed in 1980, which banned the felling of trees without the approval of the centre. In order to provide more fuelwood - till alternate sources are fully developed - the Government launched a scheme, in 1980-81 called Rural Fuelwood Plantation and Afforestation of Eco-sensitive Non-Himalayan Area.

The energy requirements in India are heavily dependent upon the traditional fuels among which firewood is the most important one followed by agricultural wastes and animal dung. Hence, energy forestry (plantation of firewood) is regarded as an important component of energy strategy as the rural communities will continue to depend upon firewood for several years to come. To give impetus to the development and better use of renewable energy sources, the government has recently established a Commission for Additional Sources of Energy (CASE). The programme covers energy plantations, biogas, bio-conversion of wastes, tapping of solar, wind, tidal and other sources, which are intended to meet the growing energy demands and to lessen the process of environmental degradation.

Considering that improved chulah is the most immediate means of fuel conservation for mitigating health hazards and drudgery caused by burning of wood and

collection of fuel for cooking, Government of India launched the National Programme on Improved Chulah (NPIC) in December, 1983 as a demonstration project and was subsequently converted into a National Programme with effect from April, 1985. This forms part of the 20 point and Minimum Needs Programme of the government. The usefulness of the programme has been widely recognised particularly in the areas of reduction in fuelwood consumption, environmental upgradation and mitigating drudgery of women working in the kitchens. The programme is being implemented through the state government agencies, autonomous bodies, housing corporations, and voluntary organisations (Department of Non-conventional Energy Sources, 1992).

The world today is seized with the problems of energy supply, shortage of cheap and efficient resources, shortage of many other usable commodities and growing environmental pollution (Dayal, 1981). It is being realised that the exploitation of renewable energy sources could not only contribute but also supplement meaningfully, along with the further development of conventional energy sources. As the new and renewable sources of energy provide clean energy and help preserve the environment and ecology, their development and utilization would change the complexion of the rural areas of the country and improve the quality of life.

Biogas is an important renewable source of energy which can be produced and utilized in a decentralized manner by a majority of rural population. The National Project on Biogas Development (NPBD) caters to promotion of family type biogas plants. It was started in 1981-82 and over 14.03 lakh rural families have been covered under the project during the period 1981-82 and 1990-91. The broad objective of the project are to provide energy in a clean and unpolluted form; to produce enriched manure to supplement the use of chemical fertilizers; to bring improvement in the life of rural women folk and children by relieving them from drudgery and to improve sanitation and hygiene (Department of Non-conventional Energy Sources, 1992 and Grewal, 1993).

An investment sharing scheme for the purchase of box type solar cookers was launched in 1982. Under this scheme, the Department of Non-conventional Energy Source's share is 33 1/3 per cent or Rs.150/- which ever is less, of the cost of the cooker. Over two lakh solar cookers have been sold in the country from the date of inception of this scheme. Community solar cookers for cooking meals for groups of people, after successful demonstration in tribal hostels, mid-day meal scheme etc., have also been made available to the users under the cost sharing scheme with a government share of 33 1/3 per cent or Rs. 1050/- which ever is less.

A National Water Supply Programme was launched in 1954 during the First Five Year Plan and progressively larger allocations were made for water supply and sanitation in the succeeding plans. However, the progress so far made in providing safe water supply and basic sanitation facilities could hardly be called satisfactory. Till the Fifth Five Year Plan, the programme did not receive a high priority in the national planning process. The importance of providing safe water supply and sanitation as a basic minimum need was stressed in the Fifth Five Year Plan(1974-79) which included drinking water for villages in its Minimum Needs Programme. The other important components of environmental significance which were introduced in this programme included elementary education, rural health, house sites for landless labourers, environmental improvement of urban slums and nutrition (Ministry of Rural Development, 1990).

During the Sixth Five Year Plan, added emphasis was given for the Minimum Needs Programme. The objective of Minimum Needs Programme is to adopt an integrated systems approach. For instance, health care should be viewed in the perspective of a total system consisting of appropriate steps including environmental sanitation, supply of safe drinking water, nutrition, health education, immunization

and family planning. ICSSR and ICMR (1981) suggest the following areas for improvement of environment so as to provide "health for all by 2000 AD".

- Safe drinking water supply will have to be provided to all urban and rural areas
- Good sewage disposal system should be established in all urban areas
- Massive programme of proper collection and disposal of solid waste and their conversion into compost will have to be developed
- An intensive programme of improving sanitation with special emphasis on proper disposal of night soil should be developed in rural areas
- Greater attention will have to be paid to town and village planning and large scale programmes of housing for the rural poor and clearance of urban slums will have to be undertaken
- Urgent steps have to be taken to prevent water and air pollution, to control the ill-effects of industrialization and to provide better work-place environment
- Health education should be an integral part of all general education

With reference to rural sanitation, the effort in the Sixth Plan is to make a modest beginning through pilot projects in all states which will help in making an assessment of community attitudes and the required sanitation facilities. Keeping in view the present position of rural sanitation and constraints of resources, it would not be possible to provide sanitation facilities to more than 25 per cent of rural population by the end of the Water Supply and Sanitation Decade (1981-1990). However, much more can be done in this area through self-help schemes of voluntary organisations and village community.

The threat that pollution poses to the health and welfare of the public is yet to be seriously taken even by enlightened citizens. In order to encourage members of the public to question and criticize those who continue to pollute the environment, there is an urgent need to inculcate in them the value of environmental quality and the benefits that they can reap from the enjoyment of clean environment. In this respect, the leadership will have to be taken by the government from educational institutions, mass media and judiciary (Dwivedi and Kishore, 1984 and Bland, 1986).

Government policies and legislation alone cannot solve the environmental problems. The co-operation of the

# PLAN AND PROCEDURE

### III PLAN AND PROCEDURE

Environmental hygiene is the science dealing with cleanliness of the living surroundings - personal, domestic and social hygiene. It aims to preserve health and prevent degradation of the environment.

Health, a constituent of quality of life depends upon the hygienic conditions of persons and their near environment. The explosive growth of human population, lack of amenities and resources, lack of consciousness of the people on environmental ethic are the factors found to be causing enormous strain and depletion of this precious resource. Since environment is the asset to be preserved for generations it is necessary to focus the attention on creating awareness on environmental hygiene among selected women and children. The present study has been framed in two phases :

- A. Creating awareness on environmental hygiene among women (through non-formal education)
- B. Creating awareness on environmental hygiene among children (through formal education)

**A. Creating awareness on environmental hygiene among women  
(through non-formal education)**

This phase of the study involved the following aspects :

1. Situational analysis of the environment in the selected areas
2. Inculcating hygienic practices through education
3. Improving environmental hygiene through simple technologies
4. Evaluating the impact of the programmes

**1. Situational analysis :**

Survey method was chosen to analyse the prevailing environmental conditions. Gupta (1990) points out that a survey is a process of collecting data from existing population units with no particular control over factors that may affect the population characteristics. The survey was carried out in a systematic way by following specific steps like :

- a. Selection of areas
- b. Selection of target groups
- c. Selection of method and research tool
- d. Preparation of the research tool
- e. Conduct of the study
- f. Analysis of the data

**a. Selection of areas :**

Improvement in environmental sanitation is an inevitable and an immediate necessity especially for the rural and urban slum areas. The pressure of growing number of slums in urban areas through migration from villages has resulted in environmental degradation. Pothana (1991) opines that a slum is basically a place with bad physical and environmental conditions, inhabited mostly by poor people and they have to be educated to keep themselves and their surroundings clean. The selected villages and urban slums for the study are given below :

Selected areas	Panchayat/Corporation
<u>Villages :</u>	
Kovanur	Naickenpalayam
Mathampalayam	Blichchi
Palanigoundanpudur	Pannimadai
Naickenpalayam	Naickenpalayam
Saravanampatti	Sarkar Samakulam
Gandhinagar - Velandipalayam	Coimbatore Corporation
<u>Slums :</u>	
Muthumariammanpuram	Coimbatore Corporation
Kamarajapuram	Coimbatore Corporation

Five villages belonging to different panchayats of Coimbatore taluk and one village and two slums situated within Coimbatore corporation were selected by purposive sampling. It means selecting a small sample of 'typical unit of the population from a heterogeneous group after careful inspection of the whole population (Cochran, 1974). Figure 1 shows the locale of the selected areas. The reasons for identifying the areas are as follows :

- ° Observations made by the investigator in her preliminary visits to the area indicated that the sanitary conditions in the selected villages and slums were unsatisfactory and needs attention. The Panchayat leaders when approached for basic information requested the investigator to take up some action-oriented programme to improve the prevailing conditions in these villages and slums
- ° Nearness, transport facility, co-operation of the people, earlier rapport established with the villagers and the slum people and the need for educating the people were other attributes for considering these areas

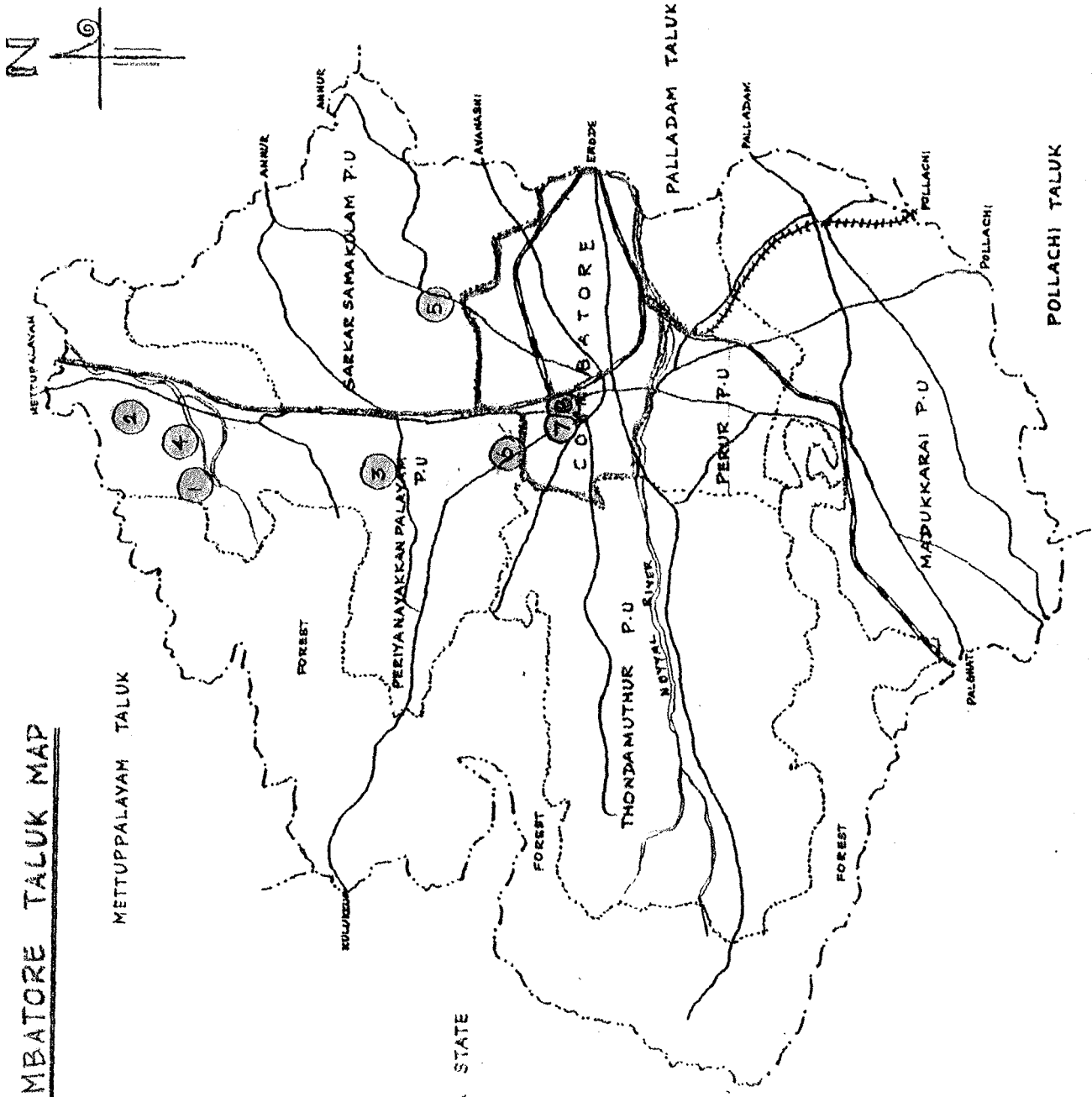
**b. Selection of target groups :**

Women are considered to be effective change agents for better houses, better environment and better economy of the nation (The Rio Declaration, 1992). Therefore, their potentials need to be identified and developed to improve

COIMBATORE TALUK MAP

METTUPPALAYAM TALUK

KERALA STATE



1. KOVANUR

2. MATHAMPALAYAM

3. PALANIGOUNDAN PUDUR

4. NAICKAN PALAYAM

5. SARAVANAMPATTI

6. GANDHINAGAR - VELANDIPALAYAM

7. MUTHUMARIAMMANPURAM

8. KAMARATAPURAM

FIGURE .1. LOCALE OF THE SELECTED AREAS

their health, and sanitary conditions. Wholesome participation on their part thereby helps to achieve sustainable development in the field of environmental hygiene. If women are educated properly, they can protect their home and near environment from degradation. So women residing in the chosen areas were considered and selected as respondents by following proportionate stratified random sampling method because it is one of the popular and most frequently employed procedures in sample selection (McClave and Diertrich II, 1989 and Muthaya et al., 1989).

Table 1 presents the total number of households in the selected areas and the sample selected for the study.

TABLE - 1  
SAMPLE SELECTED FOR THE STUDY

Area	Number of households	Women selected	Percentage of sample selected
<u>I. Villages</u>			
1. Kovanur	595	75	12.6
2. Palanigoundanpudur	595	75	12.6
3. Gandhinagar - Velandipalayam	748	75	10.0
4. Saravanampatti	1,098	100	9.1
5. Mathampalayam	1,100	100	9.1
6. Naickenpalayam	1,115	100	9.0
<u>II. Slums</u>			
1. Muthumariammanpuram	215	100	46.5
2. Kamarajapuram	421	100	23.8
Total	5,887	725	12.3

A sample consisting of 525 women from the rural households and 200 women from urban slums were selected for the study. The samples were drawn proportionately from each of the selected areas representing 12 per cent of the total number of households.

**c. Selection of method and research tool :**

Interview-cum-observation method was selected as it gives first hand and original information (Gupta, 1990). As the present study warrants questioning and observation of the informant and the surroundings simultaneously, interview cum observation method was chosen. It is more or less a flexible method and permits explanation, adjustment, variation and observation according to the situation and provides opportunity to establish rapport and economise on time and expense. Moreover, observation helps to study the behaviour of the respondents and their environmental conditions.

Observation is a careful and systematic watching of facts as they occur in the course of nature. It is a selective, purposive, meaningful and an efficient method of getting information (Adiseshaiah, 1989).

A schedule was selected as a tool to conduct the interview in the selected areas and a rating scale was framed for observation.

A schedule refers to a set of statements and/or questions to be answered by the respondent in a face to face interview and filled in by the interviewer (Chaudhari, 1939).

To measure the behaviour, attitude or opinion, the rating scale is to be used. The rating scale consists of a series of items to which the subject is asked to react or observe. This is considered simpler to construct and is reliable. It is suitable to the data intended to be collected for the study.

#### **d. Preparation of the research tool :**

To enable the investigator to putforth questions pertaining to the study in a coherent manner, an interview schedule was framed to collect primary data. The schedule was structured to contain both closed and open-ended questions. It was designed to collect quantitative as well as qualitative information in the light of observations and experiences during the exploratory village study. The schedule was framed to gather information on the following :

Socio-economic background : The variables as stated below that determine the socio-economic status of women were identified and structured to cover the first half of the schedule.

Personal variables	- age and education
Economic variables	- occupation and income
Social variables	- type of family and family size
Socio-economic variables	- ownership of house and type of residence

The second half of the schedule included the questions on prevailing environmental condition, viz. personal hygiene, cleanliness in the interior and exterior of the house, local environment, sanitary facilities available and used by the respondents.

Hartmann et al., (1989) affirm that the schedule should be standardised for clarity and validity before taken to the field for survey through a pilot study. As defined by Watson and Hill (1991) a pilot study is a preliminary testing, in which the researcher seeks to try out a new idea, system or approach to determine whether an intended study is feasible, to clarify assumptions and improve instruments of measurement. Realising the importance, the schedule was pretested among ten samples, modified and finalised for its actual use in the survey (Annexure I).

A rating scale was framed with valid statements on environmental hygiene concepts to assess awareness of the selected women and their knowledge and attitude towards

environment and hygiene. Care was taken to frame the statements so as to bring out the inherent knowledge and attitude of women towards importance of environment. Personal hygiene, cleanliness of interior, exterior and local environment, awareness of environmental problems, measures to enhance the environmental hygiene and knowledge on various governmental programmes were the important areas included in the rating scale.

The items were graded or ranked based on the nature of the problem on three-point scale and was scrutinized for its validity with the help of ten selected professionals, two from each related fields-doctors, educationists, environmentalists, extension workers and home scientists, and were asked to rank the statements under each area in the order of importance. The statements ranked high were included exempting those ranked least and the scale was finalised. The rating scale thus formulated was used to assess the awareness of women about environmental issues (Annexure II).

**e. Conduct of the study :**

Good rapport was first established and needed information were gathered through informal talk, discussion and observation during their leisure hours.

**f. Analysis of the data :**

The collected informations were consolidated, tabulated, analysed and interpreted as Sharma et al. (1983) and Sadhu and Singh (1986) point out that it is essential to put the unorganised information in a systematic manner in order to obtain the desired results and enable scientific interpretation.

The total samples selected were grouped under three socio-economic groups as low, middle and high classes in order to find out the influence of socio-economic status on their knowledge regarding various facets of environmental hygiene. Yesudin (1988) defines the social class system as a ranking of individuals on a scale of hierarchies based on their socio-economic status. There are two methods (subjective and objective) to identify social classes.

The identification of classes through one's perception is called the primary method or subjective method and the identification of classes through one's socio-economic status is called the secondary method or objective method. The objective method of identification was followed in this study to group the selected sample under different social classes by adopting the procedure given by Sharma (1987). Annexure III presents the details. Socio-economic status index (SES) was used as a basis for all the interpretations pertaining to the findings of the study.

## 2. Inculcating hygienic practices through education :

The analysis of the survey results and the observation of the selected areas by the investigator indicated the following problems concerned with environmental hygiene which formed the basis for planning of education programme for women :

- Filthy environment
- Unhygienic appearance of women
- Lack of knowledge on relationship between hygiene and health
- Poor participation of women in environmental programmes
- Ignorance of women regarding their role in protecting environment
- Prevalence of negative attitude towards children's hygiene

The above mentioned facts indicate the immediate need for creating awareness on environmental hygiene, practices and maintenance of environment for healthy living through planned environmental education. In order to awaken the women and to improve the hygienic condition an appropriate educational programme was chalked out covering the following facets.

Messages for communication :

The main aims of the programme are

1. to sensitize the women to local environmental problems
2. to motivate them to participate in the programmes related to preservation of environment and
3. to improve personal hygiene and environmental sanitation through education and practice.

This called for selection of proper messages for communication. A message is the information a communicator wishes the audience to receive, understand, accept and act upon (Dignan and Carr, 1981 and Reddy, 1987). The messages planned for rural and slum women are :

- ° Personal hygiene for healthy living
- ° Health hazards of unhygienic practices
- ° Methods of keeping domestic environment clean
- ° Need for safe drinking water
- ° Proper removal and disposal of waste
- ° Importance and use of sanitary latrine
- ° Disposal of solid and liquid wastes hygienically through soak pit and manure pit
- ° Composting
- ° Proper use of improved cook stoves - smokeless chulah
- ° Planting trees to preserve environment

**Approach and methodology :**

Ravindranath et al., (1991) opine that selecting appropriate communication methods which would sustain the interest of the women to disseminate the idea to a particular group should be carefully planned since all methods are not suitable for all subject matter. Therefore approaches and methods formulated for communicating the messages varied with different communities. To meet them periodically an appropriate time and meeting place were located for different areas under study.

Table II, Figure 2, Plates 1 to 4 and Annexure IV, present the approaches and methods formulated for communicating the messages on environmental hygiene to selected women.

TABLE II  
 APPROACHES AND METHODS FORMULATED FOR COMMUNICATING MESSAGES ON ENVIRONMENTAL HYGIENE

Approach and Method	Message	Kind of behaviour change desired
<u>Individual approach</u>		
Home visit	Family planning measures, Health hazards of unhygienic practices, Need for keeping the body clean, Interior of the house clean, and Method of purifying water at domestic level.	Improvement in the personal cleanliness Realization of the importance of hygienic practices
<u>Group approach</u>		
Lecture	Importance of personal hygiene, Waste disposal methods, Need for sanitary latrine, Effect of population explosion, and Improved technologies to prevent pollution	Keeping the surroundings clean
Group discussion	Causes of environmental degradation, Role of women in environmental protection, Improved technologies to conserve energy, and Prevent pollution and preserve environment	Change of attitudes towards waste disposal
Demonstration	Better use of smokeless chulah, Method of using mud storage device and haybox, Technologies such as solar and biogas cooking.	Gaining knowledge on improved technologies

Approach and Method	Message	Kind of behaviour change desired
Camps	One day camp emphasizing the need for cleanliness of personal, domestic and local environment, protect and preserve environment	Women and youth to take part in environmental programmes
Competitions	<p>For Women - cleanliness of domestic environment</p> <ul style="list-style-type: none"> <li>- quiz-awareness of simple environmental factors and effect of unhygienic practice on health</li> </ul> <p>Elocution - Role of youth in (for youth)</p> <ul style="list-style-type: none"> <li>- protecting environment</li> <li>- Women's role to prevent degradation of domestic and local environment</li> </ul> <p>Drawing - Depicting natural scenery (children or a bird or an animal below 13 years)</p>	Bringout inherent talent and enthuse women and children to know more about environment
<u>Mass approach</u>	Protection of household environment from degradation, Wild life preservation, Importance of social forestry	Awareness creation among general public on need for environmental protection
Exhibition	Characteristics of good environment, Effect of population on pollution, Small family norms, Sources of water pollution, Need for safe drinking water, and Low cost sanitary latrine.	Making them to realize the need for safe environment

Approach and method	Message	Kind of behaviour change desired
Meetings	<p>To pass on information about the programme in the motivation stage,            To enthuse them to participate in the programme, and            To conclude the programme by thanking the people who helped in the conduct of the programme</p>	<p>Motivating people to know about the environmental programmes conducted in their areas</p>
Notices	<p>The importance of environment, Methods to keep themselves and their surroundings neat and clean, Information on the programmes to be organised</p>	<p>Imparting knowledge on the importance of clean and safe environment</p>
Wall paintings	<p>Information on soak pit, manure pit, smokeless chulah, mud storage device, mud water filter, biogas plant and sanitary latrine.</p>	<p>Helping people to see the messages often and change their behaviour towards creating better environment.</p>

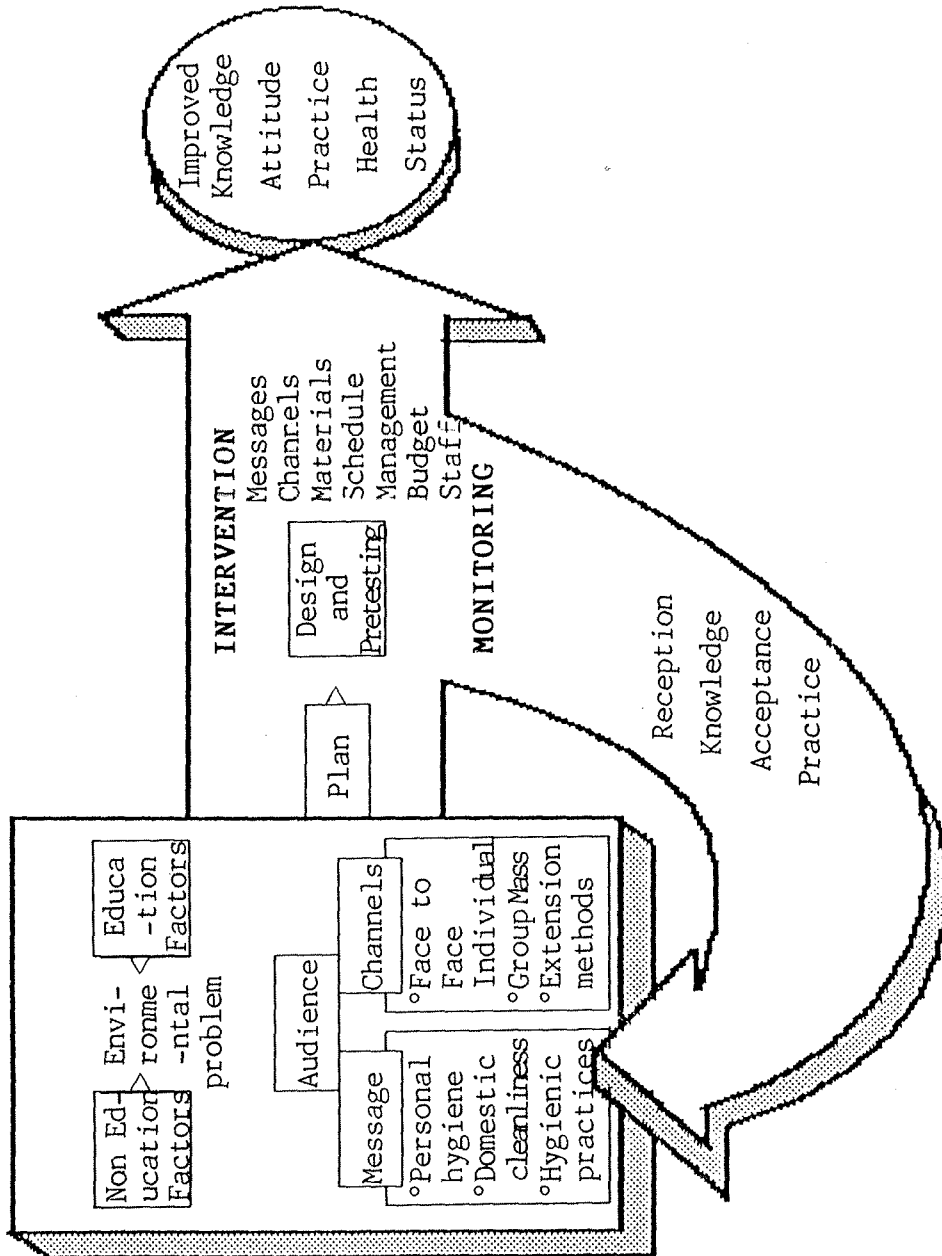


Figure.2.  
ENVIRONMENTAL COMMUNICATION MODEL

Idea : Proceedings of An International Federation for Home Economics Training Programme, 1988.



Through informal talk



Through personal contact

Plate 1 Individual approach



Group discussion



Lecture



Demonstration



Plate 2 Group approach



Competitions



Plate 2 Group approach



Exhibition



Meeting



Notice distribution



Filmshow



Wall Paintings

Plate 3 Mass approach



Plate - 4 Charts prepared by the Investigator



PLATE - 4 Charts prepared by the investigator

**Teaching plan :**

A detailed teaching plan was prepared based on the background of the selected samples, availability of materials and time. The messages were repeated in a variety of ways over a period of one year with different methods of communication using appropriate teaching aids in order to bring out desired behavioural changes. Annexure V describes the planned programmes for rural and slum women.

**Implementation of the plan :**

The success of a programme, depends on how well it is carried out. Creating awareness and sensitizing the communities are important aspects to be considered in the implementation of environmental restoration programmes. Records were maintained with the help of the youth club members to note down the number of respondents for each programme.

The record maintained for their participation showed that exhibition and demonstration attracted a major percentage of women while only a meagre percentage attended lectures and competitions. Participation in the camp activities highlighted the interest of considerable portion of the group. Through these data the investigator could specifically identify the women who showed great interest in these programmes for further activities.

### **3. Improving environmental hygiene through simple technologies :**

Several attempts have been made to create awareness among selected women on environmental issues. The observation of the environmental condition in the selected study areas necessitated specific action programmes to make the women witness, involve and experience the impact in real life situation. Under specific action programmes home improvement technologies were introduced in order to improve the interior and exterior environmental condition.

#### **Interior environment :**

Smokeless chulahs, biogas plants and solar cookers were the technologies introduced to preserve interior environment.

#### **Smokeless chulah :**

The cooking devices used by majority of the households were primitive, smoky and unhygienic. Perumal (1983) and Singh (1988) point out that smoke emitted by these traditional chulahs is dangerous to health. They further add that women in three hours of cooking, inhale more pollutants than the industrial workers do during eight hours of their work shift. The introduction of smokeless chulah alone, according to Vashist and Vohra (1991) will solve ten per cent of the health problems.

Improved, well designed, fuel efficient and a low cost cook stove is known as smokeless chulah. This chulah ensures a clean and safe cooking process. Realising the importance of introducing smokeless chulahs, the government had taken commendable steps to introduce smokeless chulahs through National Rural Employment Programme (NREP) and Rural Landless Employment Guarantee Programme (RLEGP) in households. Therefore attempts were made to motivate women to adopt smokeless chulahs by explaining the principle, use, care and maintenance of smokeless chulah. Women who would like to install were helped in installing the chulahs with the help of Block Development Office. The households were visited to clear the doubts regarding the installation of the chulahs. For the care and maintenance of the chulah the women were given the following instructions.

- ° Use both the pot seats for cooking at the same time
- ° Clean the duct and hearth every day and clean the chimney periodically once a month to keep the chulah smokeless
- ° Not to over stuff the duct with fuel as there be sufficient space for air to get inside
- ° Patch up any cracks as soon as they occur

**Biogas plant :**

Biogas is the most convenient domestic fuel which is not only hygienic but will also help to improve the environmental condition in the rural areas. Biogas technology is well known to offer fuel, fertilizer and environmental sanitation (Sharma 1980; Reddy 1981; Anand 1983 and Babu 1983). It solves the energy as well as fertilizer problem and it gives an impetus to rural hygiene and reduces the drudgery of women folk (Rao 1982 and Shah 1984). Importance, constructional features, use, care and maintenance and mode of obtaining loan from the bank were explained to the interested families.

**Solar cooker :**

Solar cookers reduce fuel requirements, attention required for cooking can be minimized and the food cooked in solar cooker does not get spoiled quickly (Venkateswaran, 1979; Broda, 1980 and Rao 1983). Gambhir and Sood (1988) remark that solar cooker is a viable and promising technology for cooking food which is likely to help in meeting future domestic energy needs. It is a new kind of cooking device and does not require any conventional fuel for operation as it works with energy, a free gift of nature. It is a device which gives no smoke and keeps the environment clean and preserve the environment. The parts of the solar cookers and the method of operation were explained to the women.

**Exterior environment :**

Sanitary latrine, manure pit, soak pit and raising kitchen garden were explained to the selected women to protect exterior environment.

**Sanitary latrine :**

Effective sanitation through the introduction of sanitary latrine is an important way of reducing the incidence of diseases like cholera, dysentery, amoebiasis gastro enteritis and worm infections that are spread by contaminated food, water and soil. Srinivasan (1984) strongly puts forth that the village households do not welcome the idea of public latrines because no one feels responsible for a public latrine and it becomes filthy. Therefore, it is important to search for an appropriate alternative.

Number of efforts have been made by the government and research institutions to develop sanitary latrines, as a result of which more than dozen designs of sanitary latrines have been developed. Out of which, Water Seal Pour Flush Latrine, Hand Flush Latrine and Ventilated Improved Pit Latrine have been analysed by Venmathi and Parimala (1990) for its cost of construction and performance. A design recommended by UNICEF (Water Seal Pour Flush Latrine) has been considered suitable for wider applications because it is simple, less expensive, provides freedom from odour and

eliminates chances of contamination of soil and ground water. Families who would like to construct sanitary latrines were helped in deciding the model and in construction.

**Manure pit :**

In rural areas, there is no system for collection and disposal of refuse. Refuse is thrown around the houses indiscriminately resulting in gross pollution of the soil. The problem of refuse disposal in rural areas can be solved by digging manure pits by the individual households. The garbage, cattle dung, straw and leaves can be dumped into the manure pits, and covered with earth after each day's dumping. In five to six months time, the refuse will be converted into manure, which can be used in the field. Therefore the women were motivated to adopt this simple idea to dispose solid waste in an efficient way.

**Waste water treatment :**

Waste water treatment is another area which needs consideration because stagnant waste water is dangerous to health and may even contaminate fresh water, causing further damage to the environment (Park and Park, 1991). Therefore better utilization of waste water is necessary for improvement of environmental quality. Murphy (1980) and Mohan (1989) suggest that waste water can be safely disposed into a soak pit or diverted to raise a kitchen garden.

**Soak pit :**

Soak pits are used for hygienic disposal of waste water. It prevents stagnation of waste water around the house and keeps the place pollution free. A soak pit is a simple device for absorbing and transferring waste water collected from kitchen and bathrooms to subsoil. It requires simple technology and skill. Need, use and maintenance of soak pit was explained through several media to the public.

**Kitchen garden :**

Waste water can become a valuable source of water supply for house garden. Waste water utilization in the household can be established for the production of vegetables. Recent studies conducted by Gnanambigai (1988) and Vidya (1992) revealed the possibility of growing vegetables utilizing waste water. Therefore the possibilities and advantages of diverting the waste water for raising kitchen garden were explained to interested women. Their individual doubts regarding the preparation of land, raising the plants, and manuring were cleared by the experts in the field.

These simple home improvement technologies were demonstrated through the Mahalir Mandrams of the concerned villages to motivate women for adoption. The focus of this

programme aimed at identification of women who would like to either adopt a new technology or improve the existing practice. Such women were enthused to contact the investigator for further help with their specific request regarding the kind of technology they would like to incorporate in their homes. Specific and special efforts were taken to solve their problems in implementing these technologies.

#### 4. Evaluating the impact of the programme :

Evaluation could be thought of as a process of judging the value or worth of a programme. At a more technical level, it may be described as a process of collecting evidences about the outcomes of a programme and interpreting them to find out whether the goals/objectives set prior to the implementation of the programme have been achieved or not (Ravindranath, 1986 and Ramachandran and Dharmalingam 1993).

Evaluation is the process of determining how well the desired behavioural changes have taken place or are taking place as a result of educational efforts.

The parameters of assessment used in this study were achievements in terms of improved knowledge on environment, conventional concepts and considerably changed health habits.

In order to assess the quantum of knowledge gained the rating scale used prior to the education programme (Annexure II) to study their knowledge, was readministered after 60 days of the educational programme to find out the acquisition of knowledge on environmental health habits and hygiene concepts.

Women who had participated in more than 80 per cent of the education programmes were selected for the

evaluation of the impact of the programmes. On an average 36 per cent (village 39 per cent and slum 33 per cent) of the women participated in 80 per cent of the programmes. Information obtained about their knowledge prior to and after the programme on aspects like environmental knowledge, hygienic practices, personal hygiene, environmental problems and programmes were compared and analysed statistically.

#### **B. Creating awareness on environmental hygiene among children**

Children should become sensitive at their younger age to the problem of environment and they should be educated in their earlier years to develop concepts of environment consciousness. Environmental education should begin at pre-school stage and be a continuous process. Educating a child is educating a generation. Primary education is the foundation of the entire super structure of the nation which we intend to build. It is most crucial of all stages of education since it is going to enlighten the future citizen of India (Nanda, 1982). At the primary school age, children establish certain norms which they will try to follow throughout their life time. Therefore for this phase of the study the primary school children were selected.

**The steps adopted are as follows :**

1. Selection of schools
2. Identification of the environmental concepts integrated into the existing curriculum
3. Comprehension of children about environmental concepts
4. Feed-back information from students and teachers on course content
5. Educating children on environmental hygiene.

**1. Selection of schools :**

Within the corporation limit of Coimbatore, there are 70 primary schools under State Board system (37 corporation and 33 aided schools) 39 under Matriculation system and two schools under Central Board. In order to understand the extent of environmental concepts included under different curriculum, one school from each system - State Board, Matriculation, Central Board - respectively were selected for the study. Willingness, co-operation of the school authorities, nearness and transport facility were the major criteria considered for selecting the three schools. Figure 3 shows the locale of the schools selected for the study.

**2. Identification of the environmental concepts integrated into the curriculum :**

Environmental education is multidisciplinary, interdisciplinary and transdisciplinary. School system

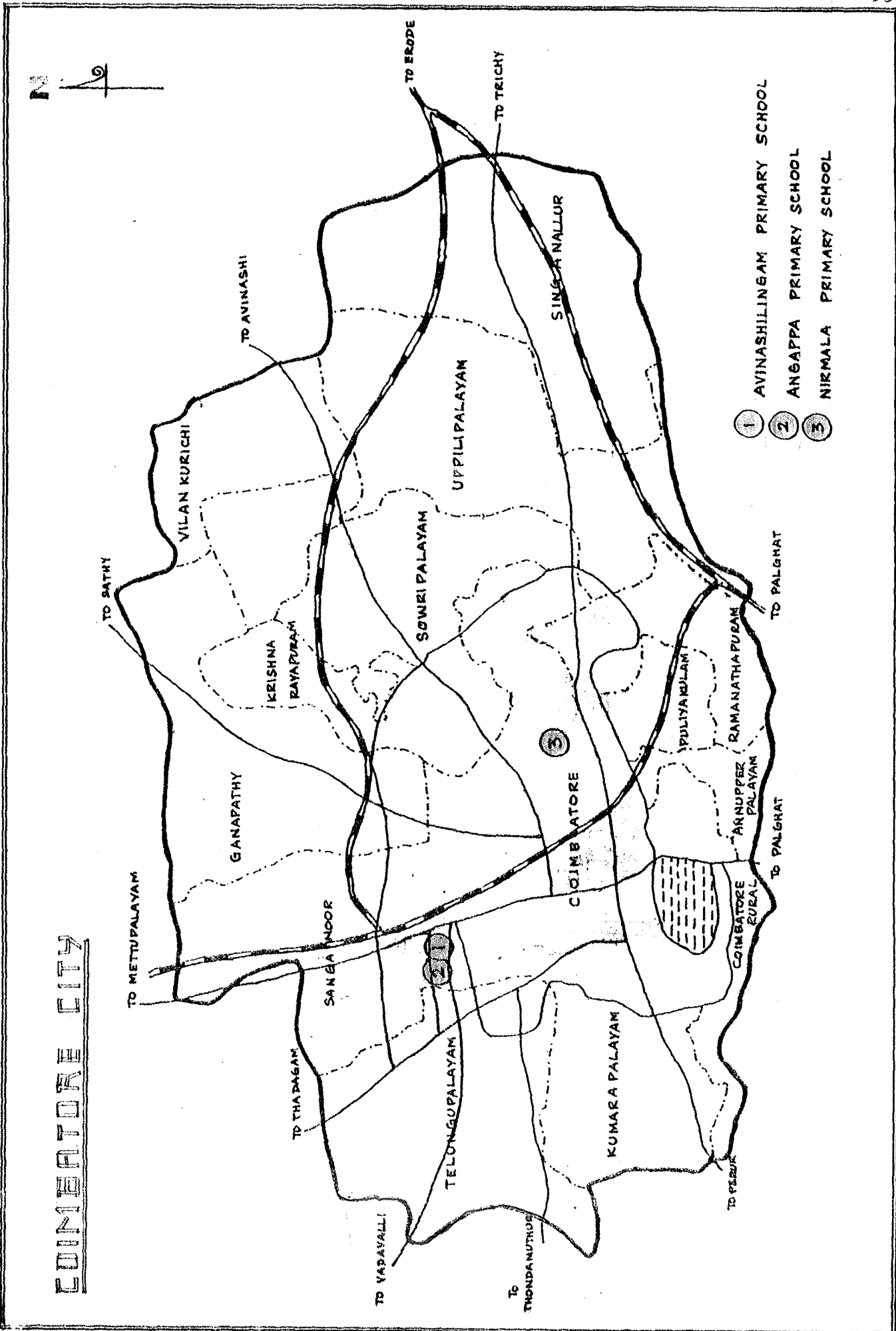


FIGURE .3. LOCALE OF THE SCHOOLS SELECTED

provides the largest organised base for environmental education and action. With children in their plastic age, school offers an effective instrument for inculcating in them the desirable environmental concepts.

With the thrust given to environmental education in the New Education Policy of the Government of India (1986) attempts have been made to reorganise the content and methodology of school instruction. Starting from the I standard upto V standard, environmental education has been introduced in most of the states as an integral component of various subjects with an aim to inculcate awareness about immediate environment.

The course content prescribed for various standards are covered under textbooks on Tamil and English languages, Science, Social studies and Moral Science. The textbooks followed by the selected schools were analysed for each standard. The textbook followed for Tamil language was common for all the schools irrespective of their system. English language and Social studies books touched only basics of environmental concepts. Science and Moral science were the two subjects which covered a considerable portion on environmental concepts.

The incorporation of environmental concepts, under various subjects in primary stage from I to V standards,

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based on the curriculum followed by the Tamil Nadu State Board, Central Board and the Matriculation system were consolidated, analysed and presented under Table III. Annexure VI, presents the list of environment related lessons included under each system of education for different standards.

Textbooks followed by State Board school concentrated more on environmental sanitation and role of plants and animals in human environment. The course content of Central Board school gave more thrust on the human body, its functions and the need to keep clean. Equal importance was offered to aspects related to personal hygiene, environmental sanitation and environmental factors in general under the Matriculation system. None of the schools selected for the study offered a separate subject on environmental hygiene.

TABLE III  
ENVIRONMENTAL CONCEPTS INTEGRATED UNDER DIFFERENT STANDARDS

School System	Standards				
	I	II	III	IV	V
State Board	Group living, Purification of drinking water, Gardening, Identifying birds and plants.	Duties of Individual, Cleanliness Concept, Family, House, Human body, Cleanliness of surrounding, Plants around us, Protection of drinking water, Earth and Sky.	Kitchen garden, Things around us, Cleanliness of surrounding, Care of teeth, The Human body, Cleanliness of class rooms and school, Identifying plants and trees, Use of plants.	Healthy living, Importance of Cleanliness, Safe drinking water, Cleanliness of surrounding and prevention of diseases, Human health, Health and Hygiene.	Tree planting, Cleanliness of surrounding, Qualities of living things, Flora and Fauna, Constitution of body, Air pollution, Water pollution.
Central Board	Group living, Good habits, The Human body, Environment - Water, Soil, Air, Cleanliness of nose.	Duties of Individual, Effect of cleanliness, Keeping body clean, Use of plants, Care of environment.	Kitchen garden, Water sources, The Human body, Safety and First-aid, Good habits.	Importance of health, Air, Water, Weather, The Human body, Health and Hygiene, Safety and First-aid, Good habits, Uses of water.	Tree planting, Cleanliness of surrounding, Exercise and growth, The Human body, Safety and First-aid, Cleanliness and care of teeth.

School System	I	II	III	IV	V
Matriculation System	<p>Group living, Good habits, The Human body, The environment - Water, air and soil, Good health.</p>	<p>Duties of individual, Cleanliness concept, Growth of body, Keeping the body clean, Use of plants, Care of Environment, Sources of water, Care of teeth, Nature's gift, Neighbourhood, Country.</p>	<p>Types of plants, The Human body, Care of teeth, Personal cleanliness, Health service.</p>	<p>Healthy living, Importance of cleanliness, Use of plants and animals, Protection of plants and animals, Human body, Safe drinking water, Cleanliness of surrounding, Good manners, Nature's gift.</p>	<p>Tree planting, Cleanliness of surrounding, Prevention of diseases, Environmental sanitation, Plants and animals, Safety and First-aid Natural wealth, Care of public property.</p>

Teaching of environmental education suffered because of certain factors. They are listed below :

- ° Lack of necessary infrastructure in the schools
- ° Inadequate training for the teachers to teach environmental concepts
- ° Insufficient data on local environmental problems
- ° Superficial coverage given to environmental problems in the textbooks
- ° Lack of co-ordination among the subjects covered between one class and the other class

### **3. Comprehension of children about environmental concepts :**

The knowledge acquired by children through school curriculum was evaluated. This aspect is dealt under the following heads :

- a. Selection of sample
- b. Construction of tool
- c. Administering the tool
- d. Analysing the results

#### **a. Selection of sample :**

The sample for the study was drawn from III, IV and V standards of three selected schools to represent State Board, Matriculation and Central Board systems because they can comprehend the messages conveyed in a better manner compared to students from I and II standards.

Totally 450 children, 150 from each standard (III, IV and V) were drawn from three different schools to conduct environmental awareness test.

**b. Construction of tool for pre-evaluation :**

Based on the environmental concepts culled out from the content of the textbooks prescribed for standards I to V, the investigator chose the important factors to be included in the tool. After discussing with ten experienced professors, the five areas of environmental hygiene namely personal hygiene, hygienic practices, domestic cleanliness, environmental problems and general environmental concepts were selected. An elaborate list of hundred concepts representing the above factors were listed down and hundred questions were framed on these concepts.

The objective type of questions were constructed. For each question four items were given among which one item was the right answer. In this multiple choice response the test required the subject to select the correct answer from among the choices provided. As Lee (1985) puts forth, it is one of the best means for testing judgment that is available.

These constructed tests were reviewed by a panel of five experts. On the basis of their suggestions, some questions were modified or deleted and few additions made.

These tests were administered to 150 children, 50 each selected from three different standards randomly from three different schools for checking validity and reliability of the test. Using the responses of the children in the pilot study item analysis was done to choose relevant items for the final test. The difficulty level and the discrimination power of the items were found out by using the formulas (Aiken, 1982)

$$F = \frac{N_U - N_L}{2n} \times 100 \quad \text{and} \quad D = \frac{N_U - N_L}{n}$$

respectively (Annexure VII).  $N_U$  denotes the number of children who answered the item correctly from the upper group and  $N_L$  stands for the number of children who answered the item correctly from the lower group and 'n' stands for the strength of both groups which have equal number of children.

The difficulty index was between 25 per cent and 90 per cent. Above 90 per cent was considered to be too easy and below 25 per cent was considered as too difficult and these items were omitted.

The items having discriminating power less than 0.28 and below were not selected and items having negative discriminating power were also removed. Finally the test was with questions of multiple choice items. Thus, three

sets of environmental awareness tests were prepared for three different standards, each having 50 questions comprising of 50 important concepts on environmental hygiene which were included in all the three curricula (Annexure VIII). A scoring key was prepared for each set of questions and is presented under Annexure - IX. Table IV indicates the concepts included under various areas of environmental hygiene.

TABLE IV  
ENVIRONMENTAL CONCEPTS INCLUDED IN THE  
ENVIRONMENTAL AWARENESS TEST

Areas	Concepts
Personal hygiene	Clean body, neat dress, care of teeth, eyes, nail, skin, hair, care of body parts, good health.
Healthy habits	Proper food habits, drinking safe water, good sleeping habits, eating nutritious food, causes for diseases and preventive methods.
Domestic Cleanliness :	
Interior	Importance of clean home, orderly arrangement of articles.
Exterior	Cleanliness of surrounding, proper method of disposing waste.
Environmental issues	Interdependence of man with birds and animals, insects, plants, domestic animals, tree planting, need for fresh air, clean water, source of water, use of water, water purification, mountains, hills, city, country, continents, desert. Solar system - earth, sun and moon. Monsoon, climate, weather and season.
Environmental Problems	Pollution - air, water and noise - waste disposal-recycling-manure pits-biogas.

While administering the environmental awareness test, the general background information about the selected children were also collected.

**c. Administering the test :**

The group testing procedure, that is, dividing the class into smaller groups to avoid discussion, was followed in administering environmental awareness test. Children from each of the standards selected were divided into two groups not exceeding 25 in a group. The investigator personally administered the test in selected schools with the help of the teachers (plate 5). When children were ready with their writing materials, they were asked to fill up their names and background information on the proforma given. Specific instructions were given to the children for the mode of answering the questions with an example. When the children in a group were able to comprehend the test, they were allowed to read and record the response. Throughout the administration, the investigator was vigilant to prevent children from consulting each other. The answer sheets of environmental awareness test were collected back from the children as soon as they completed answering all the questions. The duration of the test was one hour. Similar procedure was adopted for all the groups. Prior intimation was not given to the children about the test in order to study the real impact.



Plate - 5 Administering the Test

**d. Analysing or scoring :**

A child's answer sheet was compared against a prepared scoring key. The multiple choice format made scoring easier, dependable and objective. For each correct response, one mark was awarded. Hence, a child's score on a particular concept was either zero or one. Score obtained against each item within a particular area were added together to represent the extent of knowledge in that area. Therefore a child's total score for the selected five areas namely, personal hygiene, domestic cleanliness, environmental problems and general environment, ranged between zero and 50. The findings are interpreted in the subsequent chapter.

**4. Feed-back information from students and teachers on the course content :**

While introducing environmental concepts is a welcoming feature into the school curriculum, the authorities should also ascertain that the concepts reach the children properly in a way, they acquire them easily.

To ascertain the relevance of the curricular content with the method of teaching, feed-back information from both the children and teachers was collected. Fifty children were selected from three different schools to know

about the satisfaction derived with respect to the course content and modifications needed if any, to improve the teaching of environmental concepts.

The suggestions given by the children to improve knowledge on environmental hygiene concepts are :

- Include practical orientation to suit real life situation
- Prescribe specific books on environmental education
- Include environmental education as a separate non-examination subject
- Exposure to various environmental problems through field visits and related experiments

Teacher's opinion :

The opinion of 15 selected teachers, five from each of three selected schools were gathered and is presented below :

- Introduction of environment as a subject under primary level by NCERT is a welcome feature
- Curriculum lacks proper experimental design and detailed practical syllabi
- Lack of provision of facilities and infrastructure in the school for practical approach
- Incorporation of environmental hygiene as a separate subject is a dire necessity
- Orientation courses to teachers on environmental concept needs to be arranged

The children were more inquisitive to know about environmental concepts through related experience. Both

teachers and children expressed that the inclusion of practical component would lay more impetus on environmental hygiene rather than mere acquisition of theoretical knowledge.

#### **5. Educating children on environmental hygiene :**

An education programme was planned by the investigator focussing greater attention on practical orientation. The plan of action for environmental education included :

- a. Formulating the course content
- b. Developing the plan of work
- c. Imparting environmental education
- d. Evaluating the outcomes of the environmental education

#### **a. Formulating the course content :**

The environmentalists Trivedi and Raj (1992) opine that environmental hygiene concepts such as personal and environmental hygiene, health, nutrition and pollution should be introduced in the course content of any environmental education programme for primary school children. Apart from these, concepts on general environment should also be included to develop love towards nature and to preserve and protect the environment from degradation.

Table V indicates the environmental hygiene concepts taught to children under environmental education programme.

TABLE V

ENVIRONMENTAL HYGIENE CONCEPTS INCULCATED TO CHILDREN

Personal hygiene	Domestic cleanliness	Environmental concepts
Better Hygienic practices like :		
1. Sleeping	1. Cleanliness of interior: floor-sweeping and mopping walls - removing cobwebs, whitewashing Windows and doors - dusting and wiping cupboards - arranging things properly, using dust bins effectively	1. Components of environment: meaning of environment, interrelationship between plants, animals, birds and human beings, Air, water and solar system.
2. Proper toilet training Importance effects of open defecation		2. Degradation of environment, environmental hygiene, pollution of air, water and soil due to unhygienic behaviour of man; extinction of rare species of plants and animals
3. Importance of clean body brushing bathing daily dressing		
4. Proper eating habits to have good health	2. Cleanliness of exterior: cleanliness of the surrounding, proper disposal of waste - solid and liquid, Use of drainage to avoid stagnation of water, Avoiding open area defecation.	3. Causes for environmental problems population explosion, unhygienic behaviour
5. Importance of exercise to lead healthy living		4. Children's role in protecting environment following better hygienic habits and being good citizens.
6. Good manners for group living		
7. Need for safe drinking water		

Table V clearly illustrates the course outline framed for the environmental education programme. The same content was taught to different standards in different depth.

Lay (1992) highlights that the teaching of hygiene to young children must exclusively be practical, and should consist of actual exercises carried out with the utmost regularity. The principle involved in the teaching of the hygienic practices to the youngest school children is that of habit training.

Relevant practical activities were planned for the said course content based on the teaching materials developed by the Centre for Environment Education (CEE), Ahmedabad; Centre for Health Education, Training and Nutrition Awareness (CHETNA) Ahmedabad and Government of Tamil Nadu and Co-operative American Relief Everywhere, Madras (Annexure X).

**b. Developing the plan of work :**

A detailed plan of work was formulated to conduct classes for three different standards. The two schools representing State Board and Matriculation system were considered for conducting classes on environmental education because these two systems were followed in more number of

schools in the city. Annexure XI presents the plan of work formulated for the conduct of classes.

**c. Imparting environmental education :**

Both theory and practical classes were systematically conducted as per the plan of work prescribed for different standards for a period of one and half months and scheduled for one hour per day for five days in a week (Plate 6). Visual aids such as charts, posters, placards, models and actual objects were used to make the teaching learning process effective and meaningful. As indicated by Dahama and Bhatnagar (1987) audiovisual aids help to communicate more effectively and create interest among children and motivate them to know more about a particular fact. A uniform plan of work was followed for two different schools.

An exhibition was put up in connection with in Environment Week Celebration Young Women's Christian Association, Coimbatore for a week by the investigator along with other institutions like, Indian Trust for Art and Cultural Heritage (INTACH), Forest College and Environmental Society. The exhibition included the information on birds and animals and flora and fauna, environmental problems, and improved technologies like solar and biogas to conserve natural resources, hazards of polluted environment, methods



Plate - 6 Exposure of children to environmental knowledge

110 b.



Plate - 6 Exposure of children to environmental knowledge

to keep the environment clean and safe disposal of refuse. More than 800 children from different schools visited the exhibition. The children covered under the investigator's environmental education programme were also taken to the exhibition and explained about the concepts exhibited. Apart from classroom teaching, a video cassette on "Global Environment" was projected. Environmental games and Quiz competitions were also conducted.

**d. Evaluating the outcomes of the environmental education :**

The knowledge acquired by the children on environmental hygiene concepts were analyzed through post evaluation environmental awareness test. This test consisted of 50 questions. Out of 50 questions 40 were framed from the course content taught by the investigator. The remaining ten questions which were not known to more than 75 per cent of the children (in pre-evaluation) were included in the post-evaluation test (Annexures XII and XIII). The children (who were selected for the environmental education) were tested by administering the post-evaluation test. Children were asked to record the hygienic practices adopted after environmental education programme in order to find out the impact of the programme. The data collected were edited and analysed statistically. A sample of the analysis is given in Annexure XIV.

## **RESULTS AND DISCUSSION**

#### IV RESULTS AND DISCUSSION

The systematic analysis of the findings of the research carried on 'Creating Awareness on Environmental Hygiene Among Women and Children' are presented under the following headings :

- A. Socio-economic characteristics of the selected women
- B. Environmental situation in the selected areas
- C. Environmental hygiene as perceived by women
- D. Conceptualisation of women on environmental hygiene
- E. Details on adoption of home improvement technologies
- F. Knowledge and perception of children on environmental hygiene.

##### **A. Socio-economic characteristics of the selected women**

A situational analysis of the major socio-economic variables help in identifying the parameters wherein better development strategies could be worked out. The variables that determine the social status of the women are classified under personal, economic, social and socio-economic.

### 1. Personal variables :

Table-VI presents information on the personal variables responsible for the social status of the selected women.

TABLE VI  
DISTRIBUTION OF SELECTED WOMEN BASED ON  
PERSONAL VARIABLES

Variable	Percentage of women	
	Rural N: 525	Slum N: 200
Age in years		
20-25	15.1	23.0
26-35	21.3	17.0
36-45	44.2	31.0
46-55	19.4	29.0
Education		
Illiterate	59.4	57.0
Primary	12.0	25.0
Middle and secondary	20.2	16.0
Higher secondary	5.5	2.0
Collegiate	2.9	--

Age statistics are of fundamental importance in all social science analysis as they reflect changes in behaviour at various stages of life cycle (Agarwal and Arora, 1989).

The figures specific to the age of the women indicate that a high percentage of rural (44.2 per cent) and slum (31 per cent) belonged to middle age (36-45 years). More than 60 per cent of rural as well as slum women belonged to the age group of 36-55 years.

Education is one of the basic determinants that enables understanding of the socio-economic position of any individual or of a population (Singh et al., 1988). Even with the commendable efforts of the mass literacy programme a vast majority (59 per cent in rural areas and 57 per cent in slums) remained illiterates. When compared with the National data on female literacy (39 per cent) these figures appear to be better.

Therefore it can be comprehended that illiteracy, which is a significant barrier to the improvement of the women's social status should become an important area of development concern. But it should be appreciated that three per cent among the rural women had studied upto the college level.

## **2. Economic variables :**

Table VII depicts the occupational status of selected women and family income which decide the economic position of the women.

TABLE VII  
DISTRIBUTION OF SELECTED WOMEN BASED ON  
ECONOMIC VARIABLES

Variable	Percentage of women	
	Rural N: 525	Slum N: 200
Occupation		
Unemployed	10.5	19.0
Daily wage earners	33.0	43.0
Agricultural labourers	28.0	--
Municipal and industrial workers	15.2	20.0
Clerical and related works	13.3	18.0
Family income (Rs./month)		
Upto - 500	38.7	35.0
501 - 1000	33.0	49.5
1001 - 1500	14.3	13.0
1501 - 2000	5.2	2.5
2001 and above	8.8	--

The occupational structure of the women indicated that 89 per cent of rural and 81 per cent of slum women were gainfully employed. Wherein more than one fourth of the rural women worked in the fields and half of the slum women were dependent upon daily wage earning jobs (Coolie). Their low educational level hindered their aspirations for a better job. The women who had completed secondary school level and above were either teachers or clerks. Some of them, had taken up small business at their home level.

The revised estimation of India 1991 year book points out that people who earn below Rs.9,000 per annum are categorised under poverty line. The earning capacity of the families revealed that 43.6 per cent of rural households and 32 per cent of slum households were above the poverty line.

### 3. Social variables :

Table VIII depicts the size and type of families surveyed.

TABLE VIII  
DISTRIBUTION OF SELECTED WOMEN BASED ON  
SOCIAL VARIABLES

Variable	Percentage of women	
	Rural N:525	Slum N:200
<u>Family</u>		
Nuclear	79.0	71.0
Joint	21.0	29.0
<u>Family size</u>		
Small (upto-3)	38.7	28.0
Medium (4-6)	50.1	65.0
Large (7-9)	11.2	7.0

Education, economy and employment necessitated more than 70 per cent of the families in both the groups to set up nuclear families. The changing trends of the modern times breaks even traditional joint family system existing in rural areas.

The existence of large families among the surveyed families were few and this may be attributed to the family planning measures undertaken by the government. Coimbatore is one of the successful districts in implementing the family planning scheme in Tamil Nadu. The Monthly Statistics on Maternal and Child Health Immunisation and Contraception (1993) shows that birth rate of Coimbatore is 16.2 per cent against the State average 20 per cent. More than half of the sample belonged to medium size family consisting of 4 to 6 members.

#### **4. Socio-economic variables :**

Table IX presents the distribution of women based on socio-economic variables.

TABLE IX  
DISTRIBUTION OF SELECTED WOMEN BASED ON  
SOCIO-ECONOMIC VARIABLES

Variable	Percentage of women	
	Rural N: 525	Slum N: 200
Housing		
Owned	76.0	90.0
Rented	24.0	10.0
Type of shelter		
Mixture of pucca and kutcha	42.7	52.0
Kutcha*	24.0	40.0
Pucca*	33.3	8.0

Kutcha - Mud or coconut leaves wall with thatched roof

Pucca - Proper brick structure with plastering and with tiled roof

Possession of a house is considered as a prestigious issue and this aspect is well projected by the fact highlighting 76 per cent of rural and 90 per cent of slum families to be residing in their own houses. The number of structurally sound houses remained low both in rural (33 per cent) and slum (eight per cent) areas. Since bad housing leads to insanitary conditions and unhealthy habits and destroys incentive towards cleanliness, Narain (1993) points out to the health authorities and social

workers to educate the public about the dangers to health by living in such unhygienic houses. Socio-economic characteristics of the selected women is depicted in Figure.4.

#### **5. Socio-economic status index :**

The socio-economic characteristics determine one's social status in society. Social status is an important variable influencing the environmental hygiene concept development in women (UNESCO, 1992). Socio-economic status (SES) index was formulated for selected women (six villages and two slums separately) by adopting the procedure as given in Annexure III.

Table X and Figure.5 present the distribution of selected women according to their SES index.

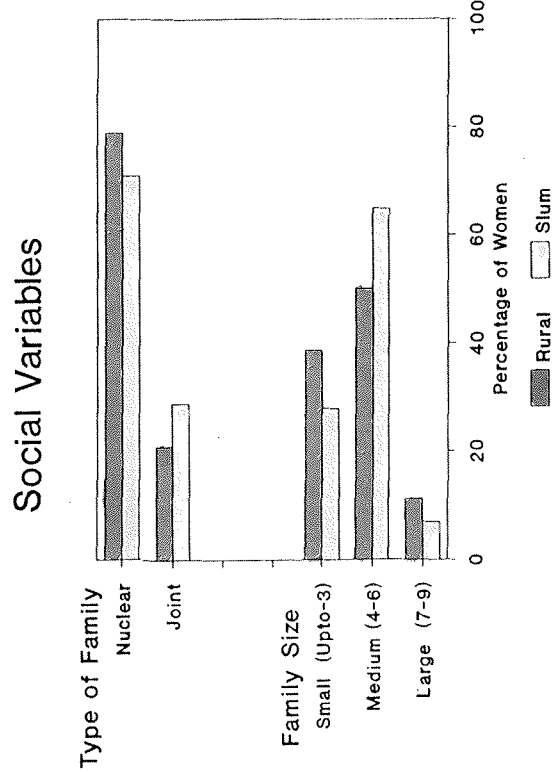
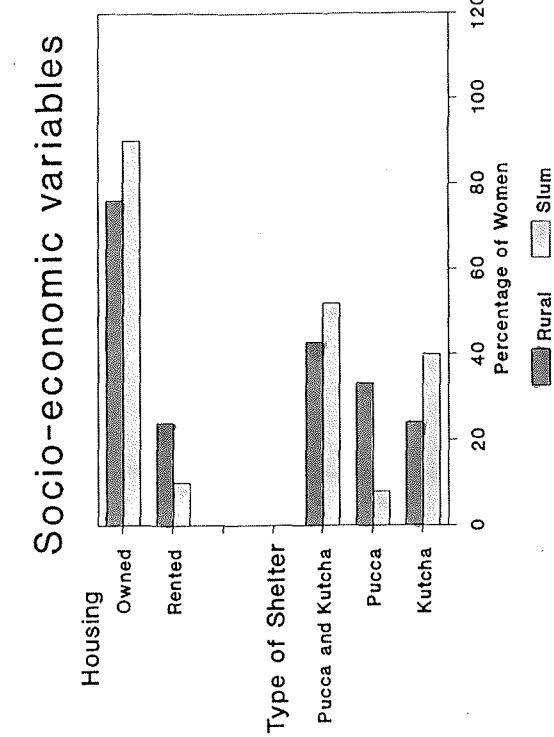
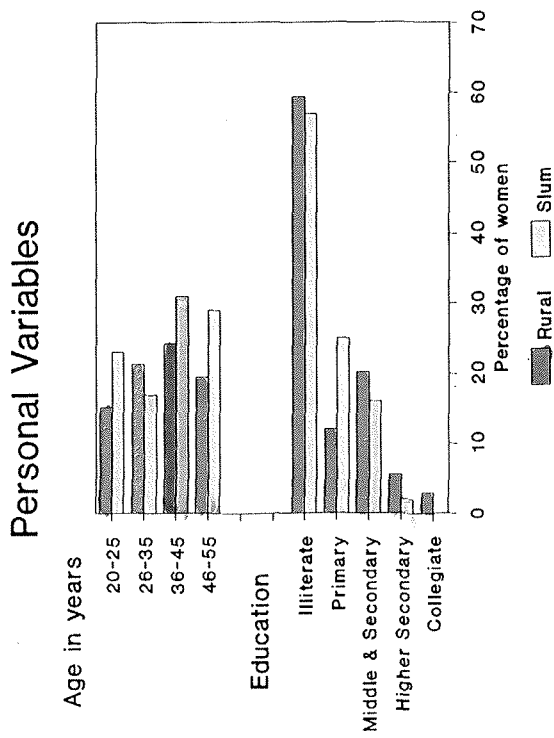
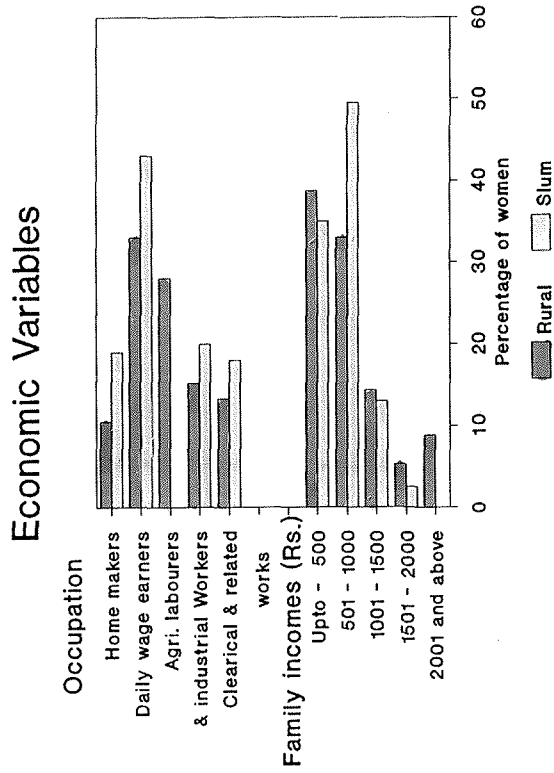


Figure.4.SOCIO-ECONOMIC CHARACTERISTICS OF SELECTED WOMEN

TABLE X  
DISTRIBUTION OF SELECTED WOMEN BASED ON THEIR SES INDEX

Area	N	Percentage of women		
		SES Index		
		Lower 235	Middle 165	Higher 125
<u>Rural</u>				
Kovanur	75	52.0	25.3	22.7
Mathampalayam	100	53.0	30.0	17.0
Palanigoundanpudur	75	42.7	40.0	17.3
Naickenpalayam	100	51.0	28.0	21.0
Saravanampatti	100	32.0	17.0	51.0
Gandhinagar	75	37.0	54.7	8.0
Total sample	525	44.8	31.4	23.8
<u>Slum</u>				
	N	99	65	36
Muthumariammanpuram	100	51.0	30.0	19.0
Kamarajapuram	100	48.0	35.0	17.0
Total sample	200	49.5	32.5	18.0

Nearly 45 per cent of selected rural women and 50 per cent of slum women belonged to lower socio-economic status (SES). Around 31 per cent of rural women and 32.5 per cent of slum women were categorised under middle SES and 23.8 per cent of rural and 18 per cent of slum women were grouped under Higher SES position. These classifications were based on education, occupation and income. These data indicate that India must take earnest steps to acquire a high socio-economic status for all citizens.

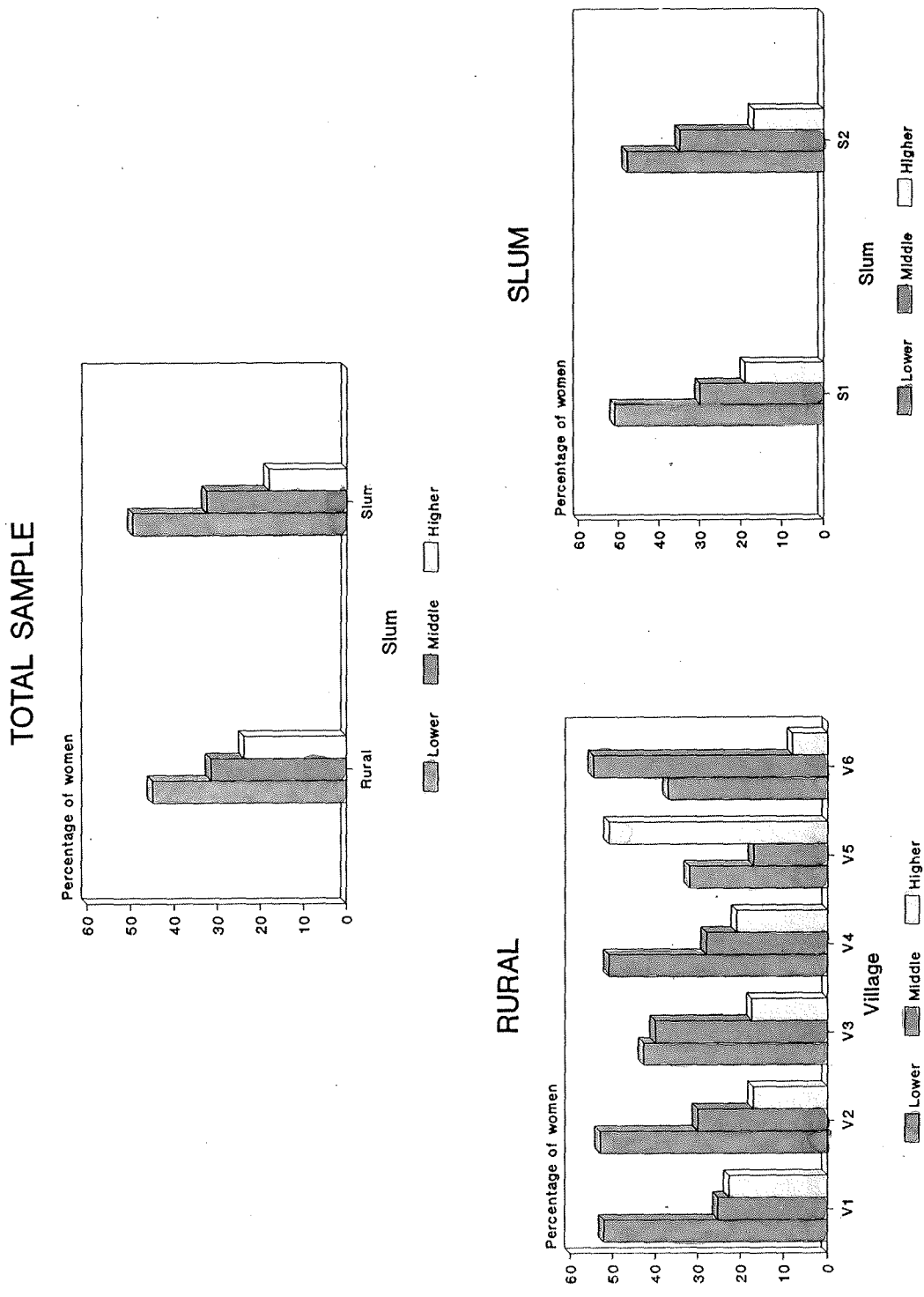


Figure.5.Distribution of selected women based on SES index

## B. Environmental situation in the selected areas

Healthy life is within the reach of everyone provided, the individual is willing to adopt a sensible pattern of living especially in rural and slum areas. Personal cleanliness is considered as an essential requirement, responsible for an individual's behaviour towards maintaining the environment clean. Therefore the personal cleanliness and hygienic habits of women were observed.

A majority of rural (46 per cent) as well as slum (42 per cent) women belonging to higher and (39 per cent of both rural and slum) middle SES had high sense of personal cleanliness when compared to the women of lower SES index. Both rural and slum women paid least importance to cleanliness of children. The physical appearance of both women and children were observed based on the physical signs given by WHO expert committee on Medical Assessment of Nutritional Status (1963).

It is interesting to note that 83 per cent of rural and 77 per cent of slum women were taking care of their eyes. Eventhough the general appearance was comparitively better, least importance was given to the cleanliness of hair, teeth, feet and nails.

The physical condition of children was still worse. In general only 17 per cent of rural and four per cent of slum children belonged to the surveyed families were found to be in good physical appearance. The others were with sore eyes, watery noses, unclean teeth, uncut dirty nails, uncombed hair and dirty dresses. The felt need today is to make children healthy. It is high time to create awareness among mothers to develop hygienic habits in their children.

#### **1. Domestic environment :**

A clean domestic environment - interior and exterior environment of the house is a good learning aid for children.

#### **Interior environment :**

Table XI presents the condition of the interior environment of the selected rural and slum families.

TABLE XI  
HYGIENIC CONDITION OF INERIOR ENVIRONMENT

Condition	Percentage of women *								
	N	Rural				Slum			
		Lower 235	Middle 165	Higher 125	Total 525	Lower 99	Middle 65	Higher 36	Total 200
Dirty walls and floor	40.9	24.2	8.8	28.0	28.3	27.7	13.9	35.0	
Smoke deposition in the kitchen	48.9	20.0	16.0	20.0	50.0	38.5	22.2	42.0	
Faulty arrangement	53.2	27.9	11.2	35.1	52.5	36.9	19.4	42.0	
Dust doors and windows	54.9	38.8	12.8	39.1	60.6	41.5	27.8	53.0	
Dumping article in the storage area(cupboards)	57.9	33.9	20.8	42.1	45.5	35.4	27.8	39.0	
Ceiling with cobweb	65.1	24.8	22.4	42.1	67.7	61.5	36.1	62.0	
Hanging clothes	65.1	37.0	18.4	45.0	69.7	38.5	26.0	51.0	
Clean interior	--	--	4.0	49.0	--	--	--	41.0	

\* Multiple response

Rural women were more conscious than slum women on the cleanliness of interior environment. Kitchen was well maintained when compared to other areas. Women of higher SES from rural as well as slum areas kept the interior environment clean than the middle and lower SES women.

Proper method of keeping clothes was given least importance by considerable portion of women. The women paid least attention to remove the cobwebs from the ceiling. More than 40 per cent of the interiors of the houses in rural and slum areas were clean and tidy.

Table XII exhibits the condition of the exterior environment of the selected areas.

TABLE XII  
HYGIENIC CONDITION OF EXTERIOR ENVIRONMENT

Condition	Percentage of women *							
	Rural				Slum			
	Lower N =235	Middle 165	Higher 125	Total 525	Lower 99	Middle 65	Higher 36	Total 200
Heap of garbage and other waste	99.2	78.2	68.8	85.0	100.0	98.5	91.7	98.0
Presence of human excreta	88.1	75.8	44.8	74.1	92.9	87.7	44.5	83.0
Stagnation of waste water	85.1	52.7	36.0	63.0	97.0	76.9	55.6	83.0
Unclean exterior walls	65.1	40.0	15.2	45.0	88.9	73.8	55.6	78.0
Growth of unwanted plants	34.9	23.0	11.2	26.1	21.2	7.7	2.8	14.0
Clean front and back yard	6.0	10.3	64.8	21.0	2.0	9.2	38.9	11.0
Clean exterior walls	2.1	20.0	55.2	20.0	1.0	16.9	36.1	13.0
Dirty cattle shed	-	4.8	3.2	2.1	-	1.5	2.8	1.0
Waste water diverted to coconut tree or kitchen garden	-	1.8	4.0	2.1	-	-	-	-

\* Multiple response

Eighty five per cent of rural and 98 per cent of slum houses were surrounded by heaps of garbage and other waste materials. Stagnation of water near the houses also presented an ugly appearance. The exterior environment of the houses of the higher SES women from rural and slum areas were maintained cleaner than lower and middle SES women.

It was observed that rural and slum women gave more importance to personal hygiene and cleanliness of interior environment than the cleanliness of exterior environment. They were of the opinion that the local government authorities were responsible for the cleanliness of exterior environment.

The common practice in the villages and slums was, and still is, to dump the waste materials of the household in heaps near the houses. Cattle dung and crop waste from the agricultural fields were placed in front of the rural houses making the exterior an unhealthy setting. These practices not only lead to foul smell but also lead to dangerous effects from health point of view. Plates 7 and 8 show the environmental condition of selected areas - villages and slums.

## **2. Facilities that promote environmental hygiene :**

Yesudin (1988) mentions that provision made for water supply, bathroom and latrine are the three basic

125 a



Plate - 7 Environmental condition of selected villages



Plate - 8 Environmental condition of selected slums

amenities that every household should be provided with for the healthy living of the inmates and lack of these three facilities are the causal factors for environmental hygiene problems.

**Water supply :**

Water is one of the basic and important amenity needed for human existence. Borewell was the main source of water supply in all the selected rural and slum areas. Borewell water was supplied through hand pumps in three villages - Kovanur, Mathampalayam and Palanigoundenpudur - and through common taps in three village - Naickenpalayam, Saravanampatti and Gandhinagar - and, two slums - Muthumariammanpuram and Kamarajapuram. Among the selected households only two per cent in the rural areas had private tap connection in their houses. Five rural households had private well in their houses. Gandhinagar, Muthumariammanpuram and Kamarajapuram had "Siruvani" water supply which is a protected safe drinking water supplied by the corporation since these areas come under Coimbatore corporation limit. The families residing in these areas expressed that they have adequate water supply. More than 74 per cent of rural as well as slum families had easy access to water source. The women of higher SES index expressed the adequacy of water to carry out the household activities.

**Provision made for bathing :**

Table XIII gives the details about the kind of bathroom and place of taking bath by the selected women.

TABLE XIII  
BATHING FACILITY

Place	Percentage of women							
	Rural				Slum			
	Lower	Middle	Higher	Total	Lower	Middle	Higher	Total
	N= 235	125	125	525	99	65	36	200
Inside kitchen	54.8	19.2	2.4	31.0	18.2	52.2	58.3	37.0
Kutcha enclosure near the house	26.0	60.8	8.0	32.0	50.5	26.2	36.1	39.0
Community well/tank	11.1	-	-	5.0	-	-	-	-
Public stand post	6.0	-	-	3.0	18.2	3.1	-	11.0
Common bath room	2.1	8.0	4.8	5.0	-	4.6	5.6	3.0
Puuca bath room	-	12.0	84.8	24.0	-	-	-	-
Municipal bathroom	-	-	-	-	13.1	13.8	-	11.0

Fifty two per cent of the rural women and 38 per cent of slum women had separate space for taking bath. SES index had direct correlation with the provision of separate bathroom.

The desire to have separate enclosure for taking bath ensuring privacy increased with the rise in 'SES' index. More than half of the women of lower 'SES' used

kitchen itself for taking bath. Pucca bathrooms were provided in the houses of higher SES (85 per cent) women, indicating the influence of their social status. The families of the lower/SES women utilized the places near the community well/tanks or public stand posts which lacked privacy for bathing.

Improper housing condition did not pave the way for the slum women to own pucca bathrooms. A kutchra enclosure near the house served as a bathroom for 50 per cent of the women. Municipal bathrooms were used by the members of the lower SES women and a negligible percentage of middle SES women .

#### **Latrine facilities :**

The open fields in the villages were used by the rural population for their nature's call. On a cumulative basis the various sanitation programmes conducted so far in the country reveals that only 2.73 per cent of rural population in India could be provided with adequate sanitary facilities till the end of 1991-92 (India, 1992). In tune with that only ten per cent of the surveyed women in rural areas had latrine facilities whereas none of the slum women had individual latrine. Among them 70 per cent had a modern flush type and the remaining used a borehole latrine.

Vacant fields in rural areas were preferred for defecation by 91, 80 and 65 per cent of lower, middle and

higher SES rural women respectively. The rented row houses had provision of common latrine and the families staying in these houses avoided open air defecation. Children below the age of ten years irrespective of the SES index defecated on the road side. This might be due to the availability of vacant space near their house. This shows their lack of awareness about the importance of using sanitary latrine for healthy living.

The absence of vacant areas near the slum compelled the women to utilize the common latrine which is in an insanitary condition. Good healthy habits were not practised by the children in the slum area; as a result the sides of the roads were used for defecation. The reasons for not having latrine is given in Table XIV.

TABLE XIV  
REASONS FOR ABSENCE OF LATRINE IN THE HOUSEHOLDS

Reasons	Percentage of women*							
	Rural N:475				Slum N:200			
	Lower N=235	Middle 163	Higher 77	Total 475	Lower 99	Middle 75	Higher 35	Total 200
Less affordable	66.0	62.0	10.4	46.1	68.7	64.6	11.4	45.7
Inadequate water supply	42.1	52.8	51.9	48.9	-	-	-	-
Availability of open space	37.9	41.7	6.5	28.7	-	-	-	-
Lack of space for latrine construction	36.1	47.9	16.9	33.6	100.0	100.0	100.0	100.0
Unhygienic	23.8	17.8	3.9	15.2	36.4	27.7	14.3	26.1
Superstitious belief	20.9	12.3	-	-	14.8	28.3	13.1	2.9

\*Multiple response

The high cost of installation of a sanitary latrine was the major hurdle for the women to construct a sanitary latrine in their own houses so they resorted to the use of the open fields for their nature's call. Lack of space refrained 36 per cent of low and 42 per cent of middle and seven per cent of higher SES rural women from constructing a sanitary latrine.

Provision of sanitary latrine requires minimum of two litres of water per person to flush alone (UNICEF Manual). Lack of adequate water supply was the reason cited by more than 40 per cent of women for not having a latrine in rural areas.

Swamy (1972) and Goudar (1973) point out that the houses in the slum are clustered without having adequate space. In accordance with the statement lack of space was the major inhibiting factor for not having individual latrine by the slum dwellers.

### **3. Civic amenities :**

Drainage and scavenging monitored by the Panchayat/Corporation were the civic amenities pertinent to this study. Yesudin (1988) affirms that these are the two important factors helping to maintain a healthy environment around the house. Scavenging means cleaning the public place, common latrine, drainage, removing and disposing the refuse. Lack of these facilities would create health

problems by way of water stagnation and accumulation of garbage and thereby spreading inherent diseases.

**Drainage system :**

Drainage system is responsible for removing the sullage, rain and storm water. Provision of proper drainage system would help to keep the area clean and render a hygienic atmosphere. While a part of Kovanur and Naickenpalayam villages and Kamarajapuram slum were provided with proper drainage system, Palanigoundenpudur, Mathampalayam and Saravanampatti villages and Gandhi nagar, Muthumariammanpuram slum were not provided with adequate drainage facility.

One source of insanitary conditions in rural areas was the drainage of waste water from bathing and cooking areas of dwellings over the katcha roads and lanes having inadequate slopes. The situation is further aggravated by the movement of carts and animals which results in the creation of portholes and ditches that get filled with stagnant water. The waste materials were dumped by the people into the drainage and thus paved the way for blocking the drainage. Seventy seven per cent of rural and 80 per cent of slum women without realising their faults blamed the authorities for the poor drainage system.

**Scavenging :**

Scavenging as a means of sanitation is totally dependent upon the Panchayat/Corporation sweepers. The

present type of scavenging covers sweeping the streets alone. Cleaning the drainage and removing accumulated refuse from the streets were not undertaken by them due to the lack of personnel.

When approached to elicit the reason the civil authorities expressed that more personnel for scavenging need to be appointed. But at the same time the authorities wanted the people residing in the respective areas should internalise their responsibility in keeping the surroundings clean by placing the waste materials in the dust bin and not throwing them indiscriminately.

As a part of the study instructions were given to the scavengers by the investigator on the proper mode of collecting the refuse from the dust bin and cleaning the drainage. As a result, the refuse collecting carts were taken around the streets daily in the morning to collect refuse and the women collected a day's waste in a polythene cover or plastic buckets and disposed in it the cart itself every morning.

#### **4. Solid waste disposal :**

Mathur (1993) brings forth that proper sanitary practices of disposing solid and liquid waste should be adopted by the people to have a clean and healthy environment. The type and quantity of solid waste that occurred daily and the method adopted for disposal by the selected women were studied.

Vegetable peelings, left over foods, packing materials and ash were the major solid wastes that occurred commonly both in rural and slum areas. Irrespective of whether it is a rural or slum area vegetable peelings were the significant solid waste in all selected families and left over foods were the solid wastes that occurred mainly with higher SES rural (23.8 per cent) and slum 18.0 per cent) women. None of the lower SES slum women had left over foods as waste.

In majority of 98 per cent of the selected women's houses the quantity of solid waste collected daily amounted to approximately 275 gm to 500 gm. The quantity of solid waste disposed had direct correlation with SES index. The higher SES women were accustomed to dispose a large quantity when compared to the lower strata.

The community dust bins provided by the authorities were utilized only by a meagre percentage of families for disposing solid waste. The high rise in population, closer proximity of residences and recent life style bring forth enormous waste materials. Inadequate and improper placement of dust bins were the complaints by the women for throwing the waste materials in the street. Indiscriminate throwing of waste outside and dumping into the drainage were the common practice of the rural and slum women. Higher the SES index, better was the method (using dust bins) practised for disposing the waste.

Problems faced in the disposal of solid waste :

The selected women have experienced numerous problems in disposing the solid waste

TABLE XV  
PROBLEMS EXPERIENCED IN SOLID WASTE DISPOSAL

Problem	Percentage of women							
	Rural N:525				Slum N:200			
	Lower N=235	Middle 165	Higher 125	Total 525	Lower 99	Middle 65	Higher 36	Total 200
Lack of community dust bin	74.4	55.8	22.4	56.2	73.8	69.2	47.2	67.5
Infrequent cleaning of streets	9.4	3.6	10.4	7.8	2	7.7	19.4	7.0
Inadequate dust bin	3.4	8.5	6.4	5.7	3	4.6	16.7	6.0
Careless removal of waste	2.6	9.7	14.4	7.6	19.2	12.3	11.1	15.5
Scattering of waste by wind	3.8	11.6	15.2	9.0	2	6.2	5.6	4.0
Scattering by rag pickers	1.3	3.6	11.2	4.4	-	-	-	-
Overflowing dust bins	-	1.8	14.4	4.0	-	-	-	-
No proper place to dispose waste	5.1	5.5	5.6	5.3	-	-	-	-

Absence of or inadequate number of community dust bins was the significant barrier for not practising safe solid waste disposal methods. Infrequent cleaning of streets, careless removal of waste, scattering of waste by wind and by rag pickers made the surrounding insanitary.

Lack of committment and realisation towards clean surroundings of the slum women were the reasons for their less comprehending power to note down the problems.

#### **5. Waste water disposal :**

Stagnant pools of waste water around the house could be noticed due to the absence of proper drainage. The back and front open yards of the houses were the areas utilized for cleaning vessels and washing clothes by the lower (85 per cent) and middle (75 per cent) SES rural women while their counterparts in the higher SES (69 per cent) cleaned the utensils in the kitchen and 85 per cent washed their clothes inside the bathroom.

Eighty five per cent and 68 per cent of lower SES slum women cleaned the vessels and washed clothes respectively in the front yard, because only 30 per cent of slum women had a back yard. Negligible proportion of the rural and slum women washed their clothes near the source of water supply.

Irrespective of the place of cleaning, washing or bathing, the question that looms up is whether provision is being made to allow water to percolate into the ground or is it effectively utilized for raising kitchen gardens. By either of these methods sullage water could be effectively disposed. Seventy seven per cent of lower SES rural women and 80 per cent of slum women tended to let out the sullage water into the exterior of the houses. Only 20 per cent of

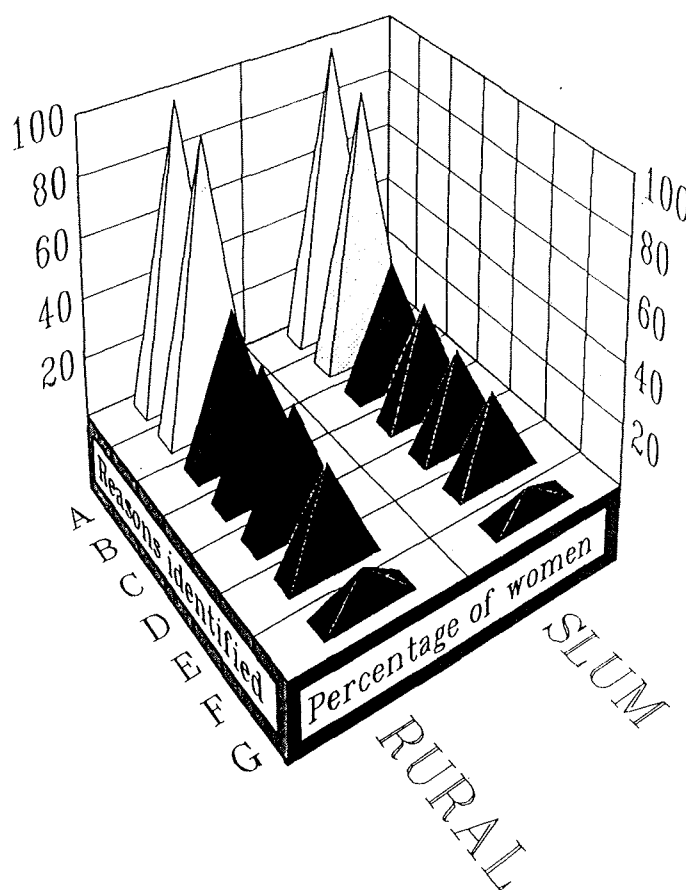
the rural and 14 per cent of the slum women enjoyed proper drainage to let out the sullage water. Ten per cent of the women who were in the higher SES had diverted the sullage water to their septic tank. Negligible per cent of women were observed to utilize the sullage water for raising a kitchen garden.

Irrespective of the SES index, breeding of mosquitoes and presence of foul smell were reported as a big menace due to stagnant pools of water. Only meagre proportion of the selected families realised the stagnation of water spoiled the aesthetic atmosphere of the area.

To assess the level of awareness on the relationship between health and hygienic practices, the women were asked to identify the unhygienic practices which leads to illhealth. Their reactions are given in Table XVI and Figure 6.

TABLE XVI  
REASONS IDENTIFIED FOR UNHEALTHY LIVING

Reason	Percentage of women	
	Rural N:525	Slum N:200
Not taking bath regularly	100	100
Patronizing street food vendors	96	92
Coughing/sneezing without covering mouth	49	42
Biting nails	41	38
Drinking polluted water	39	32
Defecating around the house	32	28
Not washing hand with soap after toileting	12	8



- A. Not taking bath regularly
- B. Patronizing street food vendors
- C. Coughing/Sneezing without covering mouth
- D. Biting nails
- E. Drinking polluted water
- F. Defecating around the house
- G. Not washing hand with soap after toileting

Figure 6. Reasons Identified for Unhealthy Living



The tabulation of scores indicated that only 12.6 per cent among the selected rural women and 8.3 per cent among the selected slum women could identify all the factors. In both areas higher the SES index better was the identification of hygienic practices. This calls for the intensive awareness programme to be implemented in selected areas.

### **C. Environmental hygiene as perceived by women**

The awareness of women on environmental hygiene concepts would have a positive effect on the hygienic condition of the women and environment. Therefore the knowledge of women on various environmental factors were analyzed and discussed.

#### **1. Concept of environment :**

The knowledge on the relationship of man with the general environment is very important to adjust with and to adapt to the change taking place in the environment. Table XVIII presents the meaning of environment as perceived by the selected women.

TABLE XVIII  
MEANING OF ENVIRONMENT

Meaning	Percentage of women							
	Rural				Slum			
	Lower N= 235	Middle 165	Higher 125	Total 525	Lower 99	Middle 65	Higher 36	Total 200
Living space (House and its surroundings)	34.9	39.9	22.4	30.7	62.6	7.7	13.9	36.0
Space around us	34.5	29.7	18.4	29.1	18.2	47.7	27.8	29.5
Air, water and land	16.2	17.0	16.8	16.8	12.1	13.8	22.2	14.5
Space and living things	14.0	17.8	20.0	16.6	7.1	26.2	16.7	15.0
Air, water, soil, plants and animals	0.4	1.2	15.2	2.2	-	3.2	8.3	2.6
Man's surrounding -natural, man made	-	3.6	7.2	2.6	-	1.6	11.1	2.5

More than 60 per cent of the slum women under lower SES category mentioned to the house and its surrounding constitute the environment. The responses received pertaining to the women's perception about environment highlighted the immediate living space as the one that constitutes the environment as indicated by 30.7 per cent of rural and 36 per cent of slum women. When SES level increased the perception about environment also improved. The complete meaning of environment as given by environmentalists was perceived only by a negligible percentage of rural (2.6 per cent) and slum (2.5 per cent) women.

**Need for clean environment :**

The need for keeping the environment in a clean manner was realised only by 45 per cent of rural and 30 per cent of slum women.

Table XIX depicts the need for keeping the environment clean as mentioned by the women.

TABLE XIX  
NEED FOR CLEAN ENVIRONMENT

Need	Percentage of women							
	Rural N:236				Slum N:59			
	Lower N= 71	Middle 74	Higher 81	Total 236	Lower 18	Middle 23	Higher 18	Total 59
Fosters happy living	37.7	18.4	21.0	26.9	67.2	46.8	30.4	53.4
Ensures healthy living	17.7	27.6	26.0	24.0	9.8	17.0	39.2	17.6
Improves neighbourhood	9.8	11.3	3.4	8.4	3.3	2.1	-	2.3
Helps to lead peaceful life	8.7	-	3.4	4.4	11.5	12.9	-	8.9
Brings concentration in work and studies	6.6	9.2	1.2	1.7	6.2	4.9	10.6	6.1
Provides mental peace	5.6	3.9	2.6	4.2	-	2.1	-	0.8
Gives fresh and clean air	4.4	13.2	21.5	12.3	-	4.3	13.0	3.8
Motivates creative thinking	3.8	2.6	2.6	3.1	-	2.1	-	0.8
Inculcates good habit among children	2.7	4.6	5.7	3.3	3.3	2.1	8.7	3.8
Develops good citizenship	1.1	9.2	4.2	4.6	-	-	8.7	1.5

Happy and healthy living were envisaged as primary outcomes of a clean environment. According to a majority of the (67 per cent) of lower SES slum women clean environment provides happy living. The other advantages realized from good environment were perceived only by a negligible percentage of women.

**Problems faced in the local environment :**

Accumulation of rubbish and stagnant pools of water as environmental problems took precedence over all other problems. Though not with much vehemence, poor housing, air and water pollution, lack of civic amenities and overcrowding were also reported as problems. Human excreta found around the house spoiling the environment- was cited by very few. This shows that they are not aware of the significant problems which affect hygiene and thereby health.

**2. Concept of environmental degradation :**

This aspect deals with the indicators of environmental degradation as pointed out by the women, reasons for degradation of immediate environment and global environment. Table XX shows the indicators of environmental degradation as mentioned by the selected women.

TABLE XX  
INDICATORS OF ENVIRONMENTAL DEGRADATION

	Percentage of women							
	Rural N:525				Slum N:200			
	Lower N=235	Middle 165	Higher 125	Total 525	Lower 99	Middle 65	Higher 36	Total 200
Prevalance of diseases	31.9	7.3	7.2	18.3	26.2	15.4	11.1	20.0
Smoke and bad smell around the place	17.1	15.2	8.0	14.3	29.3	6.3	8.3	18.0
Pollution of air	16.6	2.4	-	8.2	5.1	3.1	-	3.5
Congested living area	12.3	7.3	4.3	9.0	14.1	12.3	-	11.0
Pollution of water	11.6	3.6	-	5.9	8.1	4.6	5.6	6.5
Lack of rain	6.4	4.8	7.2	6.1	17.2	10.7	13.9	14.3
Unhygienic surroundings	5.1	4.8	8.8	5.9	-	7.7	-	2.9
Pollution of air, water and soil	-	26.1	40.8	17.6	-	40.0	52.8	22.5
Noisy surrounding	-	15.8	9.6	7.2	-	-	8.3	1.5
Decrease in number of trees and animals	-	12.7	13.6	7.2	-	-	-	-

Women in the higher SES (40.8 per cent rural and 52.8 per cent slum) pointed out that pollution of air, water and soil were the major indicator of environmental degradation. These data throw light on the fact that both rural and slum women are totally ignorant of all the other relative factors like unhygienic surroundings, congested living area, lack of rain, decrease in number of trees and

animals and noisy surrounding, that lead to consequential environmental degradation.

Prevalance of disease as one of the indicators of the environmental degradation could be identified by 32 per cent of the slum women in the lower SES order. This may be attributed to their earlier experience; whenever the environmental was polluted heavily higher was the incidence of sickness due to communicable diseases and epidemics.

Table XXI presents the reasons for degradation of immediate environment.

TABLE XXI  
REASONS FOR DEGRADATION OF IMMEDIATE ENVIRONMENT

Reasons	Percentage of women*							
	Rural				Slum			
	Lower N=235	Middle 165	Higher 125	Total 525	Lower 99	Middle 65	Higher 36	Total 200
Irregular scavenging	57.9	15.2	9.6	33.0	38.3	33.8	22.2	34.0
Lack of proper drainage	16.6	7.3	10.4	12.2	13.1	23.1	19.4	17.5
Absence of dust bins	7.7	12.7	14.4	10.0	13.1	13.8	16.7	13.6
Improper method of waste disposal	4.3	9.1	3.2	5.5	6.1	6.2	5.5	6.0
Inadequate water facility	3.8	13.9	9.6	8.4	-	-	-	-
Lack of sanitary latrine	2.1	12.1	12.0	7.6	5.1	3.1	8.3	-
Dumping waste in the drainage	1.7	10.9	7.2	5.9	8.1	7.7	5.6	7.5
Unaware of the importance of latrine	1.7	3.0	3.2	2.5	-	-	-	-
Defecating around the house	0.9	3.0	14.1	4.8	5.1	9.2	8.3	7.0
Reckless throwing of waste into the exterior	-	7.3	11.2	5.0	11.1	4.6	13.9	9.6
Smoke from kitchen	-	3.4	4.8	1.6	3.4	-	-	-
Unhealthy practices of people	-	1.2	8.2	1.1	-	-	-	-
Smoking (cigarettes)	-	-	2.4	-	0.8	-	-	-

\*Multiple response

Irregular scavenging, lack of proper drainage and dust bins, reckless throwing of waste into the exterior environment were cited as major reasons for degradation of their immediate environment. While open defecation around the house was not at all realized by the lower and middle SES women, it was significantly noted by the higher SES women. Nearly 60 per cent of both rural and slum women were ignorant of the factors that degraded their immediate environment. In general the SES level did not have any impact on the awareness of reasons for environmental degradation. These data clearly bring forth that unless behavioural changes pertaining to environmental protection are brought with forcible effort, the environment will continue to degrade and become worse.

Table XXII shows the reasons for environmental degradation at the global level as stated by the selected women.

TABLE XXII  
REASONS FOR ENVIRONMENTAL DEGRADATION AT GLOBAL LEVEL

Reasons	Percentage of women							
	Rural* N:278				Slum* N:72			
	Lower N= 69	Middle 9	Higher 117	Total 278	Lower 23	Middle 23	Higher 26	Total 72
Inefficient government	36.2	29.3	7.7	21.9	26.2	8.7	5.6	12.2
Ignorance	21.7	10.9	15.4	15.5	13.0	17.4	19.4	17.1
Population explosion	14.5	13.0	12.0	12.0	-	2.7	13.9	8.6
Poverty	7.2	4.3	5.8	5.8	4.3	17.4	8.3	9.8
Deforestation	5.8	13.0	13.0	10.8	8.7	8.7	11.1	9.8
Corruption at all levels	5.8	8.7	8.5	7.9	21.7	4.3	2.8	8.5
Illiteracy	2.9	4.3	8.6	8.7	8.7	13.0	11.1	11.0
Use of more land for house construction	2.9	8.7	11.1	8.2	17.4	8.7	5.6	1.8
Leniency in enforcing environmental protection laws	2.9	3.3	7.7	5.0	-	-	5.6	2.4
Migration from rural to urban	-	2.2	2.5	1.8	-	8.7	8.3	6.1
Rapid industrialisation	-	-	1.7	0.7	-	-	2.8	1.2
Urbanisation	-	-	0.9	0.4	-	-	-	-
Haphazard growth of slums	-	-	1.7	0.7	-	-	-	-
Increase in use of automobiles	-	2.2	2.6	1.8	-	4.3	5.6	3.7
Development of Science and technology	-	-	1.7	0.7	-	-	-	-

\*Response only from 52 per cent of rural and 36 per cent of slum women.

About 15 major reasons emerged from the enquiry made to find out the reasons for environmental degradation in general. While ignorance and population explosion were the major reasons pointed out as contributing factors, illiteracy, poverty and corruption also received due mention. The government policies for improving the environmental condition was blamed by 21.9 per cent of rural and 12.2 per cent of slum women. The women in the higher SES identified more reasons for environmental degradation than their counterparts. Women in the lower SES level both in the rural and slum areas could assimilate lesser reasons when compared to the other section of women. This signifies the need for environmental education for them to get better equipped on various facets of environment.

The impact of environmental degradation to the society in general could be perceived by 29 per cent of both rural and slum women. Acute and chronic illness and the absence of rain fall were the two factors identified with the effect of environmental degradation. The other consequences such as decreased agricultural production, extinction of animals and plants, depleted resources, changed global condition and soil erosion were not comprehended by the women which points out the absolute absence of awareness on these issues.

### 3. Role of individuals in protecting environment :

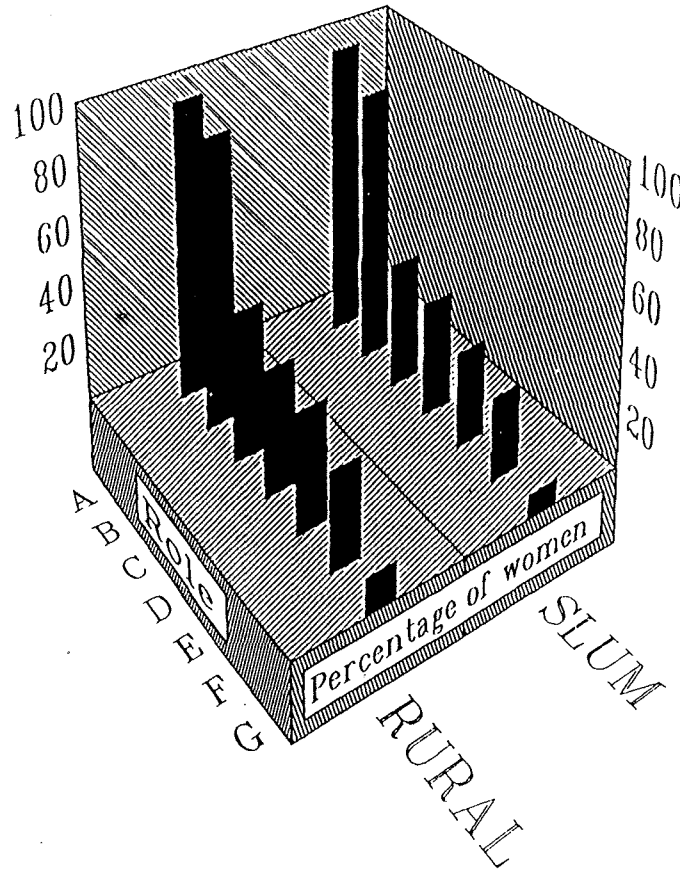
Only 20 per cent of the selected rural and 18 per cent of slum women have realized the responsibilities of individuals in protecting the environment (Table XXIII and Figure 7).

TABLE XXIII  
INDIVIDUALS' ROLE IN PROTECTING THE ENVIRONMENT

Role	Percentage of women*	
	Rural N:105	Slum N:36
Keeping the interior and exterior of the house clean	36	28
Disposing waste properly	33	22
Inculcating good health habits in children	32	22
Following hygienic practices	32	28
Using sanitary latrine	29	18
Participating actively in government's environmental programmes	12	9
Motivating others to protect environment	8	4
	26.0	20.1

\*Multiple response

The rural women were more conscious about the individual's responsibility in protecting the environment than slum women. The major issues put forth were good



- A. Keeping the interior and exterior of the house clean
- B. Disposing waste properly
- C. Inculcating good health habits in Children
- D. Following hygienic practices
- E. Using sanitary latrine
- F. Participating actively in Government's environmental programmes
- G. Motivating others to protect environment

Figure 7. Individual's Role in Protecting the Environment



Only six per cent of rural and two per cent of slum women could indicate all the seven factors. Higher the SES index higher was the realization of individual's role in protecting environment.

#### 4. Assistance required to improve environmental hygiene :

Table XXV explains the assistance required by the women to keep their near environment in an orderly manner.

TABLE XXV  
ASSISTANCE REQUIRED TO KEEP THE NEAR ENVIRONMENT CLEAN

Factors	Percentage of women*							
	Rural N:525				Slum N:200			
	Lower N=235	Middle 165	Higher 125	Total 525	Lower 99	Middle 65	Higher 36	Total 200
Water facility in community latrines	37.0	33.3	38.4	36.2	42.4	32.3	27.8	27.5
Construction of more common latrines	34.9	41.2	21.8	33.5	20.2	12.3	22.2	23.5
Collection of household waste by the civic authorities	20.9	55.2	86.4	47.2	3.0	32.3	66.6	24.0
Provision of dust bins	20.0	35.2	52.0	32.4	18.1	29.2	41.7	26.0
Construction of proper common drainage	17.9	32.1	88.0	39.0	9.1	33.9	63.9	27.0
Regular removal of waste from the dust bin and streets	16.2	40.0	84.0	39.8	13.1	38.5	58.3	29.5
Regular cleaning of common drainage	14.9	52.1	87.2	43.8	3.0	32.3	66.6	17.5
Regular scavenging	8.9	38.8	67.2	32.2	2.0	29.2	61.1	22.5
Subsidy to construct individual sanitary latrine	6.0	12.1	88.8	27.6	2.0	4.6	47.2	10.5
Proper dissemination of information on better hygienic practices	2.1	4.9	46.4	13.5	-	2.7	38.9	7.5

\*Multiple response

Women of lower SES group expressed their need for more common latrines in their respective places. The existing common latrines required provision of adequate water supply for effective utilization. Collection of household waste by the civic authorities and regular cleaning of common drainage and construction of proper drainage were requested by most of the middle SES women from both rural and slum areas. More than 80 percentage of higher SES women of the rural areas needed technical and financial help to construct individual sanitary latrine. Construction of proper drainage by the government in their areas was another proposition. Women who belonged to higher SES index of both rural and slum areas due to their exposure were more knowledgeable than the lower and middle SES women.

**Measures to be adopted by the government to tackle environmental problems :**

Table XXVI presents the suggestions given by the selected women to the government to tackle environmental problems.

TABLE XXVI  
MEASURES TO BE ADOPTED BY THE GOVERNMENT TO TACKLE  
ENVIRONMENTAL PROBLEMS

Measures	Percentage of women*							
	Rural				Slum			
	Lower	Middle	Higher	Total	Lower	Middle	Higher	Total
	N=235	165	125	525	99	65	36	200
Alleviating poverty	64.8	60.9	64.0	63.4	65.0	75.1	76.0	70.0
Stabilizing population	44.8	51.0	90.1	59.4	47.2	32.0	72.0	47.0
Improving housing conditions	44.0	32.0	24.0	41.1	57.3	73.0	89.0	68.0
Providing adequate civic amenities, drainage and scavenging	40.1	51.2	60.3	48.2	47.0	33.0	55.0	44.0
Intensive awareness programmes	12.6	37.0	51.0	29.5	16.0	42.0	50.0	30.5
Strict enforcement of environment protection laws	10.0	20.0	35.0	19.2	13.0	45.0	60.3	32.0
Reforesting the earth	1.5	15.0	56.7	18.9	9.4	28.0	65.0	25.0
Recycling waste	1.5	12.6	53.0	17.1	8.2	22.0	69.0	23.5
Motivating the use of renewable energy sources	1.5	8.2	51.0	15.4	-	4.0	19.0	5.0

\*Multiple response

More than 40 per cent of both the rural and slum women belonging to lower SES index suggested that the government should take active steps to stabilize population, alleviate poverty, improve housing and provide adequate civic amenities like proper drainage and scavenging.

While above 50 per cent of middle SES rural women suggested provision of adequate civic amenities and formulation of intensive awareness programmes, more than 40 per cent of their counter parts in the slum areas put forth strict enforcement of the environmental protection laws and implementation of intensive awareness programmes as measures to be adopted by the government.

The higher SES women irrespective of their area of residence were able to suggest more subtle but concrete ideas to the government to tackle environmental problems. The major suggestions presented were enforcement of environmental protection laws, designing awareness programmes, reforestation, waste recycling and motivating use of renewable energy sources. It is evident therefore that feeling for environmental cleanliness is not a latent characteristic in women but it is because no measures have been taken to tap their potentials until now and take advantage of the situation.

#### **Methods to motivate people to protect the environment :**

Table XXVII shows the methods to be followed by the government to motivate people to protect environment from degradation.

TABLE XXVII  
METHODS TO MOTIVATE PEOPLE TO PROTECT THE ENVIRONMENT

Methods	Percentage of families							
	Rural				Slum			
	Lower N=235	Middle 165	Higher 125	Total 525	Lower 99	Middle 65	Higher 36	Total 200
Intensive work by health visitors	15.1	10.3	7.2	11.8	6.1	6.1	5.6	6.0
Projection of appropriate films	14.6	10.9	9.6	12.2	11.8	10.9	11.0	10.5
Mass education programmes to remove illiteracy	14.0	9.1	8.0	11.0	17.2	9.2	13.9	14.0
Wide use of mass media	12.4	15.8	21.6	16.0	9.1	24.6	25.0	17.0
Individual contact by government agencies	10.7	7.3	7.2	8.8	8.1	9.2	5.6	8.0
Severe punishment for the evaders of rules	8.9	13.3	16.0	12.0	13.1	12.3	14.9	13.0
Nation wide campaigns	8.9	5.6	7.2	7.2	3.0	7.7	8.3	5.5
Rewards to the participants of governmental programmes	7.2	13.3	8.3	9.5	14.1	9.2	5.6	11.0
Strict rules and regulation	5.6	10.3	9.6	8.0	10.1	7.7	8.3	9.0
Periodical meetings	3.4	4.2	4.8	4.0	9.1	3.1	2.8	6.0

Wide use of mass media, screening films and intensive work by health visitors were suggested by rural women to motivate people to realize their civic responsibilities. Apart from these the slum women also suggested enforcing punishment for evaders of environmental

rules. It was also healthy to note that comparatively more of slum women than rural women suggested removal of illiteracy as a measure to motivate people to protect the environment. Better methods were suggested by the women in the higher SES order.

#### Sources of information on environmental issues :

Table XXVIII presents the sources of information on various environmental issues.

TABLE XXVIII  
SOURCES OF INFORMATION ON ENVIRONMENTAL ISSUES

Media sources	Percentage of women							
	Rural N:525				Slum N:200			
	Lower N=235	Middle 165	Higher 125	Total 525	Lower 99	Middle 65	Higher 36	Total 200
Films	63.8	52.7	9.6	47.4	81.8	21.5	33.3	53.5
Radio	22.1	18.0	30.4	23.1	14.2	49.2	36.1	29.5
Television	8.1	13.3	40.0	17.3	4.0	13.9	25.0	11.0
Newspapers and magazines	6.0	15.2	20.0	12.2	-	15.2	5.6	6.0

The survey revealed that films were a major source of information for the lower SES women (both rural and slum) and middle SES women (rural). While radio presented a major information source for middle and higher SES slum women, the rural higher SES women reported television as the major

source from which they get education about environmental issues. Any education programme intended therefore should take into consideration all these forms of mass media communication.

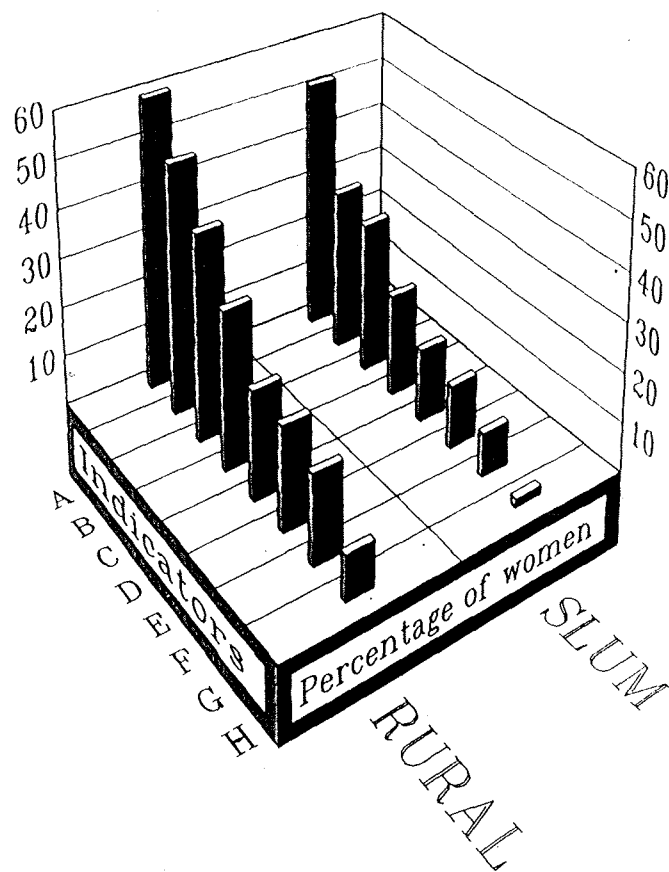
### Suggestions to protect environment :

The women were asked to suggest ways by which the environment could be protected. Suggestions to protect the environment were rendered only by 40 per cent of rural and 36 per cent of slum women. Table XXIX and Figure 8 present the data.

TABLE XXIX  
SUGGESTIONS TO PROTECT ENVIRONMENT

Suggestions	Percentage of women*	
	Rural N:210	Slum N:72
Creating awareness among different sections of the people	60	52
Participation of public	51	53
Following proper waste disposal methods	42	31
Understanding the importance of clean environment	32	21
Understanding the problems of environment	22	15
Keeping the surroundings clean	21	13
Planting more trees	18	9
Individual realization	9	2

\* Multiple response



- A. Creating awareness among different sections of the people
- B. Involvement of public
- C. Following proper waste disposal methods
- D. Understanding the importance of clean environment
- E. Understanding the problems of environment
- F. Keeping the surroundings clean
- G. Planting more trees
- H. Individual realization

Figure 8. Indicators Emerged for Preserving the Environment

Creating general awareness among people, motivating public involvement, adopting proper disposal methods and understanding the importance of clean environment were the major suggestions put forth by a majority of rural and slum women to protect the near environment.

#### **D. Conceptualisation of women on environmental hygiene**

Conceptualisation of women on environmental hygiene was studied using rating scale administered both before and after the environmental education programme. The women who participated in 80 per cent of the educational programmes alone were considered for this phase of the study (Rural (205 women) 36 per cent and slum (66 women) 33 per cent). The extent of awareness and level of practising were analysed for the following aspects :

1. Hygienic practices
2. Interior cleanliness
3. Exterior cleanliness
4. Effect of poor environmental condition
5. Measures to enhance the environmental hygiene
6. Awareness on the environmental programmes.

##### **1. Hygienic practices :**

Though there are a number of hygienic practices that should be adhered to lead a healthy life, it has been confined to common eight practices in this study. Each

practice is given three categories of responses as -not aware, aware and not practising and aware and practising.

Table XXX presents the awareness imbibed by selected women on the importance of hygienic practices.

TABLE XXX  
AWARENESS ON THE HYGIENIC PRACTICES

Criteria	Percentage of women					
	Rural N:205			Slum N:66		
	Not aware	Aware and not practising	Aware and practising	Not aware	Aware and not practising	Aware and practising
Washing hands with soap after toileting	12.2	76.1	11.7	6.1	83.3	10.6
Proper toilet practice	11.7	83.4	4.9	24.5	7.5	68.0
Combing hair daily	6.8	36.1	57.1	9.1	45.4	45.5
Bathing daily	5.8	40.8	53.4	3.6	37.3	59.1
Drinking safe water	5.8	72.1	22.1	12.1	75.8	12.1
Brushing teeth daily	3.4	9.3	87.3	10.6	6.1	83.3
Washing hands before meals	3.4	22.5	74.1	9.1	21.9	69.0
Cutting the nails	1.5	29.8	68.7	4.5	33.4	62.1
Average	6.3	46.3	47.4	10.0	38.9	51.1

Considerable improvement could be noted on the awareness of women with regard to hygienic practices. More women realised the importance of washing hands with soap

after toileting (76.1 per cent rural; 83.3 per cent slum), drinking safe water (82.1 per cent rural; 75.8 per cent slum) and proper toilet practice (83.4 per cent rural; 7.5 per cent slum). Eventhough the awareness has increased, the percentage of women practising was very low with regard to proper toilet practice (4.9 per cent) especially among rural women. Further analysis brings forth the reasons for not adopting certain practices. High cost of installing a sanitary latrine refrained many of them to resort to the old insanitary practices. High cost of fuel prevented them to boil water for drinking purpose.

In general a low percentage of women were found to be practising when compare to the awareness on the specific concept because practising requires a complete attitudinal change of a person.

The women who were aware and practising were analysed to findout the factors contributing for better practising. Age, education, occupation and income were the variables tested against the practice of women towards hygienic practices (Table XXXI).

TABLE XXXI  
 SELECTED VARIABLES VERSUS AWARENESS ON THE HYGIENIC  
 PRACTICES

Variable	Chi-square				Inference
	Rural		Slum		
	$\chi^2_o$	$\chi^2_e$	$\chi^2_o$	$\chi^2_e$	
Age	343.26	40.10	115.50	45.00	Dependent
Education	636.33	48.60	194.00	45.00	Dependent
Occupation	271.86	48.60	226.75	45.00	Dependent
Income	297.76	48.60	228.38	45.00	Dependent

The statistical interpretations indicated that age, educational level and occupational status of women and family income played a significant role in increasing the awareness and motivating them to follow hygienic practices. Age and educational level were the parameters for rural women in acquiring knowledge, but occupation and higher income motivated slum women.

## 2. Interior cleanliness :

Awareness of the selected women on the cleanliness of interior environment is given in Table XXXII.

TABLE XXXII  
CLEANLINESS OF INTERIOR ENVIRONMENT

Condition	Percentage of women					
	Rural N:205			Slum N:66		
	Not Aware	Aware and not Practising	Aware and Practising	Not aware	Aware and not Practising	Aware and Practising
Cleanliness of						
-Bathroom	34.6	43.7	21.7	32.1	63.9	14.0
-Latrine	21.4	69.3	9.3	12.1	87.9	-
-Ceiling	16.6	42.4	41.0	15.2	15.1	69.7
-Doors and windows	14.6	43.0	42.4	28.5	35.0	36.5
-Walls and floors	11.7	46.8	41.5	9.1	42.4	48.5
-Kitchen	4.9	40.2	54.9	21.2	16.2	62.6
-Neat arrangement of clothes	18.1	47.7	34.2	50.0	25.8	24.2
-Arrangement of things in the kitchen	16.6	20.8	62.6	15.1	44.7	40.2
Average	17.3	44.3	38.4	32.4	30.7	36.9

On an average 17.3 per cent of rural and 32.4 per cent of slum women were unaware of the significance of interior cleanliness towards healthy living even after environmental education programme. Percentage of awareness was more among rural women than slum women. Eighty three percentage of rural and sixty eight per cent of slum women

had internalised the need for keeping the interior environment clean. But among them only 38 per cent of rural women and 37 per cent of slum women were practising regularly. The kind of job (daily wage earning) compelled these women to spend more time outside their homes. Only 9.3 per cent of rural women had individual latrines. The cleanliness of the individual latrines in the slum could not be studied owing to its absence in their houses.

Table XXXIII shows the relationship of selected variables with the awareness towards keeping the interior clean.

TABLE XXXIII  
SELECTED VARIABLES VERSUS AWARENESS OF  
INTERIOR CLEANLINESS

Variable	Chi-square				Inference
	Rural		Slum		
	$\chi^2_o$	$\chi^2_e$	$\chi^2_o$	$\chi^2_e$	
Age	163.61	45.00*	34.71	40.10	Not dependent
Education	320.43	54.60	104.00	40.10	Dependent
Occupation	185.21	54.60	59.71	40.10	Dependent
Income	203.93	54.60	73.43	35.20	Dependent

\* For rural - Dependent

Education, income and occupational status of women had a significant effect on the acquirement of knowledge by both rural and slum women on interior cleanliness. The 'Chi-square' values point out that there is no significant

effect of age on the acquisition of knowledge on interior cleanliness among slum women. The women at the younger age have been absorbed for jobs which consume more time, give less leisure for their household chores. Attraction of mass media such as films, television and cable network were other reasons for their negligence towards keeping the interior clean.

### 3. Cleanliness of exterior environment :

The awareness and level of practising of selected women with regard to cleanliness of exterior environment are shown in Table XXXIV.

TABLE XXXIV  
CLEANLINESS OF EXTERIOR ENVIRONMENT

Condition	Percentage of women					
	Rural N:205			Slum N:66		
	Not aware	Aware and not practising	Aware and practising	Not aware	Aware and not practising	Aware and practising
Human excreta found around the house	21.4	65.4	13.2	9.8	87.2	3.0
Washing area	17.1	36.1	46.8	13.6	70.0	16.4
Garbage disposal	13.2	26.4	60.4	13.6	82.0	4.4
Diverting waste water to plants	12.2	73.6	14.2	24.5	75.5	-
Waste water disposal	11.7	48.2	40.1	10.6	62.4	27.0
Exterior wall	9.8	60.0	30.2	14.7	21.2	64.1
Space around the house	7.8	44.0	48.2	15.1	42.5	42.4
Average	13.3	50.1	36.6	14.6	63.0	22.4

The education imparted had an impact that 87 per cent of rural and 85 per cent of slum women learnt better methods of keeping the surroundings clean. Only 36 per cent of rural and 22 per cent of slum women adopted these methods in their daily life. The availability of civic amenities such as drainage, man power to clean the area, absence of dust bin and the attitude of the neighbouring households determine the cleanliness of the exterior environment. It becomes more of public concern than private matter.

Table XXXV presents the relationship between selected variables and their awareness of cleanliness of exterior environment.

TABLE XXXV  
SELECTED VARIABLES VERSUS AWARENESS ON EXTERIOR  
CLEANLINESS

Variable	Chi-square				Inference
	Rural		Slum		
	$\chi^2_o$	$\chi^2_e$	$\chi^2_o$	$\chi^2_e$	
Age	199.06	40.10	90.00	35.20	Dependent
Education	403.00	48.60	140.00	35.20	Dependent
Occupation	165.07	48.60	97.00	35.20	Dependent
Income	186.93	48.60	145.00	35.20	Dependent

As per the statistical calculation education and age top the list in influencing rural women to adopt improve environmental concepts while it was the reverse with the slum women where income of the family contributed more towards their better understanding and acceptance. The occupational status and age of the women, though were not significant influences, but effected changes in the adoption of environmental concepts.

#### **4. Effect of poor environmental condition :**

The awareness of the selected women on the effect of poor environmental condition is shown in Table XXXVI.

TABLE XXXVI  
 AWARENESS ON THE EFFECT OF POOR ENVIRONMENTAL CONDITION

Effect	Percentage of women					
	Rural N:205			Slum N:66		
	Not aware	Partially aware	Fully aware	Not aware	Partially aware	Fully aware
Overpopulation degrades environment	19.5	11.2	69.3	16.7	21.2	62.1
Washing clothes near water sources pollutes the water	19.5	39.5	41.0	21.2	19.7	59.1
Soil erosion leads to flood and draught	17.6	13.7	68.7	21.2	16.7	62.1
Waste disposal Vs Environmental degradation	12.6	29.3	58.1	7.6	16.7	75.7
Personal hygiene Vs diseases	11.2	15.6	73.2	15.2	19.7	65.1
Deforestation leads to soil erosion	11.2	12.7	76.1	13.6	19.7	66.7
Sanitation Vs Health	9.8	40.0	50.2	9.1	15.2	75.7
Open defecation leads to water and soil pollution	9.8	31.7	58.5	12.1	9.1	78.8
Drinking water from lakes and ponds leads to health problems	7.8	15.6	76.6	19.7	22.7	57.6
Deforestation affects rain fall	5.9	20.5	73.6	12.1	30.3	57.6
Waste dumped around the house leads to health problem	5.9	12.6	81.5	7.6	16.7	75.7
Excessive noise Vs health	10.2	20.0	69.8	30.2	10.6	59.1
Average	11.8	21.8	66.4	15.5	8.2	66.3

Even with the commendable efforts 11.8 per cent of rural and 15.5 per cent of slum women were not aware of

various environmental problems. More than 65 per cent of both rural and slum women were aware of various environmental problems. The factors that are associated with their daily life received highest response.

Table XXXVII shows the relationship between the selected variables and the awareness on the effect of environmental problems.

TABLE XXXVII  
SELECTED VARIABLES VERSUS AWARENESS ON THE EFFECT OF  
POOR ENVIRONMENTAL CONDITION

Variable	Chi-square				Inference
	Rural		Slum		
	$\chi^2_{-o}$	$\chi^2_e$	$\chi^2_o$	$\chi^2_e$	
Age	244.91	64.20	67.10	64.20	Dependent
Education	751.81	77.94	188.50	64.20	Dependent
Occupation	226.78	77.94	191.45	64.20	Dependent
Income	239.00	77.94	123.45	64.20	Dependent

The statistical interpretation proved that the educational level of the rural women had a strong influence on their awareness about the effect of poor environmental condition. The women at their younger age were more sensitized to the environmental issues compared to their

counterparts of older age. Occupational status and educational level influenced slum women more than the family income or age of the women.

#### 5. Measures to enhance the environmental hygiene :

Table XXXVIII presents the awareness of selected women on the measures to enhance the environmental hygiene.

TABLE XXXVIII

#### AWARENESS ON THE MEASURES TO ENHANCE THE ENVIRONMENTAL HYGIENE

Measures	Percentage of women					
	Rural N:205			Slum N:66		
	Not aware	Partially aware	Fully aware	Not aware	Partially aware	Fully aware
Solar cooker to avoid deforestation	17.2	44.2	38.5	10.6	74.1	15.3
Biogas plants to prevent pollution	13.2	38.6	48.2	15.3	60.2	24.5
Soak pit for hygienic disposal of waste water	13.2	48.2	38.6	13.6	61.9	24.5
Hand pump for safe drinking water	12.2	7.8	80.	10.6	24.5	64.9
Drinking boiled water to prevent water borne disease	11.2	11.2	77.6	4.5	27.5	68.0
Kitchen garden for safe disposal of waste water	11.2	22.0	66.8	12.1	51.8	36.1
Manure pit for solid waste disposal	8.9	44.2	46.9	12.1	51.8	36.1
Sanitary latrine for excreta disposal	8.9	5.7	85.4	6.1	34.8	59.1
Efficient chulah to improve domestic environment	4.4	7.8	87.8	3.0	18.8	78.8
Tree planting for rain, cutdown pollution, protect soil and get biomass	2.4	20.0	77.6	10.6	53.3	36.1
Average	10.2	25.0	64.8	9.9	45.8	44.3

The education programme conducted helped more percentage of rural women (64.8 per cent) to be aware of various measures to enhance the environmental hygiene than slum women (44.3 per cent). Eighty four per cent of the slum women reported that they were unable to comprehend the relationship between the use of solar cooker and enhancing environmental hygiene. The use of efficient smokeless chulah to bring cleanliness to the domestic environment attracted the attention of the maximum number of women as they faced numerous problems in the kitchen with traditional chulah.

Table XXXIX shows the relationship of selected variables with the awareness on the measures to enhance the environmental hygiene.

TABLE XXXIX  
SELECTED VARIABLES VERSUS AWARENESS ON THE MEASURES TO  
ENHANCE THE ENVIRONMENTAL HYGIENE

Variable	Chi-square				Inference
	Rural		Slum		
	$\chi^2_o$	$\chi^2_e$	$\chi^2_o$	$\chi^2_e$	
Age	482.30	54.60	104.14	54.60	Dependent
Education	965.07	66.34	198.43	54.60	Dependent
Occupation	231.50	66.34	164.17	54.60	Dependent
Income	318.27	66.34	182.14	54.60	Dependent

Education seems to be the motivating factor to bring an awakening among women. The education attained by them kindled their interest to get more information by reading books, which results in practising and adopting the measures to enhance the environment.

#### 6. Awareness on the environmental programmes :

The programmes related to improving the environment, operating in the country were explained to the women. The awareness with regard to this aspect is discussed in Table XL.

TABLE XL  
AWARENESS ON ENVIRONMENTAL PROGRAMMES

Programmes	Percentage of women					
	Rural N:205			Slum N:66		
	Not aware	Partially aware	Fully aware	Not aware	Partially aware	Fully aware
Rural Landless Employee Guarantee Programme (RLEGP)	38.6	30.2	31.2	51.5	37.3	12.1
National Rural Employment Programme (NREP)	31.2	30.2	38.6	45.5	37.7	16.8
Intensive Sanitary Programme	24.9	36.5	38.6	24.5	37.56	37.6
Minimum Needs Programme	24.9	31.2	43.9	15.1	28.8	56.1
Integrated Rural Development	18.6	21.0	60.4	40.5	45.5	13.6
Improved Chulah Programme	17.1	14.6	68.3	10.6	12.1	77.3
Social Forestry	3.9	11.2	84.9	-	40.9	59.1
Mass Literacy Programme	-	6.1	93.9	-	-	100.0
Family Planning	-	3.9	96.1	-	3.0	97.0
Average	17.7	20.5	61.8	20.9	27.0	52.1

Eighty per cent of the rural women had equipped themselves above the Social Forestry, Mass Literacy, Family Planning Programmes. While 60 per cent of them had acquired knowledge about Integrated Rural Development Programme and Improved Chulah Programme., less than 38 per cent comprehended the NREP and RLEGP programmes even after the education programme. This may be attributed to the lack of publicity and the cumbersome of the operation procedure. More than 90 per cent of the rural women were fully aware of the programmes namely Family Planning and Mass Literacy Programmes. All the slum women were aware of Mass Literacy programme. The publicity given to these programmes through radio, television and print media and the incentives given may be the reasons for highest number of women being aware of these programmes. Even then certain programmes though existing fail to attract the attention of women.

Table XLI presents the relationship of selected variables with the awareness on environmental programmes.

TABLE XLI  
SELECTED VARIABLES VERSUS AWARENESS ON ENVIRONMENTAL PROGRAMMES

Variable	Chi-square				Inference
	Rural		Slum		
	$\chi^2_o$	$\chi^2_e$	$\chi^2_o$	$\chi^2_e$	
Age	491.42	49.80	184.25	49.80	Dependent
Education	880.60	61.70	291.50	49.80	Dependent
Occupation	295.56	61.70	294.75	49.80	Dependent
Income	437.96	61.70	270.50	49.80	Dependent

The application of 'Chi-square test reveals that education played a more dominant role among rural women than slum women to improve the awareness on environmental programmes. Education and occupation equally influenced slum women to know more about environmental programmes. next to education, age had influence upon the knowledge of rural women. Age comes last in influencing slum women among the four selected variables.

Awareness of rural and slum women on various environmental concepts - hygienic practices, cleanliness of interior and exterior, effect of poor environmental condition, measures to enhance the environmental hygiene and various governmental programmes is shown in Figure 9.

#### **Methods preferred by women to create awareness on environmental hygiene :**

Several motivational methods have been used to educate the women. In order to decide on the best methods for future education programme for a specific theme, women were asked to rank the methods adopted in the education programme in the order of preference. The methods to impart the personal hygiene concept as preferred by the women are given in the Table XLII.

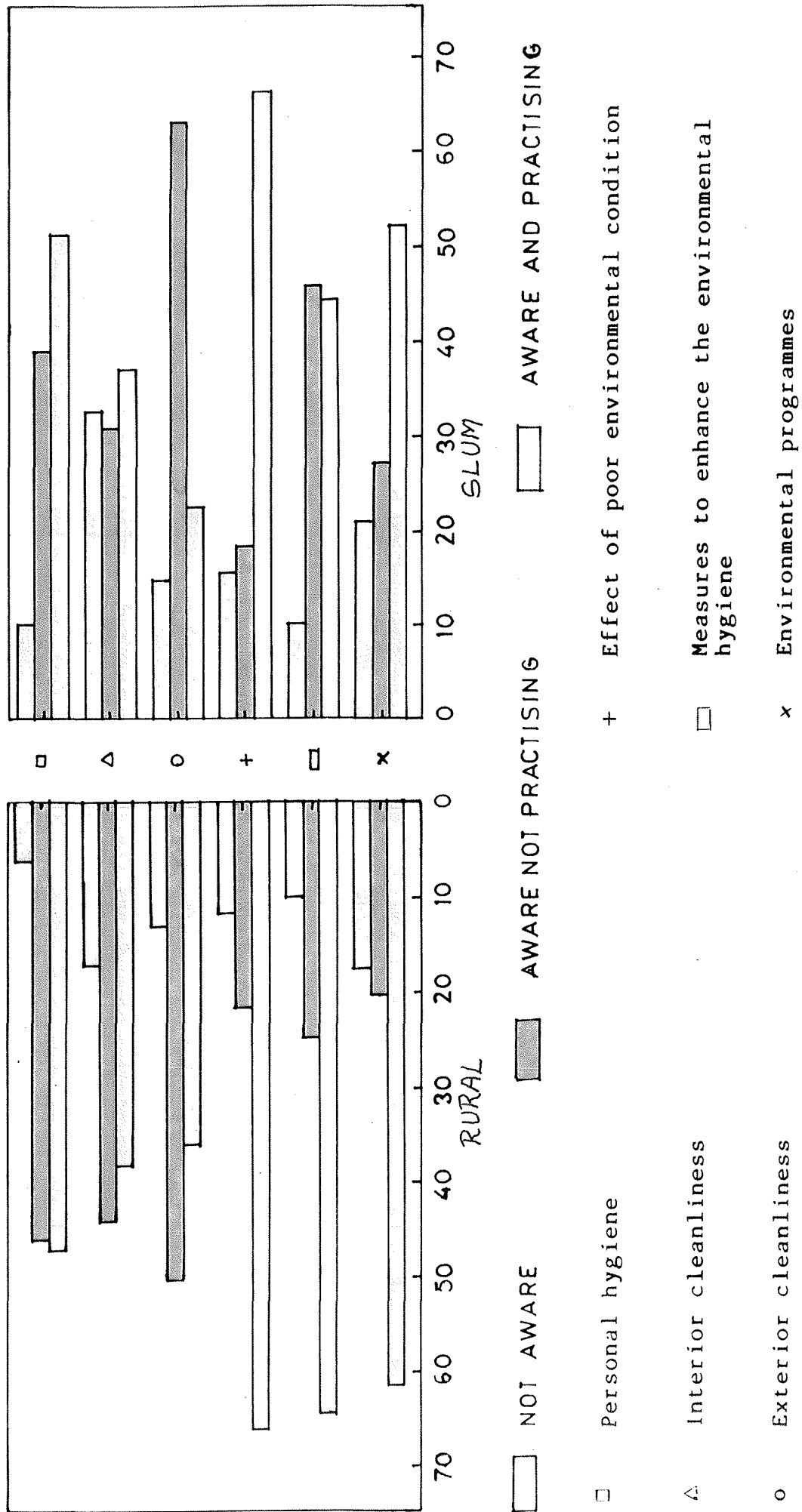


Figure.9. AWARENESS OF WOMEN ON ENVIRONMENTAL CONCEPTS

TABLE XLII

## METHODS PREFERRED BY THE WOMEN TO IMPART THE PERSONAL HYGIENE CONCEPTS

Methods	Percentage of women*					
	Rural N:205			Slum N:66		
	Most preferred	Moderately preferred	Least preferred	Most preferred	Moderately preferred	Least Preferred
Home visit	76	24	-	87	100	3
Group discussion	68	26	6	52	32	16
Demonstration	52	32	16	43	36	21
Lecture	48	39	13	32	41	27
Exhibition	32	41	27	24	32	44
Cultural programme (Folk dance and song)	28	19	53	20	28	52
Film show	28	52	20	21	34	45
Competition	28	31	41	12	51	37
Meeting	12	26	62	8	18	74
Camp	9	42	49	7	12	81
Wall painting	8	13	79	-	-	-
Notices	6	12	82	-	3	97

\* Multiple response

The most preferred method for disseminating information on personal hygiene was visiting them and counselling them personally while the least preferred was distribution of notices because the problem related to personal hygiene need confidential face to face discussion.

Home visit is the best, effective and complicated matters like family planning, health hazards of unhygienic practices and need for keeping the body, interior and exterior of the house clean. While more than 50 per cent of women preferred home visit, group discussion and demonstration, the least preferred methods were meeting, wall paintings and notices. These methods may convey general informations and single message but they do not give room for further clarification of the doubts.

Table XLIII presents the methods preferred by the women to communicate environmental cleanliness concepts.

TABLE XLIII  
METHODS PREFERRED BY THE WOMEN TO COMMUNICATE ENVIRONMENTAL  
CLEANLINESS CONCEPTS

Methods	Percentage of women*					
	Rural N:205			Slum N:66		
	Most preferred	Moderately preferred	Least preferred	Most preferred	Moderately preferred	Least preferred
Home visit	68	32	-	56	36	8
Film show	60	33	7	64	31	4
Cultural programme (Folk dance and song)	59	30	11	59	31	10
Lecture	57	30	13	48	31	21
Group discussion	49	28	23	51	37	13
Meeting	18	29	53	15	12	73
Competition	17	35	48	13	20	67
Wall painting	10	15	75	-	-	-
Notices	7	21	72	2	3	95

\*Multiple response

The most preferred methods by more than 50 per cent of both rural and slum women were home visit, film show, cultural programme and lecture and least preferred methods were meeting, competition, wall painting and notices. Other than home visits, films are the most powerful instruments that exert great influence on the minds of the people. Films acted by popular artists are one of the most effective means of arousing interest and suitable for both literates and illiterates. Since environmental cleanliness encompasses more information than personal hygiene it was felt that a strong foundation through discussion and film shows should be incorporated.

Table XLIV shows the methods preferred by the women to impart general environmental concept.

TABLE XLIV  
METHODS PREFERRED TO COMMUNICATE GENERAL ENVIRONMENTAL CONCEPTS

Methods	Percentage of women*					
	Rural N:205			Slum N:66		
	Most preferred	Moderately preferred	Least preferred	Most preferred	Moderately preferred	Least preferred
Film show	76	19	5	79	14	7
Cultural programme	68	28	4	65	22	13
Home visit	63	31	6	62	35	3
Lecture	59	22	19	51	19	30
Group discussion	57	29	14	53	18	29
Exhibition	49	31	20	43	31	26
Meeting	41	23	37	39	36	25
Camp	37	21	42	36	29	35
Demonstration	28	19	53	19	50	31
Competition	12	32	56	15	37	48
Notices	-	8	92	-	7	93

\*Multiple response

To ensure better understanding of general environmental concepts and to make the education programme interesting, film show and cultural programmes were best preferred by more than 65 per cent of both rural and slum women followed by home visit, lecture and group discussion. Figure 10 shows the preference towards communication media as stated by more than 50 per cent of women to impart environmental hygiene concepts.

Therefore the future programmes to educate women on environmental issues should include aspects enabling personal contacts, group participation, film shows and cultural events. It should also be borne in mind that other methods like wall paintings and notices may create momentary influences and can convey a single idea very briefly and will lose significance once it is out of sight. Moreover this will be useful to educate literates but not illiterates.

#### **E. Details on adoption of home improvement technologies :**

Home improvement technologies were adopted by selected women in order to improve their interior and exterior environment.

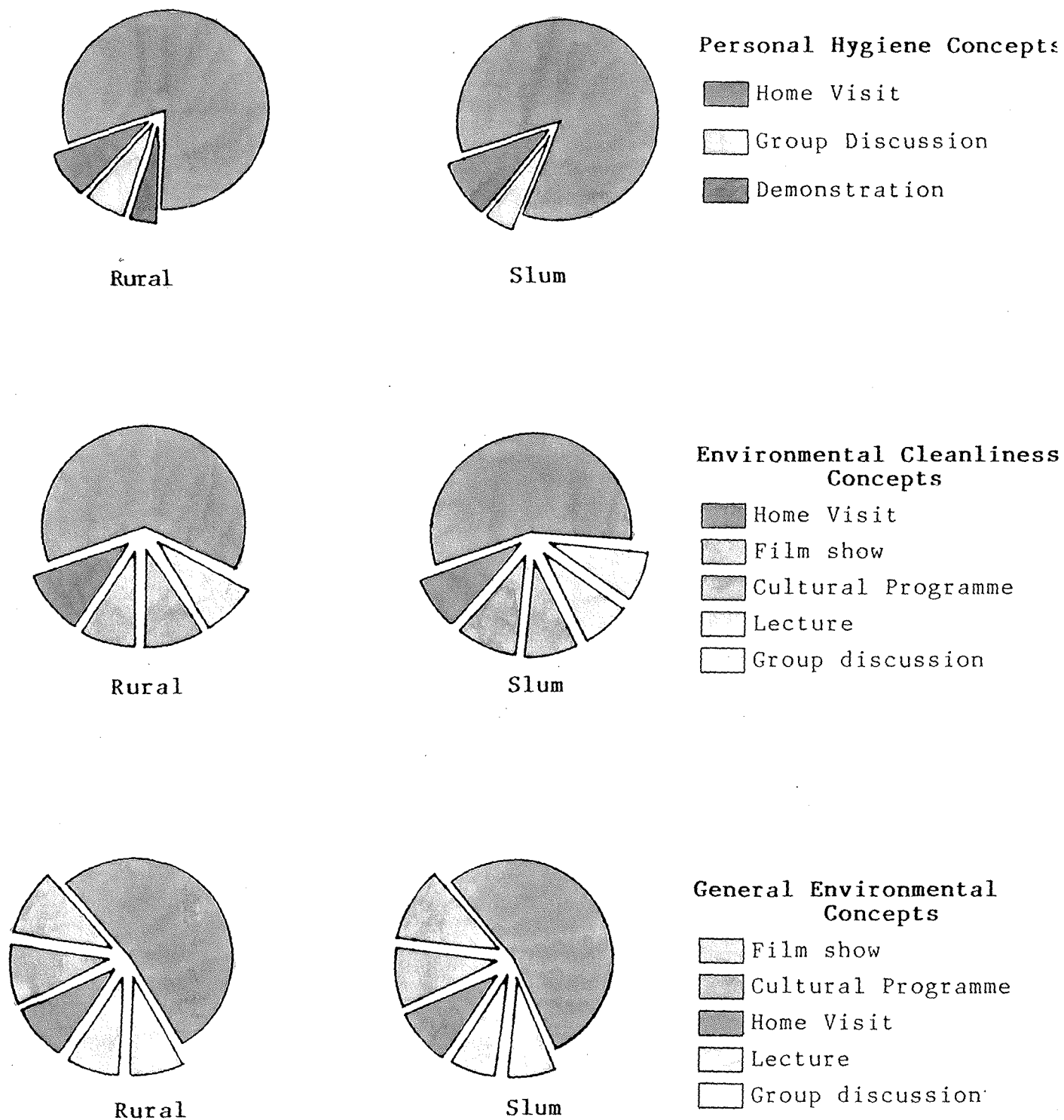


Figure.10.

PREFERENCE TOWARDS COMMUNICATION MEDIA

**Interior environment :**

Smokeless chulahs, biogas plants and solar cookers were the technologies adopted by the women to preserve interior environment especially the kitchen from smoky atmosphere.

**Smokeless chulah :**

Hundred and thirteen women spread in five villages installed the smokeless chulah in their houses with the assistance rendered by Block Development Office under National Rural Employment Programmes (NREP) and Rural Landless Employment Guarantee Programme (RLEGP) schemes. The Sukkad Model smokeless chulahs were procured for installation because it was distributed under the above mentioned schemes. The families installed the chulahs at their own expenses.

A number of benefits have been narrated by the women through the use of smokeless chulah (Table XLV).

TABLE XLV  
ADVANTAGES OF USING SMOKELESS CHULAH

Advantages	Percentage of Women* N=113
Eliminates smoke from the kitchen	98
Gives soot free utensils	98
Saves time-cooking and cleaning vessels	96
Economise fuel use	89
Transmits heat evenly	82
Lends for the use of all types of fuels	82
Helps in cooking two items simultaneously	80
Simple technology	76
Reduces health problems	72
Suitable for daily cooking	71
Cheaper cost of construction	68
Removes drudgery in cooking	69
Easy handling and maintenance of the chulah	69
Foster better family relationship	65

\*Multiple response

Ninety eight per cent of women mentioned the benefit of smoke free kitchen which enabled them to perform cooking in hygienic and pleasant atmosphere. This simple device helped to develop better family relationship and reduced drudgery in cooking.

**Biogas plant :**

As an outcome of the educational programme 28 families showed interest in installing biogas plants. These families were guided to get bank loan and subsidies through the Block Development Officer. Necessary guidance was provided with the help of the Block Development Office for constructing biogas plant.

Sixty four per cent of families constructed fixed dome model biogas plants, whereas 36 per cent constructed Khadi and Village Industries Commission (KVIC) Model of 4 cu.m capacity.

The size of live stock owned was a crucial variable which eventually influenced the adoption of biogas plants. The number of cattle possessed, ranged from 7 to 18 ensured adequate supply of cowdung to feed the plants.

Most of the biogas plants (89 per cent) were completed within a period of four months. More than six months was taken to complete the remaining plants.

The total cost of construction varied based on the model of biogas plant from Rs.8000 (fixed dome model) to Rs.11,200 (KVIC). A sum of Rs.2,600 was received by the families as subsidy.

In 18 per cent of the households, the (home makers) women were involved in mixing the cowdung with water, in 36 per cent the heads of the families and in 46

per cent the labourers working in the fields were involved in mixing the cowdung with water.

Invariably, the purpose behind installing a biogas plant was to obtain free, convenient and easy cooking fuel. So all the families used biogas for cooking purposes. Only seven per cent used for heating water and for lighting.

The benefits realised by the home makers by adopting the biogas technology are presented in Table XLVI.

TABLE XLVI  
ADVANTAGES OF BIOGAS PLANT

Advantage	Percentage of women* N:28
Supplies efficient, smokeless and clean fuel	100
Provides better quality farm yard manure	100
Improves hygienic condition in the interior and exterior environment	97
Prevents growth of flies and mosquitoes	96
Protects eyes and throat	87
Provides clean air	82
Enhances the social prestige	79
Ensures smoke free kitchen and soot free vessels	76

\*Multiple response

All the families reported that the biogas plant supplied smoke free and clean fuel, provided clean kitchen improved the health of the women and created hygienic

atmosphere in and around the house. The results indicate that the biogas plant has positive impact on women. So far none of them experienced any problem in adopting the biogas technology.

#### **Solar cooker :**

Since the concept of utilisation of solar energy was totally new to the rural women, tremendous efforts were taken to expose them to this novel device. Only 26 women came forward to experiment with solar cookers. The solar cookers were left with these women and they used them in their houses itself.

Rice, dhal, dried peas and potatoes were cooked in solar cooker by the selected women. They were satisfied with the products cooked.

The women who used the solar cooker mentioned that the use of this device helped them to keep the interior environment clean. The women were happy that they could be relieved from drudgery of smoke and the kitchen would be clean if they possess a solar cooker.

The main draw back expressed by all the women was that lifting the cooker every day from inside to outside to expose it to sunlight was a cumbersome activity because of the heavy weight.

**Exterior environment :**

In order to maintain the exterior environment from getting polluted the promotion of sanitary latrine, manure pit, soak pit and recycling of waste water to the kitchen garden had been thought off by selected women.

**Sanitary latrine :**

Three families from each village came forward to construct a sanitary latrine. The cost of each latrine constructed was Rs.2,105.

The latrines were constructed on the side of the house (44 per cent), at the back of the house (28 per cent) and as a separate structure in the back yard (28 per cent).

In order to reduce the cost of construction, they utilized the wall of the house as one side for the latrine and the other three sides were constructed by pucca walls (72 per cent).

All of them expressed their highest satisfaction with the design, materials used, the technology included and the quality of work. They expressed their happiness in having the latrine near the house. In all the houses grown up children above 8 years of age and women were using the latrine regularly. In 30 per cent of houses still the men were going to the open field for defecation. The views of the women on the sanitary latrine are given in Table XLVII.

TABLE XLVII  
VIEWS ON THE SANITARY LATRINE

Views	Percentage of women* N=18
Promotes hygienic way of living	100
Develops healthy habits	100
Affords privacy	100
Brings security	98
Removes mental and physical tension	95
Protects the environment	92
Prevents health (diseases) problems	91
Helps to inculcate cleanliness concept among children	82

\*Multiple response

The sanitary latrine promoted a healthy and hygienic living among the families. Privacy, security and protection of the environment from pollution were the outcomes realised by more than 90 per cent of the women. It is hoped that these views will spread among the rest of the community and in due course many families will be motivated to have a sanitary latrine.

#### Manure pit :

Twenty seven families constructed manure pits to dispose the solid waste in the most hygienic manner. Among them ten families were farm families. They had surface dumping of waste before the environmental education

programme. Seventeen families constructed home level manure pits and adopted the procedure of clearing up waste which was explained to them.

Regarding the location of pit 37 per cent of families constructed manure pit in the front yard, 32 per cent and 30 per cent constructed the pit in the back yard and in the side of the house respectively. The manure pits constructed in the farm houses by 37 per cent of the families were of 5m x 2m x 1m in size. The manure pits in the households were of 1m x 1m x 1m in size to cater to the needs.

Through the construction of manure pits women expressed that the exterior environment which were earlier filled with solid waste had find a suitable place and thus keeping the environment clean.

**Soak pit :**

To combat the problem of disposing sullage water, twelve families constructed the soak pit near the drain outlet of their houses. The total cost of construction of soak pit was Rs.345- in which 76.8 per cent was towards the material and 23.2 per cent on labour. Earlier the drain water was let out on the street making the area unhygienic and a place of mosquito breeding.

**Kitchen garden :**

Sixty five families disposed the sullage by diverting the waste water to the kitchen garden. A majority of 90 per cent of the households diverted the waste water straight to the garden through drain lines. The remaining 10 per cent filtered the water using strainers near the drain outlet to remove bigger particles of waste and utilized the waste water to the garden.

The location of the kitchen garden was based on the drain outlet from the house. A majority of 58 per cent of the families raised kitchen garden in the backyard. The remaining families raised kitchen garden either in the front yard (13 per cent) or on the side of the house (18 per cent). In eleven per cent of households the kitchen was separated from the main house, so they developed the kitchen garden near the kitchen.

**Motivating factors for the adoption of simple technologies**

There will be a motivating factor for adoption of any new technology. Table XLVIII and Figure 11 present the factors that are responsible for their adoption.

TABLE XLVIII  
MOTIVATING FACTORS FOR THE ADOPTION OF SIMPLE TECHNOLOGIES

Factors	Percentage of women						
	Technology adopted						
	Smoke less chulah	Biogas plant	Sanitary latrine	Manure pit	Soak pit	Kitchen garden	
	N=113	N:28	N:18	N:27	N:12	N:65	
<u>Age in years</u>							
Upto 35	54.9	67.9	72.2	59.3	83.3	56.9	188.62
Above 35	45.1	32.1	27.8	40.7	16.7	43.1	
<u>Education</u>							
Illiterate	20.4	3.6	-	22.2	-	15.3	
Primary	22.1	17.9	16.7	14.9	25.	20.0	225.00
Middle	26.5	32.1	38.9	40.7	41.7	33.9	
Higher secondary	31.0	46.4	44.4	22.2	33.3	30.8	
<u>Occupation of the Homemaker*</u>							
Unemployed(Owner cultivator)	25.7	42.9	33.3	18.6	16.7	40.0	
Agri labourer (Industrial worker)	22.1	7.1	-	25.9	16.7	21.6	213.70
Industrial worker (Business)	27.4	21.4	22.3	25.9	25.0	13.8	
Clerical and related work ( Industry owner)	24.9	28.6	44.4	29.6	41.6	24.6	
<u>Family income in Rs.</u>							
501 - 1000	31.9	-	-	3.7	-	16.9	
1000 - 1500	27.4	-	27.8	25.9	16.7	21.5	
1500 - 2000	25.7	32.1	61.1	33.3	33.3	26.2	254.10
2001 & above	15.0	67.9	11.1	37.1	50.0	35.4	

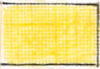
\* Note in paranthesis are occupation of the head of the family



113



26



18



28



12



65



FIGURE.11.ADOPTION OF HOME IMPROVEMENT TECHNOLOGIES

Age, education and occupation of the women and family income had significant influence on the women to adopt the technologies. The family income played more significant role than other variables because adoption of any technology involved money. Education of the women ranked second in influencing their adoption because educated women can contribute to the improvement of the quality of their family by changing their attitudes and prejudices towards old practices (UNESCO, 1992). Education of the women opens up new vistas in employment pattern and thereby increase the family income. Both income and education of the women played a significant part in practising appropriate technologies in their houses. Therefore educating women and helping them to augment family income, can improve the environmental hygiene of the villages.

#### F. Knowledge and Perception of children on environmental hygiene

Knowledge and perception of children on environmental hygiene concepts was assessed against certain selected variables. Socio-economic condition of family, parent's educational level, condition of living and parents' love, care and incentives provide a resultant effect for children's concepts in environmental studies (Rout, 1988).



Plate - 9 Improved environment-  
Outcomes of the environmental education programme

Table XLIX presents the relationship between the socio-economic condition and the performance of children in the pre-evaluation environmental awareness test.

TABLE XLIX  
SOCIO-ECONOMIC CONDITION VERSUS PERCEPTION OF  
KNOWLEDGE OF CHILDREN

Parameters	Observed value $\chi^2_o$	Expected value $\chi^2_e$	Inference
Locality Vs performance	14.90	32.67	Not dependent
Ordinal position of children Vs performance	145.04	41,33	Dependent
Education of the Parent Vs Performance	38.89	23.68	Dependent
Occupation of the parents Vs performance	61.88	67.50	Not dependent
Income Vs performance	14.26	23.68	Not dependent

The performance of the children was not dependent on the locality to which they belong. This is in accordance with the study conducted by Khunita (1980) which points out that there was no significant difference between children belonging to different locality either urban or rural. The ordinal position of children and the educational status of the parents had an effect on the performance of children because educated parents could inculcate better hygienic practices in their children and they live longer and are healthier (UNESCO, 1992). When educational status of parents increased the knowledge of children on environmental concepts also increased. Studies of Rath and Dash (1972) and Rath

(1973) highlight association of low cognitive development with low income group. But Rao and Reddy (1977) are of different opinion that the socio-economic status is not a barrier against cognitive development of children on environmental hygiene. The present study also reveals that the occupational status of the parents and the income of the family did not have any effect on the performance of children in the pre-evaluation test.

#### 1. Educational level of children and perception of knowledge :

Children's levels of attainment of concepts increase along with age and educational levels. Level of education increases along with age (Rao and Devi, 1980). Table L shows relationship between the educational level and perception of knowledge of children on environmental hygiene.

TABLE L  
EDUCATIONAL LEVEL AND PERCEPTION OF KNOWLEDGE  
ANOVA TEST

Standard	'F' Ratio	'F' Exact value	Inference
III	23.50	3.06	Significant
IV	59.50	3.06	Significant
V	5.19	3.06	Significant

There is significant difference in the knowledge of children of three different standards. Therefore it can be inferred that the three sample classes differ in their performance as measured by the average size of their marks. Rout (1980); Kunita and Das (1981) indicated that the educational level is the basic factor of acquisition of knowledge on environmental hygiene concepts. This study compares favourably with the above research findings.

## **2. Outcomes of the environmental education programme :**

The chief objective of environmental education is that individuals and social groups should acquire awareness and knowledge, develop attitudes, skills and abilities and participate in solving real life problems with a practical bias (Trivedi and Raj, 1992). Therefore classes were conducted on environmental hygiene concepts with more practical components based on the course content developed by the investigator for 300 children of two selected schools (State Board - 150 and Matriculation 150). The impact of the environmental education was studied, analysed and presented below.

- a. Improvement in the knowledge on environmental hygiene
- b. Change in hygienic practices of children

a. **Improvement in the knowledge on environmental hygiene**

Improvement in the knowledge on environmental hygiene was assessed based on the marks scored by the selected children in pre and post-evaluation environmental awareness tests.

The marks scored in pre and post-evaluation tests by the three different classes of the selected schools were statistically analysed to find out the improvement in the knowledge on environmental hygiene concepts and presented in Table LI.

TABLE LI  
SIGNIFICANCE OF ENVIRONMENTAL EDUCATION ON THE  
IMPROVEMENT OF KNOWLEDGE

Standard	Marks scored by the children				'Z' value	Inference
	Before		After			
	$\bar{x}$	$\sigma$	$\bar{x}$	$\sigma$		
III	27.36	3.91	44.72	3.09	34.8	Significant
IV	29.84	4.17	45.26	2.76	30.8	Significant
V	29.64	6.74	45.96	2.50	15.76	Significant

There is significant difference in the marks scored by the three different standards of two schools before and after environmental education. The result proved that teaching with more practical orientation improved the knowledge on environmental hygiene concepts.

b. Change in hygienic practices of children :

After a lapse of three months, the children were asked to record the hygienic practices adopted after the environmental education programme. The consolidated data of their practices are given in Table LII.

TABLE LII  
CHANGE IN HYGIENIC PRACTICES OF CHILDREN

<i>Practices</i>	Percentage of children N=150
Wash hands before meals	100.0
Use toilet properly	95.5
Comb hair properly	95.0
Wear clean dress	92.5
Follow good food habits	92.5
Keep the school surrounding clean	91.0
Do not litter	90.0
Take care of plants	88.5
Do not destroy plants	89.0
Clean the classroom	85.5
Drink boiled and cooled water	78.0
Do not buy and eat items sold outside	74.0
Cut nails properly	72.5
Wash hands with soap after toileting	62.0
Average	86.0

It is clear from the Table that on an average 86 per cent of children tried to follow better hygienic practices after attending the environmental education programme. Washing hands with soap after toileting was followed only by 62 per cent of children. The improvement in knowledge acquirement is encouraging that proper teaching may inculcate better environmental concepts in the young minds.

## V. SUMMARY AND CONCLUSION

Every one has a right to enjoy a reasonably clean, safe and life enhancing environment. The environmental hygiene problems are acute which impose great risks on the health of the people in the rural as well as in the urban settings. Governmental efforts alone cannot solve the problem of providing basic sanitary facilities. People should realize that sanitation is a community responsibility which can be achieved through awareness generation and motivation for adoption of personal and environmental hygiene. This study was intended to educate rural and slum women as well as school children on better hygienic practices. The following were the specific objectives of the study.

To:

1. understand the existing environmental conditions in selected areas
2. assess the extent of awareness of selected women and children about environmental hygiene concepts
3. arouse consciousness among women and children on environmental hygiene
4. study the impact of improved technologies in creating clean environment
5. evaluate the outcomes of the environmental education programme organised.

The study consisted of two main phases :

- I. Creating awareness on environmental hygiene among women through non-formal education programmes and
- II. Creating awareness on environmental hygiene among children through the formal education system.

**A. Situational analysis :**

The survey was conducted in six villages - Kovanur, Mathampalayam, Palanigoundenpudur, Naickenpalayam, Saravanampatty and Gandhi Nagar and two urban slums - Muthumariammanpuram and Kamarajapuram in Coimbatore city wherein 725 women selected by purposive sampling method were interviewed to learn their attitudes and behaviour towards environmental conditions.

The situational analysis revealed the following :

- ° Nuclear families predominated in the area surveyed. More than half of the women belonged to medium size families consisting of 4 to 6 members. Seventy six per cent of rural and 90 per cent of slum families were residing in their own houses.
- ° More than 60 per cent of rural as well as slum women belonged to the age group of 36-55 years. More than 55 per cent in both areas remained illiterates. While occupation of the rural women centred around agriculture, that of slum women depended upon daily wage earning jobs.
- ° The socio-economic status (SES) index as described in Annexure III was computed by considering age, education, occupational status of the women and family

income. Accordingly 45 per cent of the selected rural women and 49.5 per cent of the slum women were categorised in the lower socio-economic status. Only 23.8 per cent of rural and 18 per cent of slum women could be grouped under higher SES position. The rest were in the medium SES. The attitudes of the women towards environmental situation were analysed based on their SES index.

° The women belonging to higher SES (rural 46 per cent and slum 42 per cent) and middle SES categories (39 per cent of rural and slum women) had a high sense of personal cleanliness when compared to those in the lower SES category. Eventhough the physical appearance of the women was comparatively better, least importance was given to the cleanliness of teeth, feet and nails. In eighty three per cent of rural and 96 per cent of slum families surveyed, the children needed improvement in personal hygiene.

° Rural women were more conscious than slum women about the cleanliness of interior environment. Women of higher SES from rural and slum areas kept their interior and exterior environment cleaner than the women belonging to middle and lower SES categories.

° Seventy four per cent of rural and slum families had easy access to water source. Fifty two per cent of the rural families and 38 per cent of slum families had separate places for taking bath. SES index had direct correlation with the provision of separate bathroom. While only ten per cent families in rural areas had individual latrines none had them in the slum areas. Irrespective of the SES index, children below the age of ten years defecated on the road side. The high cost

of installation of sanitary latrine and space requirements were attributed as reasons for not having individual latrines.

° Only two villages and one slum were provided with drainage facilities. The functioning of the drainage system and scavenging services were found to be far from satisfactory.

° Garbage was the major solid waste in the households surveyed. The quantity of solid waste ranged between 275 gm and 500 gm per household per day and was directly related to the SES index. Indiscriminate throwing of waste outside and dumping them into the drainage were the common practices observed both in the rural and slum settings. Dust bins were utilized for disposing the solid waste only by the women with higher SES index. Eighty per cent of rural and 86 per cent of the slum women irrespective of their SES index, let out the sullage water on the street. Only 20 per cent rural and 14 per cent slum families enjoyed proper drainage facilities.

° With regard to unhealthy practices, irregularity in taking bath and patronizing the street food vendors were cited, although by only negligible per cent of women. However the higher the SES index, better was the identification of hygienic practices to be adopted for healthy living.

° Accumulation of rubbish and stagnant pools of water were mentioned as environmental problems by 58 per cent of women. They were not aware of the other significant problems affecting health and hygiene.

° Happy and healthy living were envisaged as the primary outcomes of a clean environment. When SES increased, the perception of clean environment also improved. Only a negligible percentage of rural (2.6 per cent) and slum (2.5 per cent) women had correctly conceptualised the term 'environment'.

° As for indicators of environmental degradation, prevalence of diseases and pollution of air, water and soil were identified by the women in the higher SES group. Eighty per cent of both rural and slum women were totally ignorant about unhygienic surroundings, congested living area, lack of rain, decrease in number of trees and animals and noisy surroundings.

° Nearly 60 per cent of both rural and slum women were unaware of the factors that degrade the immediate environment. The SES level did not have any impact on the awareness of reasons for environmental degradation. Acute and chronic illness and the absence of rain fall were the two factors identified as the effects of environmental degradation. The other consequences such as decreased agricultural production, extinction of animals and plants, depleted resources, changed global condition and soil erosion were not at all comprehended by the women under study.

° Only 20 per cent of rural and 18 per cent of slum women had realized the responsibilities of individuals in protecting the environment. The rural women were more conscious about the individual's responsibility in protecting the environment than the slum women. The rural women though aware, were not practising what they know to the expected extent. Higher the SES index, higher was the realization of individual's role in protecting the environment.

° Women in the high SES strata both in rural and slum areas due to their exposure were more knowledgeable than lower and middle SES women about the assistance required to keep the near environment clean. While women from higher SES needed financial help to construct individual latrines, common latrines with adequate water facility were preferred by the women of the lower SES order.

° The higher SES women of both rural and slum areas were able to suggest more subtle but concrete ideas to the government to tackle environmental problems than lower and middle SES women. Higher the SES level, better were the methods suggested to motivate people to protect the environment. Wide use of mass media, screening of films and intensive work by health visitors were some of the methods suggested to create awareness among people by a majority of the selected women. With regard to the sources of information on environmental issues, films were major sources of information for lower SES women and television was the major source of information for higher SES rural women. Radio appeared to be a major information source for middle and higher SES slum women.

° Creating general awareness among people (60 per cent rural and 52 per cent slum), motivating public involvement (51 per cent rural and 33 per cent slum), adopting proper disposal methods (42 per cent rural and 31 per cent slum) and understanding the importance of clean environment (32 per cent rural and 21 per cent slum) were the major suggestions put forth by the rural and slum women to protect the near environment.

## B. Outcomes of the environmental education programme :

Realizing the condition of the environment, an environmental education programme was planned to inculcate hygienic practices among women. Various communication methods such as individual, group and mass approaches involving home visits, group discussion, demonstration, lecture, exhibition, cultural programmes, film shows, competition, meetings, camp and print media were used to impart knowledge on environment so as to create awareness and motivate for adoption of better hygienic practices. The variables that helped to improve their awareness and practices were also studied. Women who had participated in more than 80 per cent of the education programmes were selected for the evaluation of the impact of the programmes. On an average 36 per cent of the selected women participated in 80 per cent of the programmes. Rating scale was used for the evaluation. The following are the outcomes of the environmental education programme.

° Though considerable improvement was noted regarding the awareness of women pertaining to hygienic practices, the extent of adoption was only meagre. Age and educational level were positively associated with acquisition of knowledge by rural women whereas occupation and income played significant roles in the case of slum women.

° With regard to interior cleanliness only 38 per cent rural and 36.9 per cent slum women were practising the hygienic principles learnt. Education, income,

occupation and age had a significant effect on the acquisition of knowledge regarding importance and maintenance of interior cleanliness by rural women. The percentage of women in rural as well as in slum areas who cared for exterior cleanliness was only limited. Education and age influenced rural women to adopt improved environmental concepts while it was the reverse with the slum women where income of the family contributed more towards their understanding and acceptance.

° Even with persistent efforts only 66 per cent of both rural and slum women could be made aware of the adverse effects of poor environmental conditions. The educational level of the rural women had a strong bearing on their awareness while occupational status and educational level were found to influence slum women better.

° Considerable number of rural women (64.8 per cent) were aware of the various measures to be adopted to enhance the environmental hygiene than their urban counterparts (44.3 per cent). The use of efficient smokeless chulah to bring in cleanliness to the domestic environment attracted the attention of the maximum number of women as they faced numerous problems with traditional chulahs. Education proved to be the best motivating factor to bring in an awakening among women on the various measures to be adopted to enhance environmental hygiene.

° Ninety per cent of the rural women became well aware of the governmental programmes namely, Family Planning and Mass Literacy, whereas cent per cent of slum women were aware of Mass Literacy Programme.

### C. Adoption of home improvement technologies in creating better environment

To comply with the request of the women specific action programmes were organised to make the women witness, get involved in and experience the impact in real life situation.

Home improvement technologies were adopted by selected rural women in order to improve their interior and exterior environment. Smokeless chulah, biogas plant and solar cooker were the technologies adopted by the women to preserve the interior environment especially the kitchen from smoky atmosphere. In order to maintain the exterior environment from getting polluted the promotion of sanitary latrine, manure pit, soak pit<sup>and</sup> recycling of waste water to the kitchen garden had been thought of by selected women.

° Realizing the benefits of having smokeless chulah 113 women installed smokeless chulah in their houses with the assistance received from the Block Development Office. Feed back indicated that 98 per cent of women were happy with the smoke free kitchen which helped them to have hygienic and pleasant environment.

° As an outcome of the educational programme 28 families spread in five villages had installed biogas plants. All the families reported that the biogas plant supplied smoke free and clean fuel, maintained the kitchen clean, improved the health of the women and created hygienic atmosphere in and around the house.

- ° Only 26 women were interested in experimenting with solar cooker. All of them had expressed <sup>that</sup> this method of cooking helped them to experience a novel way of preparing foods in a smoke free condition.
- ° As for disposal of the human excreta, even with continuous efforts, only 18 households constructed sanitary latrines. The cost of the sanitary latrine came up to Rs.2105/- and this might be the reason why many of them had not opted for it.
- ° However the adopters were satisfied with the design, materials used, the technology involved and the quality of work. They expressed that the sanitary latrine helped them to lead a healthy and hygienic living. Privacy, security and protection of the environment from pollution were the outcomes realized by more than 90 per cent of the women adopting the technology.
- ° Twenty seven families had constructed manure pits to dispose off the solid waste in the most hygienic manner and obtaining manure rich in nutrients.
- ° Twelve families constructed soak pits near the drain outlet of their houses to combat the problem of disposing sullage water. Each soak pit on an average costed Rs.345/-. Sixty five women diverted the waste water to raise kitchen gardens.
- ° Age, education and occupation of the women and family income had positive influence on the adoption of these technologies. Family income played a more significant role since adoption of any technology would have financial implications. Helping the women to augment family income favoured adoption of desirable technologies.

languages, science, social studies and moral science. The textbooks followed for Tamil language was common for all the schools irrespective of their system. English language and social studies books touched only basics of environmental concepts. Science and moral science were the two subjects which covered a considerable portion on environmental concepts.

Textbooks followed by State Board school concentrated more on environmental sanitation and role of plants and animals in human environment. Equal importance was offered to aspects related to personal hygiene, environmental sanitation and environmental factors in general under the Matriculation system. The course content of Central Board School gave more thrust on the human body, its functions and the need to keep clean. None of the schools selected for the study offered a separate subject on environmental hygiene.

Based on the environmental concepts culled out from the content of the textbooks prescribed for standards I to V, the investigator chose the important factors to be included in the environmental awareness test for different levels. After discussing with ten experienced professors, the five areas of environmental hygiene namely personal hygiene, hygienic habits, domestic cleanliness, environmental problems and general environmental concepts

were selected. Three sets of environmental awareness tests were prepared for three different standards, each having 50 questions comprising of 50 important concepts on environmental hygiene. Three schools, one each from Tamil Nadu State Board, Matriculation system and Central Board were selected. Totally 450 children, 150 children each from the three selected schools who were studying<sup>in</sup> III, IV and V standards (50 each) were selected. The performance of children in the test was analysed against selected variables to understand their influence on the adoption of environmental concepts. The highlights of the results are :

- ° The ordinal position of children and the educational status of the parents had positive effect on the performance of children in the environmental awareness test. The occupational status of the parents and the income of the family did not have any effect on the performance of children.
- ° The educational level and age of the children had a significant effect on their knowledge about environmental hygiene concepts.

#### **Outcomes of the environmental education programme**

- ° Three hundred children from State Board and Matriculation schools of different standards were selected to conduct the environmental education programme.
- ° The children were more inquisitive to know about environmental concepts through related experience. Both teachers and children expressed that the inclusion

of practical component would lay more impetus on environmental hygiene. Therefore, the classes were conducted with more practical components based on the course content developed by the investigator. Improvement in the knowledge of environmental hygiene was assessed based on the marks scored by the selected children in the pre and post tests.

° There had been a significant difference in the marks scored by the three different standards of the two schools before and after environmental education.

° On an average 86 per cent of children tried to adopt better hygienic practices like washing hands before meals, using toilet properly, combing hair properly, wearing clean dress, cutting nails properly and washing hands with soap after toileting, after attending the environmental education programme.

The recommendations emerged out of the study are as follows:

**To the Government :**

° The outlay of funds allocated by the government for beautification of the cities should be utilized for providing basic infrastructure for sanitation. While implementing the programmes, the town planning authorities should also be consulted.

° The owners of the vacant sites within the city limits should be made to realize their responsibility towards the cleanliness of the site.

° Public should be made more knowledgeable by placing the notices of permanent type in the appropriate areas by use of hoardings.

- ° Every village should have sanitation complex for constructing and maintaining sanitary latrines with water facilities and community biogas plants for utilization of the waste<sup>and</sup> to have community benefits such as street lighting.
- ° Construction of individual household latrines should be a mandatory part of the total housing policy both in the rural and urban areas.
- ° The government should be strict in enforcing the laws related to environmental hygiene. The Building Codes enumerated in the housing policies must be strictly adhered to.
- ° The mass media specially the television, should be optionally used to conscientize the public and make them 'Environment Friendly'.

**To the Educational Institutions :**

- ° Younger generation especially children should be well informed about the ill effects of environmental degradation in order to make them conscious about the cleanliness of the surrounding when they grow up.
- ° Different curriculum on environmental issues for urban and rural children at primary level separately may be designed. Teachers have to develop children's power of observation, discrimination, remembering and generalisation through inclusion of concrete examples of concepts in day-to-day teaching.
- ° Since concept attainment is a gradual and continuous process, proper steps should be taken by authorities to educate children on environmental issues starting from the pre-school level to different stages of education with appropriate teaching aids.

° Environmental education must be a life oriented education. School children should be taken out to wilds on field trips to orient them with natural environment. They must be exposed to various sources of pollution, their effects on human health and preventive measures in real life situation, so that, at least future progeny will evolve as environmentally well informed citizens.

° The school and college teachers must undergo refresher courses and orientation programmes to take up the challenging task of arousing environmental awareness among school going children and youth.

° The N.S.S. programmes in the colleges and Universities should integrate "environmental hygiene" as a part of their non-formal education.

**To the Community :**

° Community leaders and familiar village motivators should be well informed about the hazards of poor environmental hygiene practices before educating the public in general and women in particular.

° The public should be motivated for the promotion of sanitation and about sanitation services available by using village level mass media networks.

° Press and voluntary organisations should take active part in creating awareness among the people on environmental issues from time to time. Voluntary organisations should be given financial assistance for viable projects concerned with environmental sanitation.

Environmental education should not be limited to the imparting of information and skills, though they are important components. Such education must go beyond this to create values and attitudes regarding natural and environmental phenomena.

The environmental movement is and should be a positive movement seeking to bring man into harmony with himself, his men and his environment. Let all tenaciously pursue this goal, keeping in mind that this is just a beginning to realize the relationship to environment and groping for new ways to cope with the problems of the bio-physical environment. The preservation of the environment is a collective responsibility as indicated in Figure 12. Let all join together to preserve and protect this precious environment from degradation.

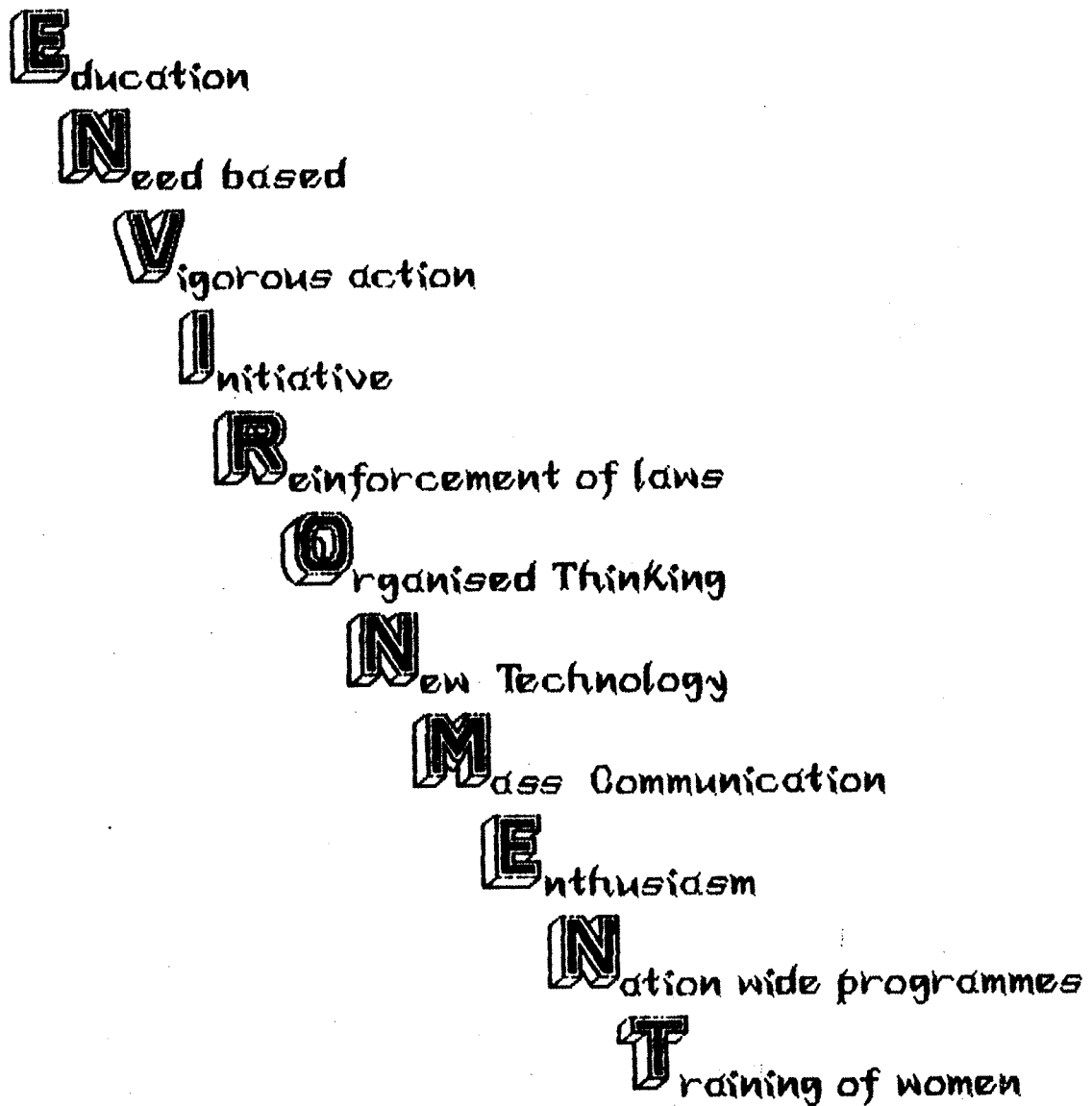


Figure 12. Factors Contributing to Environmental Hygiene

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ANNEXURE - I

INTERVIEW SCHEDULE TO ELICIT INFORMATION REGARDING  
ENVIRONMENTAL AWARENESS OF SELECTED HOMEMAKERS

Name of the Respondent :

Address :

**I. Socio-Economic Background**

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Name	Relation to Homemaker	Age	Educa- tion	Occu- pation	Income
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**II. Housing and civic amenities**

1. Is it your own house or rented house?

i. owned

ii. rented

2. Record the type of residence

i. Pucca structure

ii. Kutcha structure

iii. Mixture of pucca and kutcha structure

iv. Semipucca

3. Is there a separate bathroom?

Yes  No

a. If no, where does your family take bath?

- i. At the common bathroom attached to the house
- ii. inside kitchen
- iii. at the community well/tank/canal
- iv. at the public stand post
- v. at the bathroom provided by the municipality
- vi. others (specify)

b. Is there a latrine attached to the house?

Yes  No

If yes, what is the type of the latrine facility provided?

- i. Modern flush out
  - ii. Western commode
  - iii. Basin without flush
  - iv. Pit
  - v. Rectangular enclosure
  - vi. Others (Specify)
- c. If no, where does the family members defecate?
- i. Community latrine provided by the municipality
  - ii. Common latrine attached to the house
  - iii. Open space
  - iv. Others (Specify)

4. What is the source of water supply?

- i. Private tap in the house
- ii. Common tap for the house
- iii. Public stand post
- iv. Private well
- v. Common well
- vi. Others (Specify)

5. Is water supply adequate for your family?

Yes  No

6. Indicate the type of drainage facility provided

No drainage  Soakpit  Common drainage

7. Are you satisfied with the scavenging done by the municipal scavengers?

Yes  No

If no, why?

- i. No scavenging
- ii. Not frequent
- iii. Carelessly done
- iv. Not clean
- v. Emits bad smell
- vi. Others (Specify)

If yes, indicate

- i. How often do they clean?
- ii. Mention about the type of cleaning
- iii. How do they collect and dispose the waste after sweeping?

8. Disposal of solid waste:

a. Indicate the solid wastes that occur in the home?

- i. Vegetable peelings
- ii. Leftover foods
- iii. Packing materials
- iv. Ash
- v. Any other (Specify)

b. Specify the quantity of solid waste that occur in the house, per day.

- i. below - 0.5 kg.
- ii. 0.5 - 1 kg.
- iii. 1 - 1.5 kg.
- iv. 1.5 kg. and above

c. How do you dispose the collected wastes?

- i. by throwing outside
- ii. by dumping near the house
- iii. by disposing in the common dustbin
- iv. by throwing in the drainage
- v. by composting
- vi. by disposing in the municipal cart

d. Do you face any problems in solid waste disposal?

Yes

No

- e. What are the problems faced in solid waste disposal?
  - i. No common dust bin
  - ii. Inadequate dust bin
  - iii. Lack of frequent cleaning of dustbins
  - iv. Improper removal of waste
  - v. Scattering of the wastes by heavy wind
  - vi. Throwing of the waste outside the bin by rag pickers
  - vii. Any other (Specify)

9. Disposal of waste water:

- a. Where do you clean the utensils?
  - i. Inside the kitchen sink
  - ii. Outside the kitchen
  - iii. Front yard
  - iv. Back yard
  - v. Bathroom
  - vi. Any other (Specify)
- b. How do you dispose the kitchen waste water?
  - i. Drainage channel
  - ii. Soakpit
  - iii. Let out open
  - iv. Kitchen garden
  - v. Any other (Specify)

c. How do you dispose the bathroom waste water?

- i. Connected with septic tank
- ii. Drainage channel
- iii. Soakpit
- iv. Let outside the house
- v. Kitchen garden
- vi. Any other (Specify)

d. Do you face any problem during the disposal of waste water?

Yes  No

e. If yes, what are the problems?

- i. Mosquitoe breeding
- ii. Bad smell
- iii. Unhealthy atmosphere
- iv. Any other (Specify)

10. What is the condition of the space around the house?

11. Do you face any problem in keeping the exterior environment clean?

Yes  No

12. If yes, indicate

### III. Environmental Awareness

13. What do you mean by environment?

Space around us

Space and the living  
and not living things

Air, Water & Soil

Space where we live

a. Do you need a clean environment for better living?

Yes  No

If yes, give reasons

b. What do you mean by environmental degradation?

Pollution of air

Pollution of water

Over crowding

Unhygienic  
condition

Diseases

c. What are the reasons for environmental degradation?

Home Level	Yes	No	General	Yes	No
Stagnant drainage water			Population explosion		
Dumping of garbage & solid waste around			Illiteracy		
Defecation around the house & on the roadside			Rapid industrialization		

Home Level	Yes	No	General	Yes	No
Unhygienic practices			Migration of people from village to town		
Civic irresponsibility of people			Poverty		
			Slums		
			Automobiles		
			Deforestation		

14. Are you aware of the Govt's programmes to protect environment?

Yes  No

If yes, what are they?

Family planning

Mass literacy

Social forestry

Rural Development Programmes

Eradication of communicable diseases

Propaganda through Radio, T.V. & News paper (Mass media)

Legislation to prevent pollution

15. As an individual how will you help to protect the environment?

Following hygienic practices

Disposing the waste properly

Using sanitary latrine

Educating children on good health habits

Keeping the interior and exterior of the house clean

Teaching children to be neat/clean in public places

Avoiding eating food from public vendors

16. What type of help do you need to keep your environment clean?

Dust bins in every street

Proper common drainage

Removal of waste daily from the dust bins & Streets

Door to door collection of waste

Regular cleaning of common drainage

Construction of common latrines

Regular cleaning of common latrine

Water facility in the latrine

Financial facility to construct low cost sanitary latrine at home

Information on better health practices

17. Suggest viable method, for motivating people to protect their environment?

Using Mass media  
(Radio, T.V. News paper, Cinema)

Individual contacts

Campaigns

Periodical meetings

Screening films on importance  
of environment

Intensive work by health  
visitors

Rewards to the participants  
in Govt's programmes

Strict rules and regulation

Severe punishment for polluting

Creating awareness

Eradicating illetracy

Enforcement of environment  
protection laws

## A N N E X U R E - I I

Rating scale to Assess the Environmental Hygiene concepts of Selected Women

### Environmental Concepts

#### I. Personal Cleanliness or Hygiene

##### A. General cleanliness - Physical condition or appearance

	Good (3)	Fair (2)	Poor (1)
1. Total appearance			
- neat and tidy appearance			
2. Bathing daily			
3. Clean skin			
4. Sparkling teeth			
5. Neat and clean dress			
6. Clean well combed hair			
7. Cleanliness of hand			
- neat hand without dirt			
8. Cleanliness of nails			
- clean and cut nails			
9. Cleanliness of face			
- clean skin with bright eyes			
10. Cleanliness of feet			
- clean and tidy feet			
11. Clean nose			
12. Clean ears			

## B. Hygienic practices

	Not aware	Aware & not practicing	Aware & practicing
1. Bathing daily			
2. Proper toilet practice			
3. Washing hands before and after meals			
4. Washing hands after toileting with soap			
5. Brushing teeth daily			
6. Drinking safe water (boiled and cooled)			
7. Covering mouth while sneezing or coughing			
8. Covering all food items			

---

## II. Household cleanliness

(Cleanliness of the domestic environment)

---

### A. Interior

1. General appearance
  - clean walls, floors and ceiling
  - dirt and dust free floors
  - clean doors
  - clean windows

	Not aware	Aware & not practicing	Aware & practicing
- neat and clean kitchen			
- neatly arranged things			
- clean vessels			
- clean and neat cupboards			
- clean and properly arranged containers			
2. Cleanliness of curtains			
3. Neatness of wardrobe			
4. Arrangement of slippers			
5. Cleanliness of the wash area			
6. Cleanliness of bath room			
7. Neat and clean lavatory			
<b>B. Exterior</b>			
1. Cleanliness of space around the house			
- Front yard			
- Cleanliness of backyard			
- Walls			
- Window sills			
- Steps			
2. Proper method of garbage disposal			
3. Proper method of Waste water disposal			
- drainage channel			

	Not aware	Aware & not practicing	Aware & practicing
- stagnant			
- septic tank			
4. Presence of human excreta around the house			
5. Thorny plants grown around the house			
6. Neat Neighbourhood			
7. Kitchen garden in the backyard			
8. Ornamental plants in front of the house			
9. Washing area			
10. Cleaning area			
11. Bathing area			
12. Cattle shed			
13. Sty			
14. Waste water diverted to plants			

### III. Awareness of the impact of the environmental problems on total environment

	Not aware (0)	Partially aware (1)	Fully aware (2)
1. Relation between health and sanitation			
2. Waste disposal Vs. environmental degradation			

	Not aware (0)	Partially aware (1)	Fully aware (2)
3. Personal hygiene Vs. diseases			
4. Awareness of environmental problems such as			
- over population degrades environment			
- depletion of natural resources			
- extinction of plants and animals			
5. Causes for pollution			
- land			
- air			
- water			
- noise			
6. defecation leads to water and soil pollution			
7. deforestation leads to soil erosion			
8. Soil erosion leads to flood and drought			
9. deforestation affects rain			
10. knowledge on effect of excessive noise on health			
11. waste dumped around house leads to health problem			
12. drinking water from ponds and lakes is harmful to health			

	Not aware (0)	Partially aware (1)	Fully aware (2)
13. washing clothes near water sources (pond, lake, open well) pollutes the water			
14. defecation near water source pollutes water and air			

#### IV. Measures to enhance the environmental hygiene

	Not aware (0)	Partially aware (1)	Fully aware (2)
1. Hand pump is good to get safe drinking water			
2. Drinking boiled and cooled water prevents waterborne diseases			
3. Use of soakpit helps in hygienic disposal of waste water			
4. Use of manure pit helps to dispose solid waste hygienically			
5. Need for low cost sanitary latrine to enhance hygiene			
6. Importance of trees			
- for rain			
- to cut down pollution			
- to protect soil			
- to get biomass			

	Not aware (0)	Partially aware (1)	Fully aware (2)
7. Use of biogas plant to avoid pollution			
8. Use of solar cooker to reduce use of fuel wood			
9. Diverting waste water to kitchen garden			
10. Efficient chulah to improve the domestic environmental condition			

#### V. Environmental Programmes

	Not aware (0)	Partially aware (1)	Fully aware (2)
1. Family Planning			
2. Integrated Rural Development Programme			
3. Mass literary Programmes			
4. Social forestry			
5. National Rural Employment Programme (NREP)			
6. Smokeless chulah - improved chulahs			
7. Intensive Sanitary Programme			
8. Minimum needs programme			

### A N N E X U R E - III

#### THE CONSTRUCTION OF SOCIO ECONOMIC STATUS INDEX (SES)

It consists of a summation of an individual's score on three sub-indices, that is occupation, income and education. Each of them was divided into a five-point scale on which a person scored for the kind of work he did. In this study it was done in the following way:

<u>Occupational Categories</u>	<u>Score</u>
I. Clerical and related workers	5
II. Municipal and industrial workers	4
III. Agricultural labourers	3
IV. Daily wage earners	2
V. Home makers, unemployed	1

<u>Educational Categories</u>	<u>Score</u>
I. Under Graduate, Post Graduate and Professionals	5
II. Higher Secondary	4
III. Middle and S.S.L.C.	3
IV. Primary	2
V. Illiterate	1

<u>Income Categories</u> (in Rs.)	<u>Score</u>
2001 and above	5
1501 - 2000	4
1001 - 1500	3
501 - 1000	2
Upto 500	1

Thus each variable was scaled on a 5-point scale by giving equal weightage to different variables and by assuming an equal interval between the different points of the scale. Thus the total scores ranged from 3 to 15. On the basis of quartile distribution, classified into three categories, such as upper, middle and lower. The SES was prepared for all the selected areas separately and then for the total sample as follows:

$$Q_1 = \frac{N/4 - CF}{f} \qquad Q_3 = \frac{3N/4 - CF}{f}$$

ANNEXURE - III

**VILLAGE-WISE DISTRIBUTION OF THE SES SCORES  
AND THEIR MEDIAN SCORE**

S. No.	Scores	Rural						Slum					
		V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	V <sub>4</sub>	V <sub>5</sub>	V <sub>6</sub>	Total	C.F.*	S <sub>2</sub>	S <sub>1</sub>	Total	C.F.*
1	3	12	17	14	15	9	23	90	90	29	17	46	46
2	4	6	11	3	7	9	4	40	130	1	12	13	59
3	5	21	25	15	29	14	1	105	235	18	22	40	99
4	6	6	13	4	4	3	3	33	268	12	8	20	119
5	7	6	3	13	10	2	26	60	328	7	2	9	128
6	8	2	2	6	10	7	11	38	366	3	3	6	134
7	9	5	12	7	4	5	1	34	400	3	5	8	142
8	10	2	2	4	4	10	1	23	423	10	12	22	164
9	11	7	6	2	8	5	4	32	455	2	1	3	167
10	12	1	2	2	1	7	1	14	469	5	10	15	182
11	13	3	2	2	5	14	-	26	495	7	7	14	196
12	14	2	2	1	1	6	-	12	507	3	1	4	200
13	15	2	3	2	2	9	-	18	525	-	-	-	-
Total of the Sample		75	100	75	100	100	75	525		100	100	200	

\* C.F. - Cumulative Frequency

Median Score	Village median	Quartile 1	Quartile 3
Median Score overall (Rural & Slum)	6	4	10
V <sub>1</sub> Kovanur	5	5	9
V <sub>2</sub> Mathampalayam	5	4	9
V <sub>3</sub> Palanigoundampudur	7	5	9
V <sub>4</sub> Naikenpalayam	5	5	8
V <sub>5</sub> Saravanampatti	10	5	13
V <sub>6</sub> Gandhi Nagar	7	3	7
S <sub>1</sub> Muthumariammanpuram	5	4	10
S <sub>2</sub> Kamarjapuram	6	3	10
Village overall	6	5	9
Slum overall	6	4	10

Distribution of selected women of different areas according to SES index.

DISTRIBUTION OF SELECTED WOMEN ACCORDING TO SES INDEX

	Score Class	SES category	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	V <sub>4</sub>	V <sub>5</sub>	V <sub>6</sub>	Total
	3 - 5	Lower	39 (52.0)	53 (53)	32 (42.7)	51 (51.0)	32 (32.0)	28 (37.3)	235 (44.8)
Rural	6 - 9	Middle	19 (25.3)	30 (30)	30 (40.0)	28 (28.0)	17 (17.0)	41 (54.7)	165 (31.4)
	10 - 15	Higher	17 (22.7)	17 (17)	13 (17.3)	21 (21.0)	51 (51.0)	6 (8.0)	125 (23.8)
			75	100	75	100	100	75	525
			S <sub>1</sub>	S <sub>2</sub>	Total				
	3 - 5	Lower	51 (25.5)	48 (24.0)	99 (49.5)				
Slum	6 - 10	Middle	30 (15.0)	35 (17.5)	65 (32.5)				
	11 - 15	Higher	19 (9.5)	17 (8.5)	36 (18.0)				
			100	100	200				

ANNEXURE - IV

NOTICES PREPARED

AVINASHILINGAM INSTITUTE FOR HOME SCIENCE AND HIGHER  
EDUCATION FOR WOMEN  
Department of Family Resource Management  
Coimbatore - 641 043.

TO THE ATTENTION OF THE PUBLIC

- \* Keeping the environment clean is everyone's principal duty
- \* Polluted environment is the cause for diseases. This polluted environment affects the people's body, psyche and property. Hence follow the hygienic rules.

HYGIENIC RULES

- \* Before eating and after defecation, wash your hands with soap
- \* Always use the water from hand pump, borewell or the protected well
- \* Don't defecate in open places. Use lavatory.
- \* Keep the food and water covered, to protect them from flies
- \* Remove the refuse and garbage and animal dung by using the manure pits

\* DISEASES CAUSED BY THE OPEN DEFECATION:

Open defecation causes, dysentery, diarrhoea, jaundice and worm infestations

\* These diseases can be controlled by safely departing the excrements

\* Most people think that constructing lavatories will cost more. Hence, the low cost sanitation technology is being evolved

**SPECIAL FEATURES OF THE FLUSH LATRINES:  
(Low Cost Sanitary latrine)**

\* Low cost

\* Resists the breeding of mosquitoes, flies and insects

\* Can be constructed in any socio-economic environments and in any type of soil

\* There won't be any stink, hence, it can be constructed near the house

\* Easy maintenance

\* No need of scavengers to remove the wastes

\* So, latrine is a must to every house

\* Try to construct a latrine for your own. Numerous organisations are giving financial assistance to construct latrines. If you wish, approach us for guidance.

**AVINASHILINGAM INSTITUTE FOR HOME SCIENCE AND  
HIGHER EDUCATION FOR WOMEN, COIMBATORE**  
and  
**INDIAN NATIONAL TRUST FOR ART AND CULTURAL HERITAGE  
(INTACH)**  
(Financial Assistance - Ministry of Environment and Forest,  
Government of India)

**"CAMP ON NATIONAL ENVIRONMENT AWARENESS"**

If we don't keep our environment clean, we suffer a lot. Particularly, if wastes are dumped in front of the house and waste water is stagnated around the house. This spread diseases like Cholera, Influenza etc.,

It is necessary to know how to minimise the water usage and how to utilize the waste water usefully.

Growing trees help us to get clean air. Also we can get more rain.

Population explosion also pollutes the environment.

Explaining all these, a function has been arranged, comprising the following programmes, on December 15th 1989, from 10 am to 6 pm at Kamarajapuram. We request you all to participate and felicitate the function.

- \* Exhibition regarding the family welfare
- \* Cultural Programme
- \* Speech
- \* Prize distribution
- \* Film show

AVINASHILNGAM INSTITUTE FOR HOME SCIENCE AND  
HIGHER EDUCATION FOR WOMEN  
(Department of Family Resource Management)

THINK AND ACT

- \* Don't allow the waste water to stagnate around the house. They spread diseases like Cholera, diarrhoea etc.,
- \* Don't defecate and urinate around the house. They will become the producer of disease carriers
- \* Be clean - Relieve from the diseases
- \* Educate the children good sanitary habits. It will make the future generation healthy.
- \* Don't cut trees. They are the friends of rain
- \* Don't pollute the environment in any way. And don't let who pollutes

Let everyone act as a guardian of environment.

Why all these?

For our health, for the welfare of our family and for the progress of our country.

THINK AND ACT

ANNEXURE - V

TEACHING PLAN FOR EDUCATING WOMEN

S.No.	Concept	Method	Agency
1.	Personal Hygiene (Physical appearance) Neat and tidy appearance, clean skin, Sparkling teeth, clean dress, well combed hair, cleanliness of hand, cleanliness of nails, cleanliness of face, Cleanliness of feet, clean nose	Home visit Lecture Group discussion Exhibition Camp Charts Demonstration	NSS volunteers SAP Project of FRM Dept.
2.	Hygienic practices		
	◦ Bathing daily	Home visit	NSS volunteers
	◦ Brushing teeth daily	Lecture	SAP project of FRM Dept.
	◦ Proper toilet practices	Exhibition	
	◦ Washing hands before and after meals	Youth Club	
	◦ Washing hands after toileting with soap	INTACH	
	◦ Drinking potable water		
	◦ Covering all food items		
	◦ Covering mouth while sneezing or coughing		
3.	Cleanliness of domestic environment		
	◦ Cleanliness of interior	Home Visit	NSS Volunteers
	Kitchen	Group discussion	SAP project of FRM Department
	Walls		
	Roof - removing cobwebs	Lecture	Local Youth Clubs
	Floor - Sweeping	Exhibition	
	Arrangement of things	Camp	INTACH
	◦ Cleanliness of exterior	Competition	
	Front and back yard	Charts	
	sweeping and removing unwanted plants	Leaflets	
	avoiding dumping of garbage and stagnation of water		
	◦ Proper method of garbage disposal		
	Manure pits		
	Using dust bins		
	◦ Proper method of waste water disposal		
	Soak pit		
	Kitchen garden		
	◦ Avoiding defecation around the house		
4.	Cleanliness of local environment		
	◦ Proper drainage	Lecture	Local Panchayat/ Corporation
	◦ Dust bins in the street	Exhibition	
	◦ Cleanliness of street	Camp	Local Youth Clubs
	◦ Cleanliness of common latrine, if any	Meeting Charts	INTACH
5.	Environmental Problems and solution		
	◦ Types of pollution	Lecture	SAP project of FRM Department
	◦ Health hazards of pollution	Exhibition	
	◦ Improved technology to protect environment	Camp	
	◦ Population explosion its effect on environment	Film show	
	◦ Importance of trees, Deforestation Soil erosion		
	◦ Need for low cost sanitary latrine to enhance hygiene		

6. Government Programme on environmental protection

- Family Planning
- Social forestry
- Minimum needs programme
- Water and Sanitation programme
- Intensive Sanitation programme
- Improved chulah programme
- National Biogas programme

Lecture

Camp

Exhibition

Meeting

Film show

INTACH

SAP project of  
FRM Department

Coimbatore  
Environment  
Society

District Public  
Relations  
Officer

Local Youth  
Clubs

ANNEXURE - VI

ANALYSIS OF SYLLABI

STATE BOARD

Standard-I	Standard-II	Standard-III	Standard-IV	Standard-V
1. (Live together)	1. (What are these people doing)	1. (Our kitchen garden)	1. (Must)	1. (Tree planting)
2. (Purification of drinking water)	2. (My duties)	2. (Things around us)	2. (Healthy living)	2. (Cleanliness of the surrounding)
3. (Gardening)	3. (Cleanliness is good)	3. (Cleanliness of the surrounding)	3. (Is god angry with us)	3. (Where will they go)
4. (Identifying feathers of birds, pictures of plants and trees)	4. (My family)	4. (Care of teeth)	4. (A tree talks)	4. (Quality of living things)
	5. (My house)	5. (Our body)	5. (Safe drinking Water)	5. (Flora and Fauna)
	6. (My body)	6. (Cleanliness of classrooms)	6. (Cleanliness of the surrounding and prevention of disease)	6. (Skeletal and muscular systems of our body)
	7. (Surrounding cleanliness)	7. (Cleanliness of the school)	7. (Human health)	7. (Surrounding cleanliness)
	8. (Environmental plants)	8. (Identifying various plants and trees)	8. (Health and hygiene)	8. (Air pollution)
	9. (Let us protect our drinking water)	9. (The other uses of plants)	9. (Classroom cleaning)	9. (Water Pollution)
	10. (Our earth and sky)			
	11. (Identifying various leaves by touching)			
	12. (Cleanliness of the surroundings)			

MATRICULATION

Standard-I	Standard-II	Standard-III	Standard-IV	Standard-V
1.	1.	1.	1.	1.
2. Good habits	2.	2. Plants	2.	2.
3. My body	3.	3. Human body	3. Gold fish	3. Prevention of disease
4. The environment	4. Protection and maintenance	4. Food	4. Tiger	4. Environmental sanitation
5. Water	5. Changes in height and size	5. Care of teeth	5. Useful plant	5. Living things
6. Soil-air	6. Keeping the body clean	6. Personal cleanliness	6. Useful animals	6. Adaptive characteristic of plants and animals
7. Good health	7. Cleanliness	7. Health service	7. Protection of plant	7. Human body
8. My school	8. Home	8. Well done ganga	8. Protection of plant	8. Safety and first aid
9. Keep clean and tidy	9. Plants uses		9. Our body	9. The natural wealth got from the earth
	10. Care of environment		10. Drinking water	10. Our neighbourhood
	11. Sources of water		11. Keeping the surroundings clean	11. Looking after public property
	12. Ramesh goes to dentist		12. Golden rules for good manners	
	13. Do not take the gift of nature granted		13. Do not take the gift of nature granted	
	14. Our neighbourhood			
	15. Our neighbour			
	16. Our country			

CENTRAL BOARD

Standard-I	Standard-II	Standard-III	Standard-IV	Standard-V
1.	1.	1.	1.	1.
2. Good habits	2.	2. Water sources and experiments	2.	2.
3. My body	3.	3. Human body	3.	3. Exercise and growth
4. The environment	4. Kutch and his family	4. Safety and first aid	4. Air, Water and weather	4. Human body
5. Water	5. Shake well	5. What is good and what is bad	5. Human body health and hygiene	5. Safety and first aid
6. Soil-air	6. There is a lovely park		6. Safety and first aid	6. Cleanliness
7. Clean and neat	7. Protection and maintenance		7. Good character	7. Care of teeth
8. Noise	8. Changes in height and size		8. This is not fun	
	9. Keeping the body clean		9. Anti-social act	
	10. Cleanliness		10. Thanks for water	
	11. Home			
	12. Plants uses			
	13. Care of environment			
	14. It is good			

ANNEXURE - VII

I T E M     A N A L Y S I S

Q.No.	$N_u$	$N_L$	Df	$F = \frac{N_u + N_L}{2n} \times 100$	$\frac{N_u - N_L}{n} = D$
1	8	2	6	42	0.5
2	6	6	0	31	-
3	12	11	1	58	0.08
4	6	2	4	33	0.33
5	8	2	6	42	0.50
6	7	5	2	50	0.17
7	11	10	1	88	0.08
8	11	6	5	71	0.42
9	12	11	1	96	0.08
10	4	3	1	29	0.08
11	12	10	1	92	0.08
12	7	3	4	42	0.33
13	5	2	3	29	0.25
14	9	8	1	71	0.08
15	8	1	7	38	0.58
16	11	8	3	79	0.25
17	5	5	0	42	-
18	11	4	7	63	0.58
19	8	7	1	63	0.08
20	4	1	3	21	0.25
21	9	6	3	63	0.25
22	12	11	1	96	0.08
23	10	2	8	50	0.67
24	10	7	3	71	0.25
25	4	0	4	17	0.33

Q.No.	$N_U$	$N_L$	Df	$F = \frac{N_U + N_L}{2n} \times 100$	$D = \frac{N_U - N_L}{n}$
26	7	3	4	42	0.33
27	10	4	6	58	0.50
28	3	2	1	21	0.08
29	10	9	1	79	0.08
30	9	1	8	42	0.67
31	4	6	-2	42	-
32	7	2	5	38	0.42
33	7	1	6	33	0.50
34	6	1	5	29	0.42
35	4	2	2	25	0.17
36	3	3	0	25	-
37	8	6	2	58	0.17
38	11	7	4	75	0.33
39	12	6	6	75	0.50
40	12	9	3	88	0.25
41	11	8	3	79	0.25
42	8	5	3	54	0.25
43	1	3	-2	17	-
44	3	2	1	21	0.08
45	3	1	2	17	0.17
46	3	2	1	21	0.08
47	12	6	6	75	0.50
48	10	9	1	79	0.08
49	8	5	3	54	0.25
50	10	5	5	63	0.42

A N N E X U R E - V I I I

AVINASHILINGAM INSTITUTE FOR HOMESCIENCE AND  
HIGHER EDUCATION FOR WOMEN, DEEMED UNIVERSITY,  
COIMBATORE 641 043.

PROFORMA TO ELICIT BACKGROUND INFORMATION OF CHILDREN

**a. General Background**

1. Name of the Student :
2. Age :
3. Class :
4. Address :
5. Details regarding parents :

---

	Father	Mother
Name		
Education		
Occupation		
Income		

---

6. Number of Brothers/Sisters :

7. Place of the child :

1st

2nd

3rd

ENVIRONMENTAL AWARENESS TEST - A1  
(Pre Evaluation test)

STANDARD-III

1. Food gives us
  - a. sickness
  - b. tiredness
  - c. energy
  - d. sleep
2. Body building food contain
  - a. Carbohydrates
  - b. fats
  - c. protein
  - d. vitamins
3. Energy giving food is
  - a. rice
  - b. milk
  - c. egg
  - d. dhal
4. Food should not be brought from street vendors because
  - a. they are not exposed to dust and flies
  - b. they are clean
  - c. it is cheep
  - d. they are exposed to dust and flies
5. Brushing teeth is
  - a. good habit
  - b. bad habit
  - c. unhealthy
  - d. none of the above
6. Biting nails is
  - a. hygienic
  - b. unhygienic
  - c. good habit
  - d. bad habit
7. Bad habit will affect
  - a. health
  - b. food
  - c. house
  - d. note

8. Eating in between meals is
- a. good habit
  - b. bad habit
  - c. healthy habit
  - d. unhealthy habit
9. Every year your height will
- a. decrease
  - b. remain the same
  - c. increase
  - d. double
10. Dirty clothes may cause
- a. scabies
  - b. fever
  - c. elephantiasis
  - d. rabies
11. Village people are mainly engaged in
- a. industries
  - b. forestry
  - c. agriculture
  - d. education
12. Village environment consist of
- a. schools and colleges
  - b. industries and public halls
  - c. huts and fields
  - d. cinema house and shopping complex
13. Very big land masses are called
- a. Continents
  - b. planet
  - c. universe
  - d. earth
14. The low land between mountains is called
- a. cliff
  - b. valley
  - c. foot path
  - d. rift
15. Bigger seas are called as
- a. rivers
  - b. lakes
  - c. canals
  - d. oceans
16.  $\frac{3}{4}$  of the earth is covered with
- a. land
  - b. island
  - c. water
  - d. mountain
17. The highest mountain in India is
- a. Nilgiris
  - b. Himalayas
  - c. Kodaikanal
  - d. Yercaud

18. The longest river in India is  
a. Ganga      b. Bramaputhra      c. Cauvery      d. Sutlej
19. The important river in India is  
a. Cauvery      b. Ravi      c. Narmada      c. Ganga
20. Bees help us to get  
a. Water      b. juice      c. gum      d. honey
21. The insects that sucks blood is  
a. cockroch      b. butterfly      c. may fly      d. mosquito
22. All birds and insects  
a. are dangerous      b. are not dangerous      c. can fly      d. can talk
23. Talking bird is  
a. crow      b. parrot      c. peacock      d. dove
24. Himalaya people get milk from  
a. cow      b. donkey      c. yalk      d. goat
25. Peacock is an  
a. omnivorus animal      b. herbivorous animal  
c. carnivorus animal      d. domestic animal
26. Carnivorus animal is  
a. tiger      b. cow      c. goat      d. elephant
27. Silk worm grows on  
a. mulberry tree      b. mango tree  
c. neem tree      d. ashoka tree

28. Crocodile also swallows small stone to help  
a. sleep      b. digestion      c. move      d. relax
29. Beasts of burden are  
a. tigers and fox      b. lions and elephants  
c. donkeys and camels      d. dogs and cats
30. Leather is from  
a. animals      b. plants      c. earth      d. wool
31. Which is the living thing  
a. ball      b. dog      c. desk      d. cup
32. Which is the flowering plant  
a. money plant      b. crotens      c. mushroom      d. rose
33. Food is prepared in plants by  
a. roots      b. leaves      c. shoot      d. stem
34. Paper is made from  
a. leaves      b. leather      c. plastic      d. bamboo
35. The trees that lives for many years is known as  
a. perennials      b. binneals      c. annuals      d. seasonal
36. The main source of water is  
a. dam      b. tank      c. pond      d. rain
37. Dirty water can be used for  
a. watering plants      b. bathing      c. drinking      d. washing

38. We should always drink
- a. boiled water
  - b. ice water
  - c. sugar water
  - d. lake water
39. Filtering makes water
- a. soft
  - b. hard
  - c. fresh
  - d. clear
40. Soap do not lather well in
- a. soft water
  - b. hard water
  - c. clear water
  - d. fresh water
41. Fast increase of human population is called as
- a. growth of population
  - b. population explosion
  - c. migration and automobiles
  - d. floating population
42. Factories and industries pollute
- a. house
  - b. vegetables
  - c. humans only
  - d. air, water and living things
43. The continuous noise of industries and factories cause
- a. air pollution
  - b. water pollution
  - c. noise pollution
  - d. land pollution
44. One of the pollutants of water is
- a. sewage
  - b. smoke
  - c. fish
  - d. aeroplane
45. April, may, June are
- a. summer months
  - b. South west monsoon months
  - c. winter months
  - d. North east monsoon months

46. Papayas and water melon grows plenty in  
a. summer season                      b. winter season  
c. spring season                      d. rainy season
47. Woolen clothes are worn in  
a. summer      b. winter              c. spring              d. autumn
48. Flowers are available      plenty in  
a. summer      b. winter              c. spring              d. autumn
49. Stars are clear during  
a. day              b. night              c. cloudy day      d. rainy day
50. Weather changes because of  
a. movement of sun around the earth  
b. movement of earth around the moon  
c. movement of earth around the sun  
d. none of the above

**ENVIRONMENTAL AWARENESS TEST - A2**  
**(Pre evaluation test)**

**STANDARD-IV**

1. Food gives us energy and makes us  
a. strong      b. weak      c. restless      d. tired
2. Body building foods are  
a. Carbohydrates      b. fats      c. proteins      d. vitamins
3. Protecting food contain  
a. vitamins only      b. Carbohydrates only  
c. fats      d. vitamins and minerals
4. Raw vegetables contain  
a. more vitamins      b. more fat  
c. less vitamins      d. less fat
5. The perfect food are  
a. milk      b. egg      c. rice      d. meat
6. Keeping proper hours for sleep is  
a. hygienic      b. unhygienic      c. good habit      d. bad habit
7. The liquid that comes through our skin during work is  
a. water      b. sweat      c. blood      d. salt
8. The simplest method of keeping skin clean is  
a. washing      b. bathing      c. steaming      d. bleaching

9. If hair is not properly combed it will develop  
a. lice      b. patches      c. white colour      d. curling
10. The tearing teeth is  
a. Incisor      b. Canines      c. molar      d. premolar
11. Eating sugarcane keeps the teeth  
a. unhealthy      b. bleeding      c. clean      d. dirty
12. India consist of  
a. 20 states and 4 union territories  
b. 25 states and 7 union territories  
c. 27 states and 5 union territories  
d. 21 states and 9 union territories
13. The peak in Western ghats is  
a. Anaimalai      b. ponmudi      c. yercaud      d. Doddabetta
14. The chief occupation of Tamil Nadu people is  
a. fishing      b. mining      c. painting      d. farming
15. The major port in Tamil Nadu is  
a. Coimbatore      b. Trichy      c. Tuticorin      d. Kanyakumari
16. Coimbatore is known as  
a. Poor man's Ooty      b. Queen of hills  
c. Prince of hills      d. Iron city



26. Younger ones of lion is  
a. puppys      b. kittens      c. cubs      d. chicks
27. The organ of locomotion in fish is  
a. scales      b. tail      c. fins      d. gills
28. Rabbits live in  
a. tunnels      b. shed      c. stable      d. kennel
29. Earthworms crawl with help of  
a. leg      b. muscles      c. setae      d. cleitellum
30. Frog is an  
a. reptile      b. amphibian      c. invertebrate      d. mammals
31. Horse lives in  
a. shed      b. stable      c. kennels      d. cage
32. During respiration the gas taken in is  
a. carbon-di-oxide      b. nitrogen  
c. sulphur      d. oxygen
33. Plants breath through  
a. lungs      b. gills      c. stomata      d. fins
34. Plants prepare their own food known as  
a. starch      b. protein      c. fat      d. vitamins

35. In plant reproduction through stem is known as
- a. germination
  - b. vegetative reproduction
  - c. dispersion
  - d. budding
36. Rose is a
- a. summer flower
  - b. winter flower
  - c. monsoons flower
  - d. spring flower
37. A mineral used as fuel is
- a. gold
  - b. coal
  - c. sulphur
  - d. lead
38. A compost pit is used for disposing
- a. water
  - b. garbage
  - c. sweage
  - d. sullage
39. Farm yard manure is got from
- a. dung of cattle
  - b. industrial waste
  - c. chemical synthesis
  - d. mining
40. April, May, June are
- a. summer months
  - b. south west monsoon month
  - c. winter months
  - d. north east monsoon month
41. Wind blowing during certain months in particular direction
- a. storms
  - b. monsoons
  - c. thunders
  - d. lightenings
42. Water vapour on air condences with cold object and form
- a. fog
  - b. snow
  - c. dew
  - d. mist

**ENVIRONMENTAL AWARENESS TEST - A3**  
**(Pre Evaluation test)**

**STANDARD-V**

1. The right kind of food is known as
  - a. fat food
  - b. sugar food
  - c. good food
  - d. nutritious food
  
2. Growth of bones is due to
  - a. vitamins
  - b. mineral salt
  - c. carbohydrate
  - d. fat
  
3. Eating too much is
  - a. proper food habit
  - b. keeps healthy
  - c. improper food habit
  - d. good
  
4. 2/3 of our body contains
  - a. salt
  - b. sugar
  - c. water
  - d. sweat
  
5. Our country is a large peninsula in
  - a. south of Asia
  - b. north of Asia
  - c. west of Asia
  - d. east of Asia
  
6. The island country which lies south of our country is
  - a. Burma
  - b. Singapore
  - c. Malaysia
  - d. Srilanka
  
7. Lakshadweep island is in
  - a. Arabian Sea
  - b. Bay of Bengal
  - c. Indian Ocean
  - d. Red Sea
  
8. The Indian ocean, the Bay of Bengal and the Arabian Sea meet at
  - a. Kayalpattinam
  - b. Tuticorin
  - c. Kanyakumari
  - d. Trivandrum

9. The Queen of hill stations in South India is  
a. Yercard    b. Kodaikanal    c. Ooty    d. Ponmudi
10. The desert in our country is  
a. Sahara    b. Malwa    c. Thar    d. Kalahari
11. Vindhya and Satpura mountains lie in the  
a. Eastern plateau    b. Western plateau  
c. Northern plateau    d. Southern plateau
12. Himalayas stretches from  
a. Kashmir to Kanyakumari    b. Kashmir to Assam  
c. Kashmir to Calcutta    d. Assam to Calcutta
13. Himalayas are divided into  
a. two parallel ranges    b. three parallel ranges  
c. four parallel ranges    d. five parallel ranges
14. The tall grassland in shivalik range of Himalayas is  
a. duns    b. valley    c. terai    d. forest
15. In lesser Himalayas the valleys are called  
a. duns    b. rifts    c. peak    d. slope
16. Dehra Dun is a  
a. valley    b. pass    c. plateau    d. mountain
17. The insect that suck blood is  
a. butterfly    b. bees    c. bed bug    d. cockroach

18. Kiwi is a  
a. wingless bird   b. animal   c. beast   d. small insect
19. Ostrich is a  
a. animal   b. bird   c. insect   d. fish
20. The domestic animals which help in carrying loads are called  
a. farm animals   b. beast of burden  
c. pet animals   d. agricultural animals
21. Ship of the desert is  
a. elephant   b. donkey   c. fox   d. camel
22. The home of a dog is  
a. cage   b. hut   c. house   d. kennel
23. Animals move from place to place in search of  
a. food and shelter   b. friends  
c. comfort   d. satisfaction
24. Man's Basic needs are supplied by  
a. plants   b. animals   c. soil   d. water
25. The part of plant that grows towards sunlight is  
a. root   b. shoot   c. flower   d. leaf
26. The movement of root towards water is  
a. geotropism   b. phototropism  
c. autotropism   d. hydrotropism

27. During Photosynthesis
- a. oxygen is taken in
  - b. oxygen is given out
  - c. carbon-di-oxide is given
  - d. nitrogen is given out
28. The leaves prepare food by the process called
- a. photosynthesis
  - b. osmosis
  - c. respiration
  - d. evaporation
29. The process of taking water by plants from soil is
- a. absorption
  - b. retention
  - c. filtration
  - d. evaporation
30. The food factory of the plant is
- a. root
  - b. stem
  - c. leaf
  - d. flower
31. Cutting trees leads to
- a. water pollution
  - b. soil erosion
  - c. air pollution
  - d. afforestation
32. The planting of tree and developing of forest is called
- a. deforestation
  - b. oxidation
  - c. purification
  - d. afforestation
33. Good source of pure water is
- a. well water
  - b. river water
  - c. tank water
  - d. deep bore wells
34. Water can be made safe for drinking by
- a. boiling
  - b. cooling
  - c. icing
  - d. sugaring

35. The natural disinfectant is  
a. acid      b. sunlight      c. soap      d. bleaching powder
36. Throwing tons and tons of refuse into rivers and oceans result in  
a. soil pollution      b. air pollution  
c. water pollution      d. land pollution
37. Gobar gas is produced from  
a. plants      b. cow dung      c. chemicals      d. industrial waste
38. The chief source of all energy is  
a. moon      b. sun      c. wood      d. water
39. The earth gets more heat during  
a. summer      b. winter      c. autumn      d. spring
40. Woolen clothes are worn in  
a. summer      b. winter      c. spring      d. autumn
41. Snow is formed when water vapour  
a. freezes in air      b. freezes with dust  
c. freezes with iron      d. freezes with solid substance
42. Mist is formed when vapour in air condenses on  
a. cold objects      b. dust particles  
c. solid substance      d. liquid substance
43. Slow moving rivers of ice is  
a. valley      b. pass      c. snow field      d. glaciers

44. Planets are
- a. non luminous
  - b. luminous
  - c. non moving objects
  - d. poisonous
45. The largest planet is
- a. earth
  - b. mars
  - c. neptune
  - d. jupiter
46. The brightest planet is
- a. mercury
  - b. venus
  - c. earth
  - d. mars
47. Comets are
- a. frequently seen
  - b. daily seen
  - c. annually seen
  - d. very rarely seen
48. Asteroids are
- a. major planets
  - b. minor planets
  - c. dust particles
  - d. satellites
49. The star that helps to decide direction in night is
- a. great bear
  - b. blue star
  - c. durva star
  - d. sun
50. Stars are not visible during day time because of
- a. absence of sunlight
  - b. moon light
  - c. bright sunlight
  - d. clouds

ANNEXURE - IX

S C O R I N G     K E Y

ENVIRONMENTAL AWARENESS TEST - A<sub>1</sub>

Pre evaluation

Standard - III

1. c	11. c	21. d	31. b	41. b
2. c	12. c	22. b	32. d	42. d
3. a	13. a	23. b	33. b	43. c
4. d	14. b	24. c	34. d	44. a
5. a	15. d	25. b	35. a	45. a
6. b	16. c	26. a	36. d	46. a
7. a	17. b	27. a	37. a	47. b
8. b	18. b	28. b	38. a	48. c
9. c	19. c	29. c	39. d	49. b
10. a	20. d	30. a	40. b	50. c

ENVIRONMENTAL AWARENESS TEST - A<sub>2</sub>

Pre evaluation

Standard - IV

1. a	11. c	21. b	31. b	41. b
2. c	12. b	22. a	32. d	42. c
3. d	13. d	23. a	33. c	43. b
4. a	14. d	24. b	34. a	44. d
5. a	15. c	25. b	35. d	45. -
6. c	16. a	26. c	36. d	46. b
7. b	17. c	27. c	37. b	47. a
8. b	18. a	28. a	38. c	48. d
9. a	19. d	29.	39. a	49. b
10. b	20. b	30. b	40. a	50. c

**ENVIRONMENTAL AWARENESS TEST - A<sub>3</sub>**

**Pre evaluation**

**Standard - V**

1. d	11. d	21. d	31. b	41. b
2. b	12. c	22. d	32. d	42. a
3. c	13. b	23. a	33. d	43. d
4. c	14. c	24. a	34. a	44. a
5. a	15. a	25. b	35. b	45. d
6. d	16. a	26. d	36. c	46. b
7. a	17. c	27. b	37. b	47. d
8. c	18. a	28. a	38. b	48. b
9. c	19. b	29. a	39. a	49. c
10. c	20. b	30. c	40. b	50. c

## ANNEXURE - X

### TEACHING MATERIALS USED

# Environmental Sanitation

For a happy and healthy living, clean environment is a pre-requisite. The word 'environment' stands for the things that surround us. Our surroundings include our home, school neighbourhood, pathways, fields, well, pond, stream, etc. Basically we can divide our surroundings in to three major environmental division i. e. AIR, WATER and LAND. A clean environment promotes healthy living while an unclean one is the root cause of all diseases.

We are all an integral part of our environment. We could keep it clean and enjoy its bliss or we could abuse it and pollute it and thereby suffer the consequences in the form of an unhealthy, disease filled life.

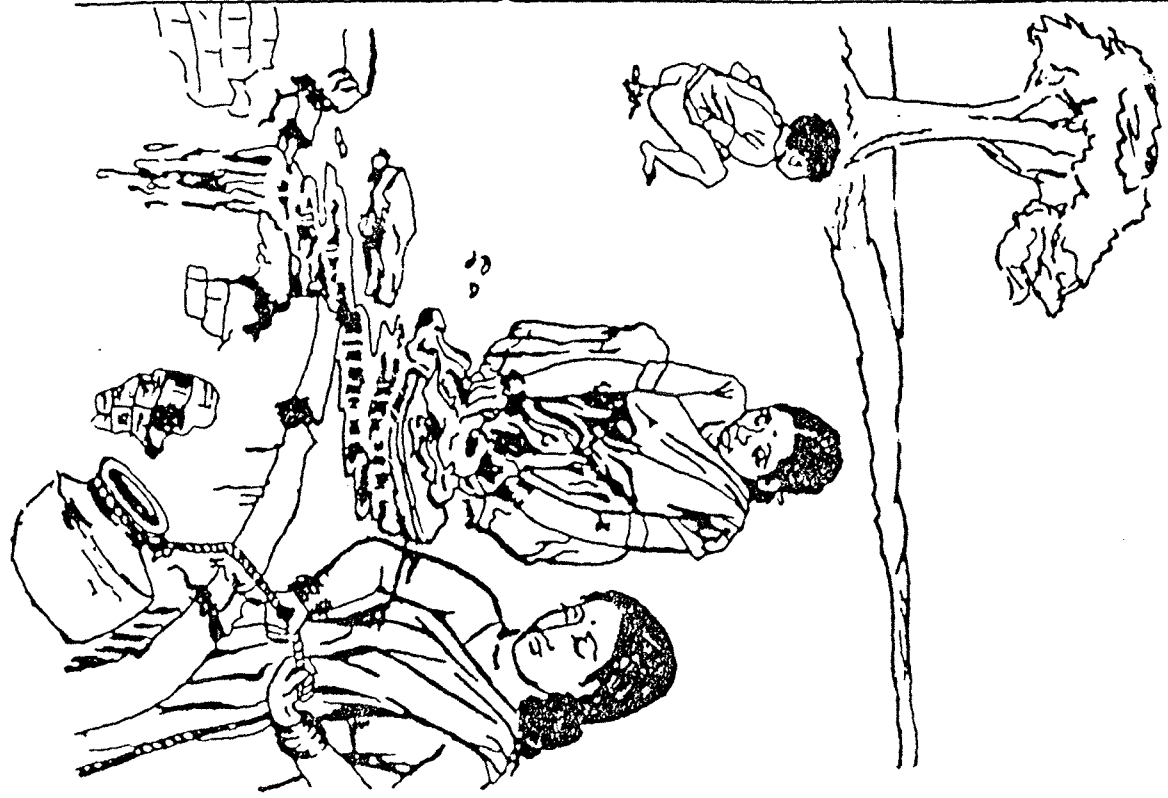
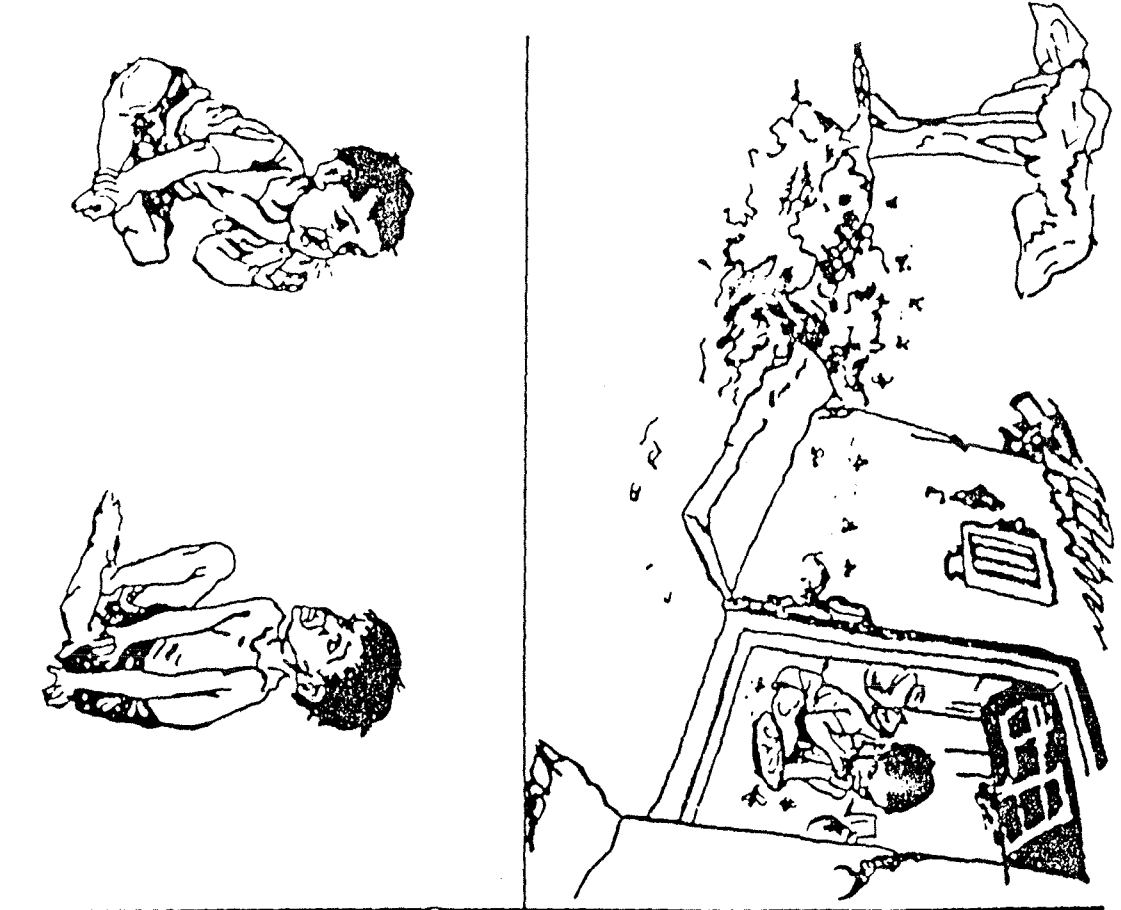
The picture (on Page No. 34) shows the environment we live in. Look at it closely. What do you see?

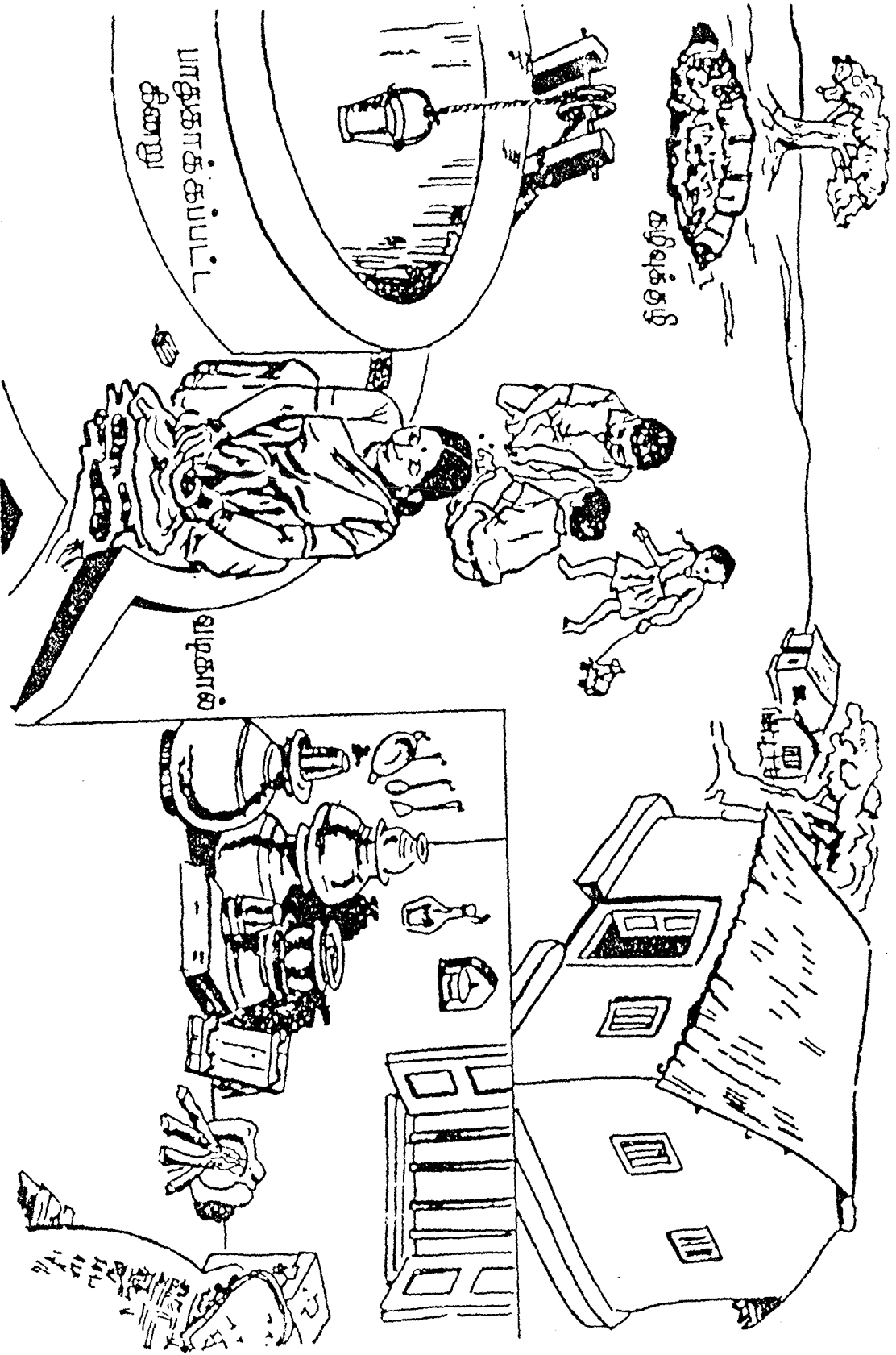
- Children happily playing
- A home
- A well
- A river
- A latrine
- A waste disposal pit
- Healthy trees

Now look at the next picture (on Page No. 35) What do you see ?

This picture has three sections :

The first section shows inside and out side of a home. The house and its surroundings are dirty. Flies can be seen travelling from the refuse heap to the food the child is eating.





பாதுகாக்கப்பட்ட  
சிற்று

கழிவுத்தீ

வடிகால்

The second section of the picture shows a child defecating in the open very close to a well. A woman is washing clothes near the well and the water from the wash is running into the well. This well is used by the community for drinking water.

Now look at the children in section three. Both these children are sick and in poor health and obviously it is because they live in such dirty surroundings.

Now let us again look at the children in the first picture. They appear healthy and happy. The reason for this is quite obvious i. e. clean surroundings.

Comparing the two pictures it is easily understood that our surrounding is what we make it. We should be greatly concerned about our environment/surroundings. We should take proper care of it and keep it clean and beautiful. The environment in return will give us an enjoyable and healthy life.

## **Environmental Pollution Problems and Possible Solutions**

Now we will take a closer and more detailed look at the environment. As stated earlier, environment can be divided into three major areas :

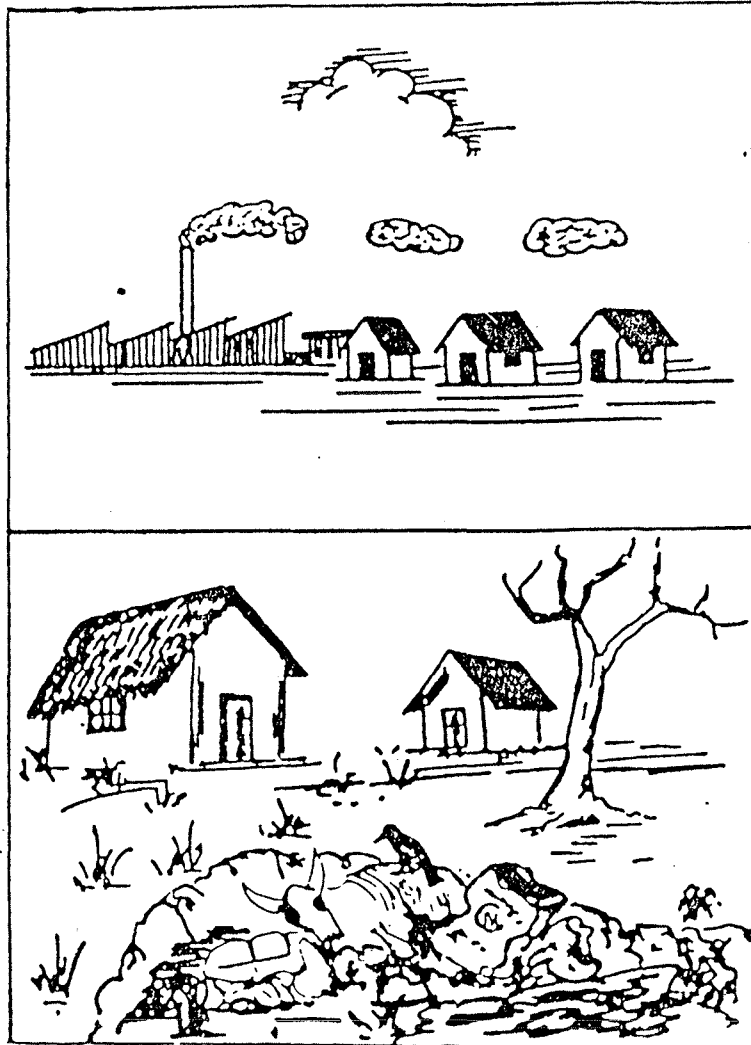
1. AIR
2. WATER
3. LAND

### **AIR**

Air is vital for the survival of all living things including plants. Air keeps everyone healthy by helping in purifying the blood. However, if the air we breathe in is not clean, it will help propagate diseases and other malfunctions in the body.

## How does air become dirty (polluted) ?

Air pollution is caused mainly by industrial pollutants and by bio - degradable pollutants (decaying biological material).



**INDUSTRIAL POLLUTANTS :** are mainly fumes emitted (in the form of smoke) by factories, refineries, tanneries etc. These industrial fumes contain hazardous chemicals which become suspended in air and dangerous to health when inhaled. Spraying of pesticides also pollutes the air temporarily.

**BIO-DEGRADABLE POLLUTANTS :** decaying biological waste like dead carcasses, decaying plants and human excreta normally harbour disease virus and germs. These

viruses and germs get carried away by the air and are either breathed in by us or deposited on food. Similarly other germs emitted with spit and cough of people suffering from contagious diseases like TB, Influenza etc. also pollute the air.

### **How to prevent air pollution ?**

As far as the industrial pollutants are concerned they are usually beyond the control of an individual. A collective effort is necessary to fight this kind of pollution. Perhaps an intervention at the national level in the form of legislation might be needed and for this individuals can help in generation of opinion and support among the community. The Bio-degradable pollutants are however easier to handle and each of us can play an important role in helping overcome this problem by observing simple civic rules. Some of the general rules could be as follows :

- a. Bury/burn all dead and decaying material specially the excretions of diseased persons.
- b. Keep surroundings clean.
- c. Keep eatables and drinking water well covered.
- d. Isolate persons suffering from contagious disease.
- e. Disinfect home and household articles used by sick persons.

Polluted air causes respiratory diseases like Bronchitis, Asthma, TB, circulatory disorders, coughs and colds. Air when polluted with the germs, viruses of various diseases, becomes a disease carrier.

### **WATER**

Like air, water is also very important for all living things. Similar to polluted air, polluted water can be very harmful to the health of the people. Sixtyfive percent of our body is water. Our body losses water through urine, sweat etc. So we need water everyday to make up for this loss. We also

need water to cook our food, to clean our body, to wash our clothes etc. It is therefore, essential for us to ensure that the water we use is clean and safe. Normally we use water sources like rivers, ponds and wells.

**How does water become polluted ?**

1. Stagnation of water causes it to become polluted.
2. Stagnation of water waste around useable water sources.
3. Dust, leaves and droppings of birds falling directly into water.
4. By animals leaving their excreta near these sources.
5. Open defecation by people near these sources.
6. Washing dirty clothes near/in these sources.
7. Animals and human beings bathing inside these sources.
8. Use of soiled containers for drawing and carrying drinking water.
9. Emitting of industrial waste into these water sources.

**How to prevent water from becoming polluted ?**

1. Proper drainage should be provided around the water source to avoid water stagnation.
2. Cover the well to prevent leaves etc., from falling inside.
3. Prevent animals and humans from defecating near the water source.
4. Separate platform should be raised for washing and bathing to prevent waste water from running into the water source.
5. Do not bathe animals in the water source.



6. Use clean containers for drawing water from wells.
7. As far as the industrial pollutants are concerned they are usually beyond the control of an individual. A collective effort is necessary to fight this kind of pollution. Perhaps an intervention at the national level in the form of legislation might be needed and for this, individuals can help in generation of opinion and support among the community. The Bio-degradeable pollutants are however easier to handle and each of us can play an important role in helping overcome this problem by observing simple civic rules.

### IMPORTANT

Do not bathe or use pond water for household purposes i. e. drinking, cooking etc. which is either stagnant or in which animals are bathed or clothes are washed.

A properly protected well is quite safe. Specially a bore-well with a hand pump.

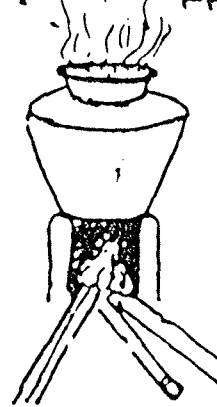
However, in case there is no alternative but to use polluted water source, then the following should be done :

1. The water sources (if small) should be periodically disinfected by using bleaching powder or potassium permanganate in adequate quantities.
2. Filter and boil all water for drinking.

ஊக்கட்டுதல்



வகாதிக்க வைத்தல்



3. Store water in a clean container and cover it by a lid. Do not dip hands into the water. Always use a separate clean dipper for drawing water from the pot.

Polluted water causes diseases like Cholera, Typhoid, Jaundice, Dysentery etc. and is responsible for several worm infestations and skin afflictions.

## LAND

How important land is in our every day life hardly need be mentioned. We walk on it, we play on it and we work on it. However, this is the most abused areas of our environment and is responsible for quite a few diseases. In fact quite a few problems of land pollution directly or indirectly affect Air and Water pollution and in a large measure contribute to it. Land surrounding us must therefore be always kept clean.

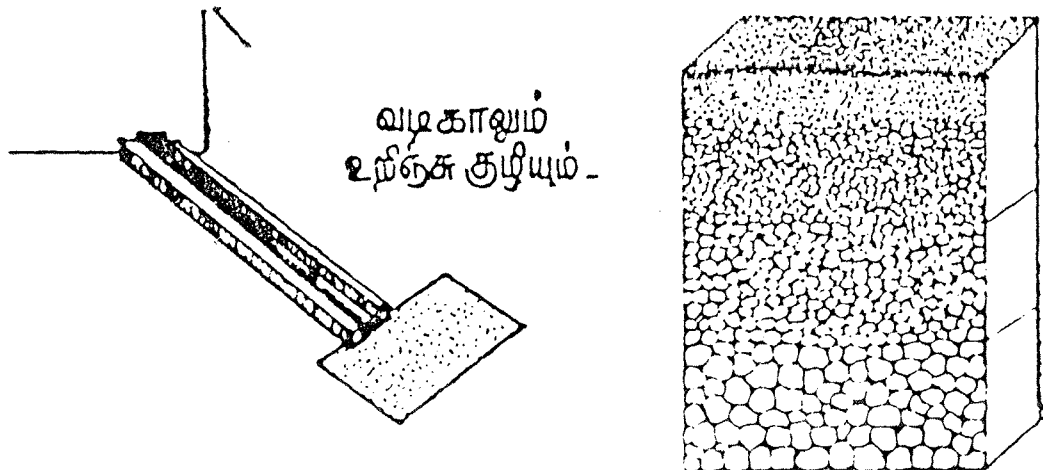
How does land become polluted?

Generally, land pollution is caused by :-

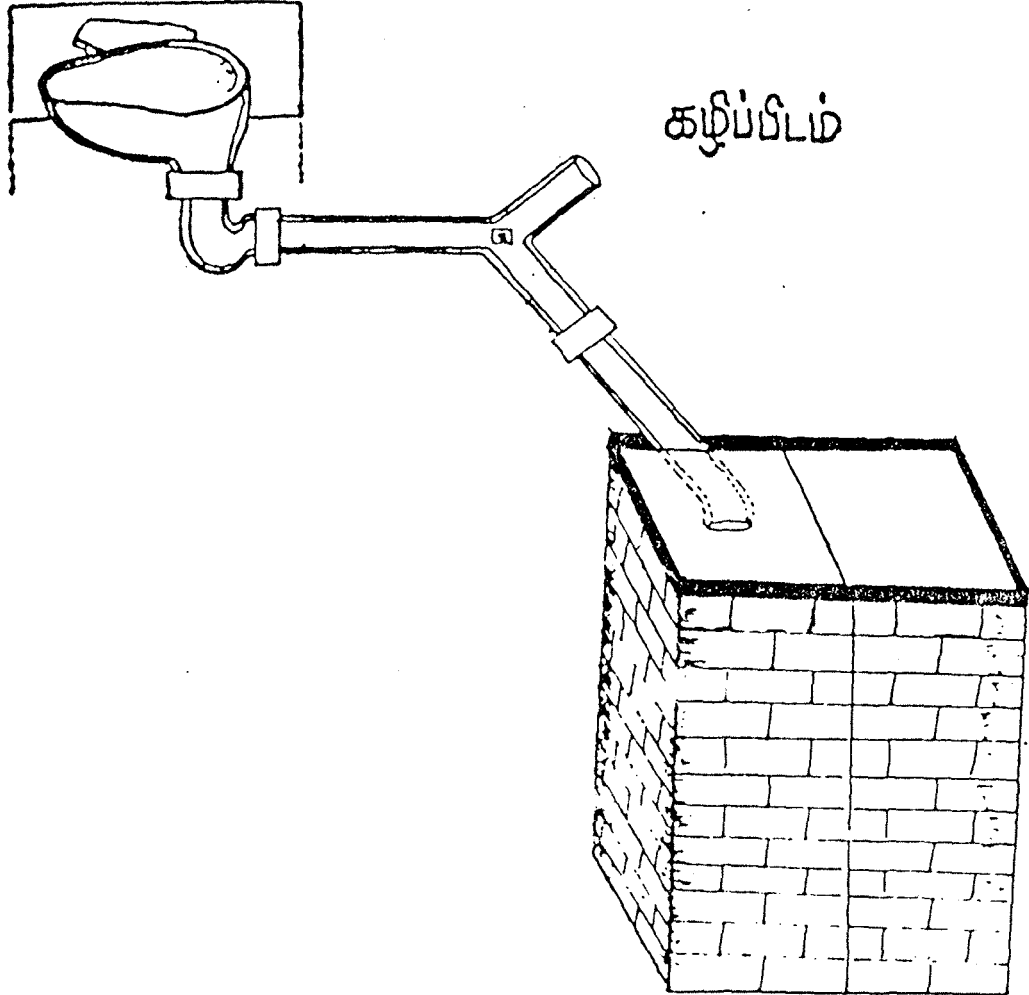
- Improper and open drainage systems.
- improper disposal of organic/inorganic wastes like garbage, kitchen, refuse, food waste, animal shed waste, (dung & urine), animal carcasses, faeces of humans and animals, iron, nails etc.

How to prevent land pollution?

- By providing covered drainage and soak pits for proper disposal of waste water.



Stopping defecation in open and using latrines in each house. If however latrine construction is not practicable for some reason then open defecation should be done in areas away from pathways, habitations and water sources. Cover defecations immediately with soil.



— Encourage use of dust-bins, urinals and spittoons.

Generally helminths like hook-worm, round worm are a direct result of contamination of land by faecal matter. Communicable diseases like cholera, typhoid, dysentery etc, are also transmitted through this form of pollution.

## Personal Hygiene

Practice of sound health habits is essential for a healthy living. In this chapter we will discuss how personal habits affect the proper upkeep of important parts of our body.

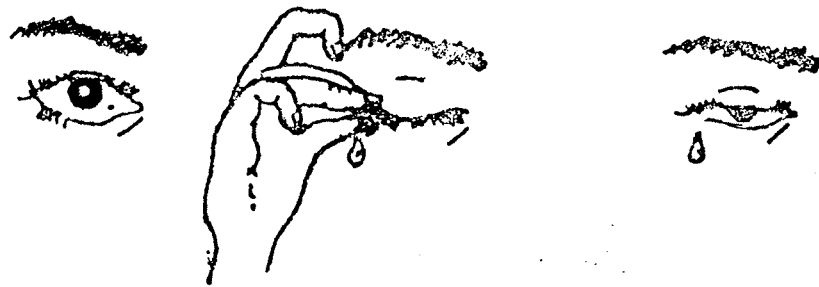
### EYES

They are a very important part of our body. The beautiful world around us will become a dark place if we lose our eye sight. Eye sight can be impaired by reading very small letters, reading in insufficient or even very bright light, reading in a moving vehicle or try reading in a reclining position and by eating foods deficient in Vit. 'A'.



Normally a minimum distance of one foot between the book and the eyes should be kept. Keeping the book too close or too far away from the eyes or inclining the head to one side in order to read comfortably are sure signs of defective eye sight. By observation of those signs a teacher should detect children with defective eye sight and inform their parents to take timely preventive/curative measures.

Eye sight can also be damaged by foreign bodies, like sand particles in the wind or soot from the factory smoke. Eye should be washed well in clean water everyday. When a foreign body falls in the eye we should not rub our eyes. Easier method of removing it is to lift the upper eye lid and place it gently over the lower eye lid. By doing so the dirt will be eliminated along with the tear expelled from the eye. If dirt still persists rinse the eye in a bowl full of water. Even when this fails, a doctor should be consulted.



↑



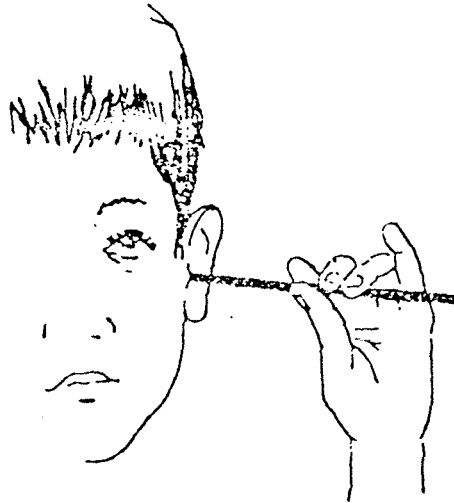
↑

In conditions of conjunctivitis, watering of the eyes, redness of the eyes, irritation and failing sight, the help of a doctor should be taken.

We get necessary vitamins in Vit. 'A' to keep our eyes healthy, from green and leafy vegetables and from yellow fruits and vegetables. Consumption of such vegetables and fruits will also prevent night blindness.

## EARS :

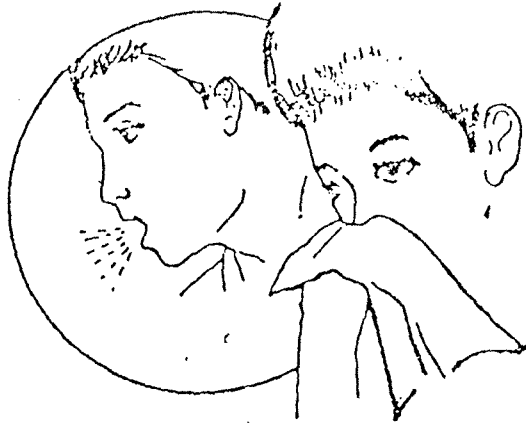
They help us to hear sounds and are therefore a very essential part of our body. People generally use sticks, pencils etc., to clean the wax from the ears. This is a dangerous practice since the ear drums are very delicate and can easily be punctured resulting in loss of hearing. Slapping a person close



to the ears or a sudden loud noise may also damage the ear drums. It is advisable to consult a doctor upon noticing any discharge or pus formation in the ear. No oil or water should be poured in the ear if a discharge is noticed. Do not consult Quacks for any ear treatment. When blowing the nose it is advisable to blow slowly and through one nostril at a time. Failure to observe this may result in damage to the ear drums. To prevent water from entering the ears while swimming they should be plugged with cotton or a piece of cloth.

## NOSE :

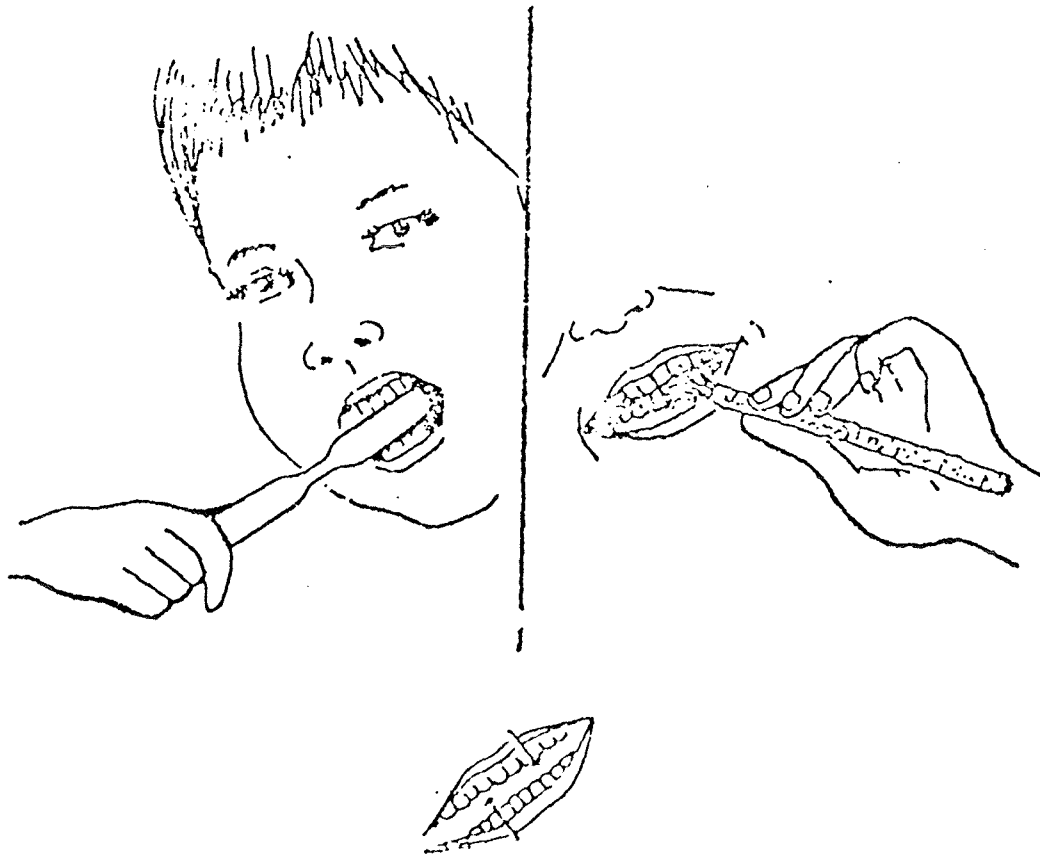
Nose facilitates breathing and smelling. Nose also helps in filtering the air breathed in from dirt and dust therefore breathing should always be done through the nose. Some people unconsciously breathe through the mouth — this is a sure sign of some defect in the nose. A doctor should be consulted immediately to correct the fault.



We should not blow and clean our nose in public places and this will help spread disease germs. Similarly, while sneezing or coughing a handkerchief should be placed on the nose and mouth to prevent spread of diseases through air. Fingers should not be used for digging the nose for cleaning it. Doing this facilitates disease germs entering into the body.

### TEETH & MOUTH

A good set of clean teeth provide beauty to the face but more importantly they help us in chewing food and making it



easily digestible. To keep the teeth healthy they should be brushed frequently, at least twice a day. Brush or twigs along with tooth powder should be used for cleaning teeth. Brushing of teeth should be done methodically i.e. always brushing starting from the gum downwards for upper and upwards for lower set of teeth (see figure). On no account should one use brick-powder, sand or grit as they destroy the enamel and hasten tooth decay. Regular cleaning of the tongue is also essential.

Good eating habits also assist in avoiding tooth decay. Avoid consuming too much sweets. Consumption of too hot or too cold foods also affects the teeth adversely.

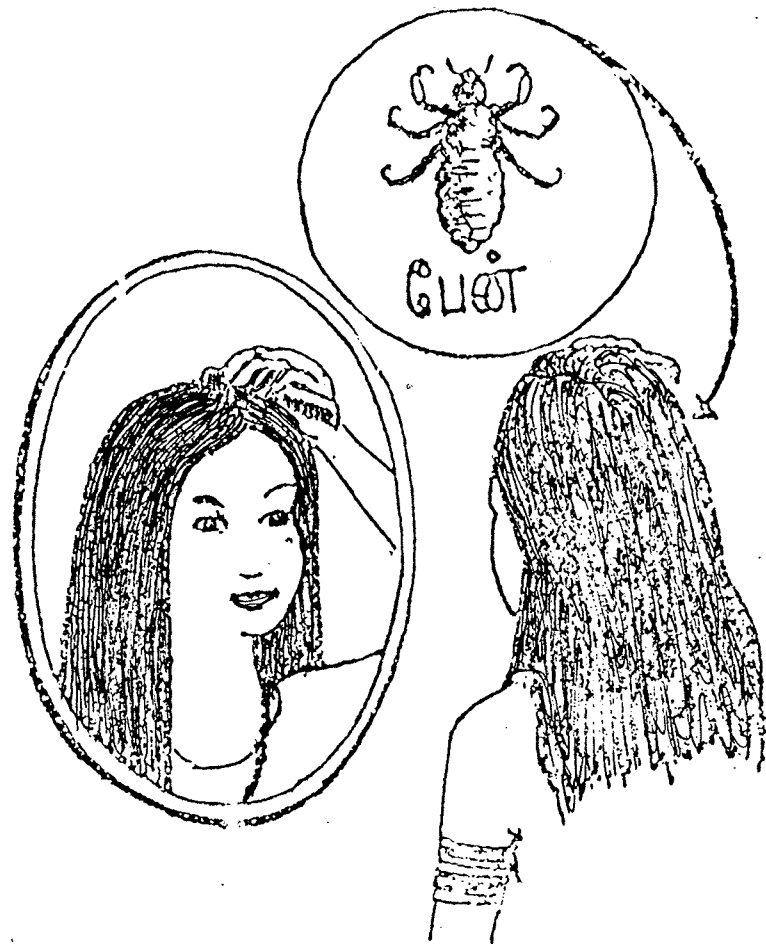
To keep teeth and gums healthy consumption of nutritious foods like carrots, radish, tomato, goose-berry and green and leafy vegetables is a must.

Decayed teeth spread disease germs to other parts of the body. Proper medical assistance should be sought for care of dental caries.

## **HAIR :**

Hair should always be kept clean and tidy. Any disregard to this will result in scalp disorder and possible loss of hair. Hair should be washed everyday (at least twice a week for girls using soap-nut power 'Shikakai'). Massaging the scalp will help keep the scalp healthy by activating blood circulation. Hair should be brushed or combed frequently to keep it healthy and lustrous.

Lice and dandruff develop in unkempt hair. Scabies may also develop. However, they can be avoided by washing hair frequently and by using one's comb exclusively. Using common combs help the spread of dandruff, lice and scabies of one person to another. Special care is required for those with scabies on the scalp. All hair should be shaved off and



prescribed medicine applied. Removing hair helps in healing fast. Towel, comb and clothes of a person suffering from scabies should be isolated.

#### SKIN:

Skin helps in excreting sweat and in maintaining the body temperature. It also serves as a protective covering for the whole body. It also adds to personal appearance. Skin which is soft, smooth, blemish free and without any cracks or pimples is a sure sign of a healthy body.

To keep the skin clear it is essential to take bath as frequently as required and at least once a day is a must.

Bathing in cold water is good. Bathing enables us to become fresh and healthy and also cleans up the sweat pores thus enabling proper excretion of sweat.

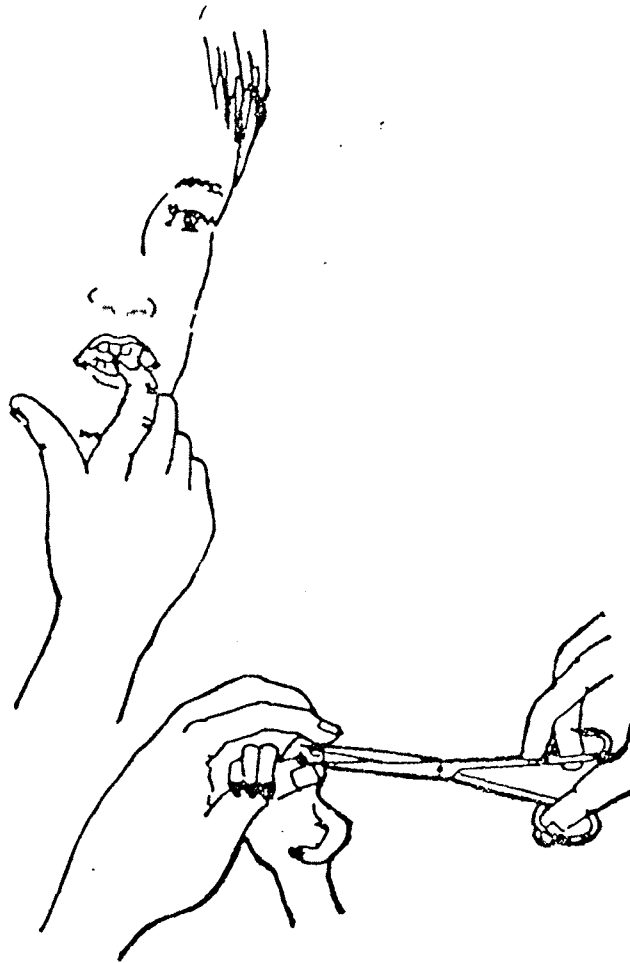


However, bathing alone will not help. Even the clothing we wear should be washed daily. Clothes should be dried well in the sunlight. Drying in sunlight frees the clothes of germs. Special care has to be paid in cleaning the clothes of persons suffering from contagious diseases like Scabies. Their clothes should always be boiled and washed.

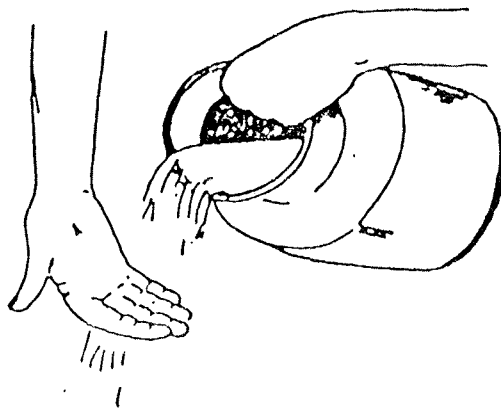
Skin should also be protected from extreme heat or cold. Do not take a bath immediately after meals as it interferes with process of digestion. Consumption of greens, carrots, papaya, mango, drumstick, liver and eggs help us keep the skin healthy.

## HANDS:

Cleaning of hands is extremely important. Proper and timely cleaning will prevent spread of diseases. Finger nails should always be cut and trimmed. Nails usually harbour dirt and disease germs.

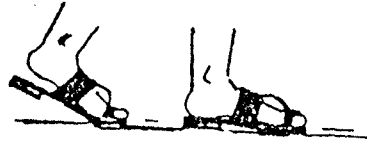


Remember to wash hands after play or work, before cooking, before serving food, before and after eating, after defecation, before and after attending to a sick person or when ever the hands become soiled.



## LEGS:

Legs should always be washed when we return home from outside after play or work. Like washing of hands this too should be done as frequently as required. Germs like



hookworm enter the body through the legs. Washing them, help prevent this to some degree. It is desirable to wear shoes or chappals while going out or walking/playing in areas which are not clean.

## EXERCISE:

Exercise is as essential for a healthy body as proper food. It helps in improving blood circulation and activates sweating thereby increasing and facilitating required metabolic activity in the body. Exercise, however, should be chosen based on one's age and physical condition. Walking briskly is a good exercise for all ages. Exercise immediately after meals however is harmful.

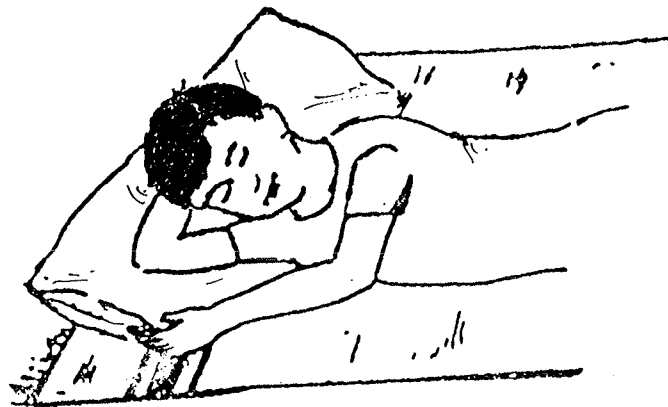
## FOOD HABITS:

Food is essential for many body functions. It provides us energy to work or play. It provides necessary body building nutrients as well as necessary nutrients for proper upkeep of the body. (Nutritional aspects of food have been adequately covered in the chapter on food and Nutrition). It is stressed here that food consumption must be

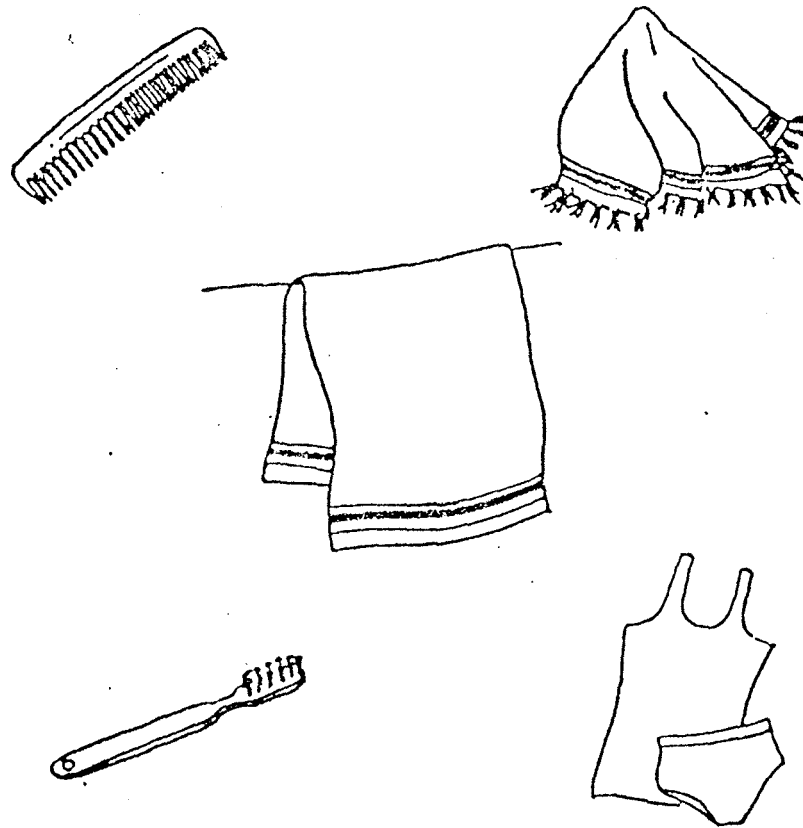
regulated i.e., eat at regular timings. Always eat a balanced diet in order to fulfil all types of needs of the body. Drink a lot of water, at least 8 to 10 tumblerfuls of water in a day. Eat in clean environment. Those who cook must remember to wash vegetables etc., well before cutting, cut in large chunks and do not wash after cutting. A lot of nutrients are lost when washing after cutting vegetables.

### **SLEEP & REST:**

Rest and sleep are as essential as exercise for a healthy living. Adults generally require 6 to 8 hours of sleep while



younger children and old people require more, depending on age and physical condition. Sleep and rest refresh our body and mind.



Items of exclusive use :

The items shown in the above picture should always be exclusively used to avoid contagious diseases.



main reason for this being the reduction and stabilization of population growth. In india a great majority of us do not have access to the basic needs mainly because of tremendous population increase

The Govt. of India has taken several steps to ensure that all citizens lead a healthy and happy life. However, Government alone cannot do all that is needed. For example, due to improved medical services the death rate among young and old has decreased. This together with unchecked growth upsets all country plans. It is therefore, imperative that each individual participates in the development process by limiting his family size.



# ANIMALS IN OUR LIVES

## Objectives

To make students aware of how animals contribute to our lives.

## Activity

Ask students to make a list of the commodities and services which we get from animals. Divide the class into two groups. Ask one group to draw pictures of the animals which are directly used by man and the other group to illustrate the products and services they provide. This should be placed on the display board and pictures of the animals should be matched with their products and services.

For instance the picture of a buffalo or a cow should be matched with the picture of milk and its derivatives, or sheep with wool and woollen clothing.

Having done this, students should be asked to go out and observe various domestic animals and make notes on what they eat, how they have to be looked after, etc. Concepts of proper management and care of these animals should be discussed and excursions to farms and dairies should be organised.

Care should be taken not to omit animals which are used as beasts of burden.

A separate list should be prepared of various animals kept as pets.

## Variation/extension

Animals domesticated for traditional needs in other lands should be studied e.g., two-humped camels, reindeer, llamas, husky dogs, etc.

To sensitise students to cruelty to animals, a separate project may be designed to see whether domesticated animals are receiving the sort of care they deserve.

## Thrust area

Environment

## Subject

Science

## Places

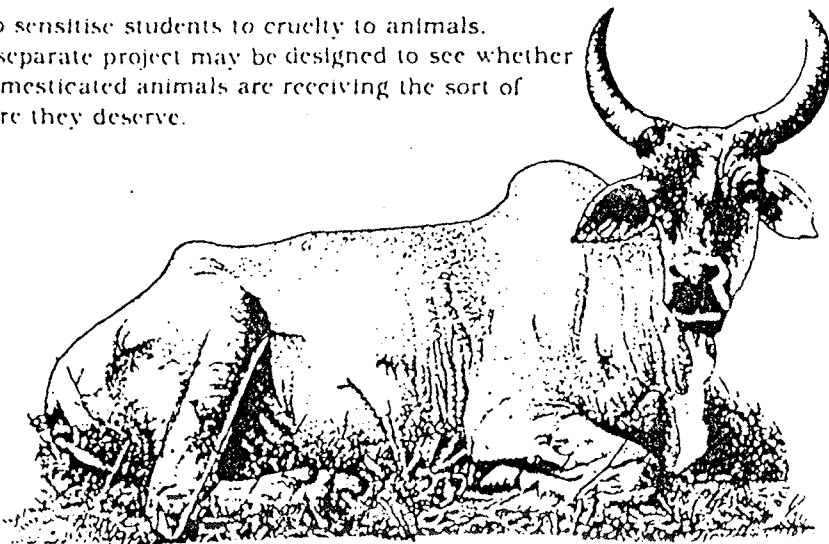
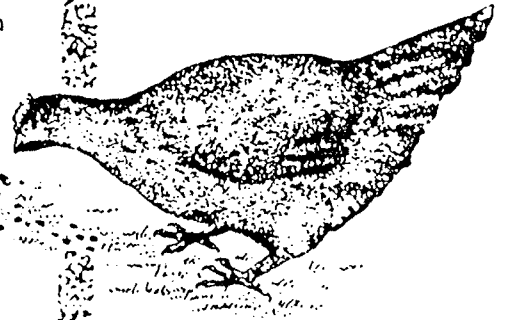
Classroom, Outdoors,  
Home

## Group size

Entire class divided  
into two groups

## Materials

A large display board,  
painting material



# Soil Salinity

## Objective

To show how soil salinity affects plant growth.

## Activity

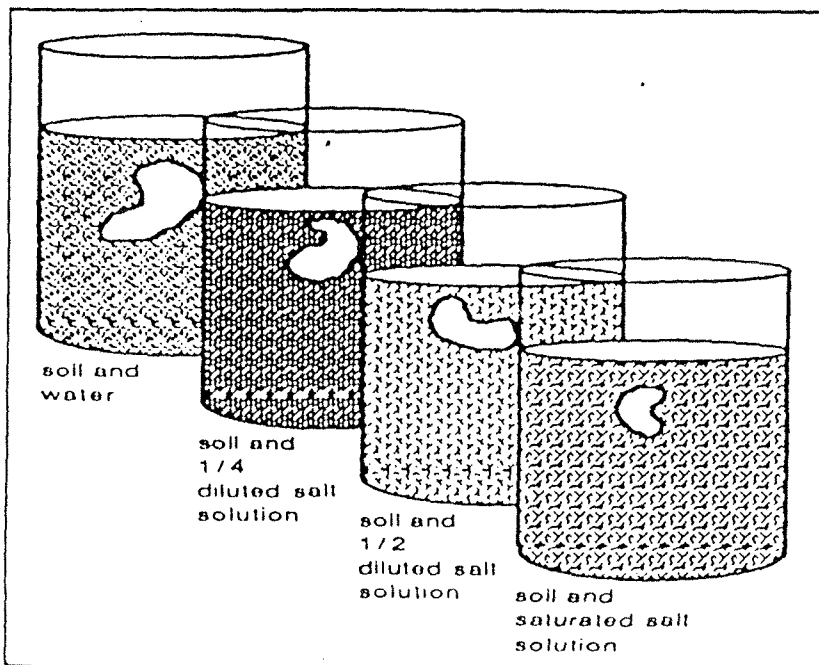
Take four similar tin cans or pots. Let the students fill each of them with soil. Label these as 1, 2, 3 and 4. Plant some bean seeds or gram seeds in each of the four pots.

Take four containers. Label these as 1, 2, 3 and 4. Let the students take 3.5 litres of water in the first container and mix enough salt in it to prepare a saturated salt solution (i.e., until salt settles down even after shaking the solution well).

Let them take out 1.5 litres of the saturated solution into the second container and add 1.5 litres of plain water to it. They will now have 3 litres of half-diluted salt solution.

Now let the students measure out one litre of this half-diluted solution into the third container and add one litre of plain water to it. They will now have two litres of quarter-diluted solution. In the fourth container, let them take two litres of plain water.

Let the students use the water in the container 1, 2, 3 and 4 to water the pots 1, 2, 3 and 4 respectively. Let them continue watering the plants as mentioned above for a week or ten days and observe the results on plant growth.



**Subject**  
Science/Social Studies

**Place**  
Classroom/Outdoors

**Group size**  
Entire class

**Duration**  
45 minutes to prepare the activity and then 10 minutes everyday for a week.

**Suitable time/season**  
Any time

**Materials**  
Four similar containers (tin cans or pots); soil, 4 containers to hold water (one large container of at least 5 litre capacity and three containers of at least 2 litre capacity each.), salt, bean seeds or gram seeds.

# TREE OF LIFE

## Thrust areas

*Ecology, Wildlife*

## Subjects

*Science, Maths*

## Places

*Classroom, Outdoor*

## Group size

2 to 3

## Materials

*Paper, pencil*

## Objectives

To make students aware that trees harbour a rich and complex variety of life.

## Activity

Ask each student to select a tree for himself and observe it carefully. The students should draw an outline of the shape of the tree to mark what they see on it.

They should note down whatever life they are able to see on or around that tree. They should note down the details like : what types of birds, insects and other animals did they see on the tree and where? How many were there? Did they notice any nest? What were the birds, animals, insects doing?

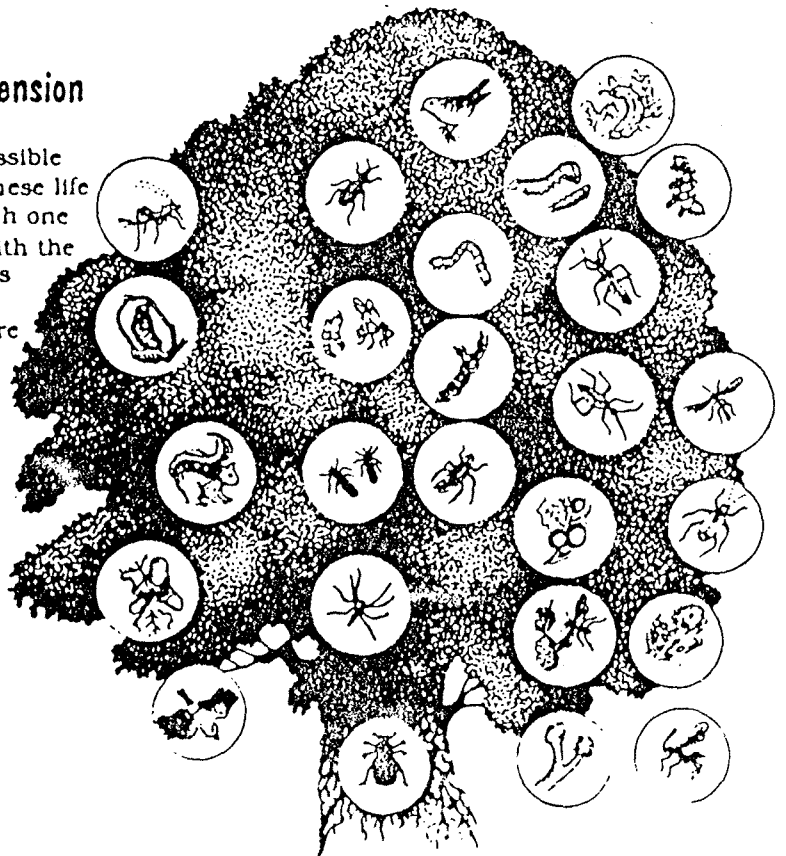
The students may go for observation more than once to notice the patterns of life on and around the trees.

They should then return and present their drawings to the class.

Which kinds of trees have a greater variety of life on them and why?

## Variation/extension

Discuss the possible relationships these life forms have with one another and with the tree. Draw lines connecting the things which are inter-related.



# I AM A TREE

## Objectives

Identifying oneself with a tree and imagining its response through acting.

## Activity

Ask the students to act out what happens to a tree when there is a

- Gentle breeze
- Violent storm
- Forest fire
- Squirrel running up its trunk
- Person plucking leaves and fruits
- Person carving on its bark
- Shower of rain
- Child climbing it
- Man watering it
- Person cutting it

This activity would be very effective if there was some music with it.

## Variation/extension

Students should observe trees during the year in as many of these conditions as possible.



## Thrust areas

*Forestry, Conservation*

## Subject

*Performing arts*

## Place

*Classroom*

## Group size

*10-15*

## Duration

*15-20 minutes*

## Materials

*Music optional*



# LEAF FORMS

## Objectives

To observe plants and leaves and know more about their shapes and forms.

## Activity

Ask students to collect leaves from their surroundings.

Let them group these leaves according to their respective edges —

Spiky edges: Wavy edges: Smooth edges

Are leaf edges of the same type of plant always the same?

Instruct them to put these leaves between sheets of old newspapers. When these leaves are dry, they can paste them on a hard paper and write the name of the plant or tree below each of them.



## Thrust area

*Environment*

## Subject

*Science*

## Place

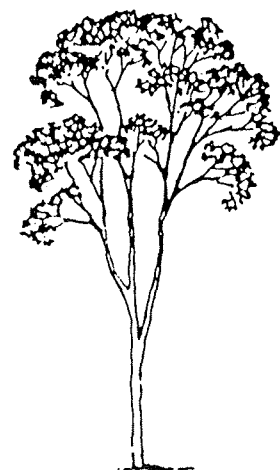
*Outdoor*

## Group size

*Individual*

## Materials

*Leaves from different plants, old newspapers, hard paper, gum, pencil*



# THE FORMATION OF RAIN

## Objectives

To give students a better understanding of how water from the ocean, pond, river, etc. comes back to the ground.

## Activity

- Ask the students to bring a transparent plastic bag and pour a teaspoonful of water into it.
- Tie the mouth of the bag with the thread.
- Place the bag in direct sunlight.
- Ask the students to observe beads of water forming on the top and sides of the bag.
- Ask them how these droplets got there.
- Transfer the bag to a cool place and ask them to observe what happens to the water droplets.
- Discuss evaporation and condensation of water in nature.

## Thrust area

*Environment*

## Subject

*Science*

## Places

*Classroom, Home*

## Group size

*Individual or group*

## Duration

*One hour*

## Suitable time/ season

*Daytime in enough  
sunlight*

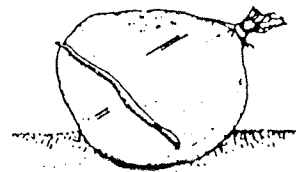
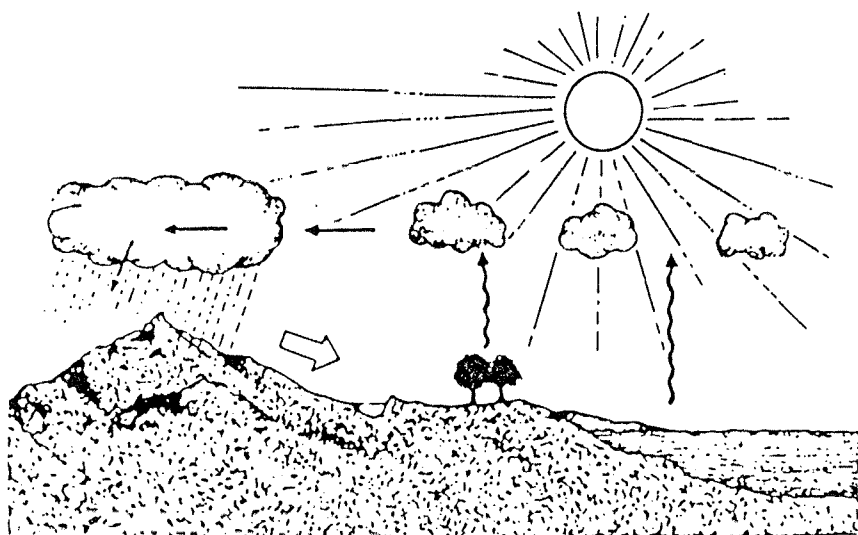
## Materials

*A transparent plastic  
bag*

*A piece of thread to  
tie the bag*

## Pre-requisites

*The student should know that water on earth is in constant circulation called the water cycle. Water from soil, oceans, ponds, leaves of plants, etc. evaporates by getting heat from the sun. In its vapour state, water is carried through air and eventually condenses into small droplets to form clouds and from clouds the water falls back to the ground in the form of rain or snow.*



# SOUND AND NOISE

## Thrust areas

*Environment,  
Pollution*

## Subjects

*Science, Social Studies*

## Place

*Classroom*

## Group size

*Entire class*

## Duration

*30 minutes*

## Materials

*Note book, pencil,  
objects for making  
sounds with*



## Objectives

To make students aware of the concepts of sound and noise and realise that these are relative terms.

## Activity

Ask students to make a list of sounds they hear. These may be sounds from nature like falling water, a wind blowing or thunder; they may be sounds made by animals like a dog barking, a bird chirping or a donkey braying; or sounds of man like singing, shouting, scolding etc. Ask them to sort out these in terms of pleasant sounds and unpleasant sounds. Are the sounds classified perceived the same way by all the students?

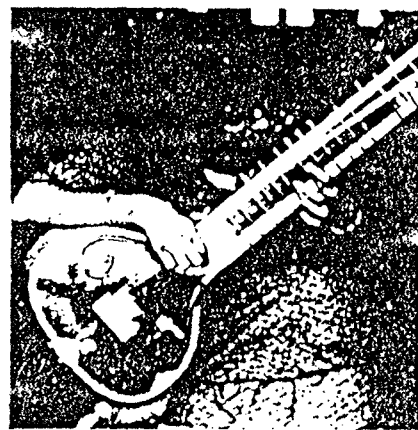
Ask each student to make some sound. You can tell them to make animal sounds, or any other sounds — even an unusual one which is not generally heard. They may also make sounds using another object, like rubbing two things or banging one against another. Let the other students say whether they felt the sound was pleasant or unpleasant.

Ask students to indicate what functions sounds made by animals perform. Do they think these sounds are pleasant or unpleasant to the animals?

## Variation/extension

What are different animal sounds called?

Can you make a sound that a cat would not like, or a dog would like?



# MORE THAN MEETS THE EYE

## Thrust area

*Pollution*

## Subject

*Science*

## Places

*Classroom, Home*

## Group size

*Individual, Groups of  
2 to 3 students*

## Duration

*One day*

## Suitable time/ season

*Whenever there is  
bright sunlight*

## Materials

*Transparent drinking  
glasses or empty  
bottles, saucers, salt*

## Objectives

To create among students an awareness that water contains dissolved and undissolved substances and to introduce the concept of water pollution.

## Activity

Ask the students to collect water in glasses or transparent bottles from different sources like a pond, water tank, stream, tap, etc.

Tell the student to observe each.

Is the water clear or murky?

What colour is the water?

Is anything seen floating on the water surface or in it to grade the water : clearest, clear, murky, very murky.

Placing the water in different glasses at a time is a good method of comparing the water in them.

Let the water stand for 30 minutes and then ask the student to observe it again.

Has anything settled at the bottom of the glass?

Ask the students to place equal amounts of water (say 20 teaspoonful) from the glasses into separate saucers. Place the saucers in direct sunlight until the water evaporates.

Is there a residue? What could it be? Why could they not see it before?

## Variation/extension

Ask the students to take a glass of drinking water and dissolve a teaspoon of salt in it. Evaporate the water in direct sunlight. Once the water has evaporated, ask the students to taste the residue.



# SUN, EARTH & MOON

## Objectives

To make students understand the concept of day and night and the phases of the moon.

## Activity

Darken the room before starting the activity. A powerful torch or directional table lamp should be placed on a desk to represent the sun.

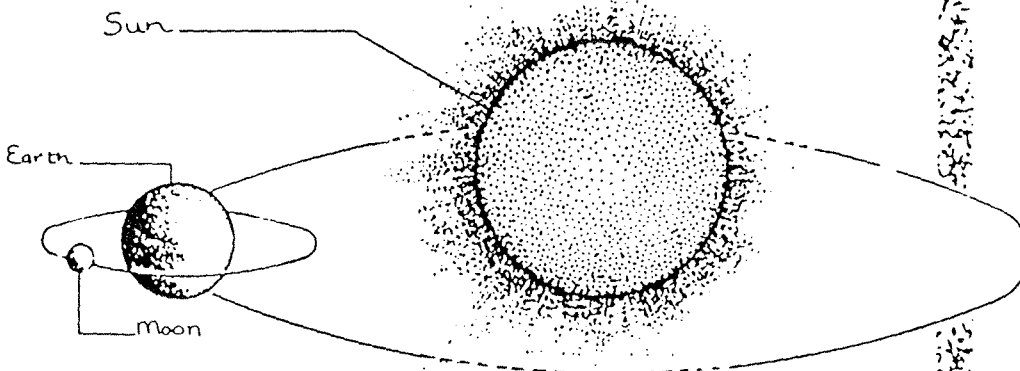
The students (approximately 15 at a time) should form a closely packed circle in the centre of the room, facing outwards. Ask them to move anti-clockwise. Explain to them that they represent the rotating earth and the lamp represents the sun. Make them understand day and night, mid-day, mid-night and sunrise, sunset.

Now ask one of the students to hold the ball over his head so that the entire class can clearly see it. He should stand at the end of the room and should move in a circle between the "earth" and "sun". The students on "earth" will notice that the shape of the lighted part of the ball gradually grows till the student (moon) reaches the part of the room exactly opposite to the light. At this point, the side of the ball facing the "earth" is entirely lit. This is the "full moon".

As the "moon" continues moving anticlockwise around the "earth", the shape of the lit portion as seen from the "earth" decreases.

## Variation/extension

Students should be asked to observe the actual phases of the moon and notice that full moon rises opposite to the setting sun. After how many days does the full moon re-appear?



## Thrust area

*Environment*

## Subject

*Science*

## Place

*Classroom*

## Group size

*Entire class*

## Duration

*30-40 minutes*

## Materials

*Large bright light,  
volley ball*

## Pre-requisites

*The students are  
acquainted with the  
fact that the moon's  
light is reflected  
sunlight and not its  
own.*

## Web of Life

Objective: To inter-relate the various aspects of nature using a single string.

To visually communicate the concept of the "Web of Life".

Place: Preferably outdoors. This game can be demonstrated in a hall or a stage.

Group size: For the string version, 12-40. For the ball variation, 8-20.

Preparation: Prepare name tags for each player either according to the object selected by him or from the list that follows. Keep a ball of string (about 350 metres) and six balls ready.

Activity: This game may preferably be played after the students have completed "Who Am I" and "The Poet in the Child". The whole group sits in a circle. Each student identifies himself with one aspect of nature e.g. rock, sun, soil, air, water, grass, tree, leaf, flower, bird, cow, butterfly, etc. (See list of names for this game).

Distribute the name tags. Each student wears a tag so that everyone can see it. Make sure that the four main elements of nature — sun, soil, air and water — figure on the tags.

Take the ball of string and give it to Sun. It is appropriate to begin with the Sun because all life is made possible by it. Let the Sun wind one end of the string on a finger and throw the ball to any aspect of nature he feels related to, e.g. Tree. The Tree then winds the string once or twice around his finger and after ensuring that it is not loose between the Sun and him, passes it to another aspect he feels related to, e.g. Fruit. Then Fruit offers the ball to Parrot and the line of relationships continues as the string is unwound from the ball and begins to form a pattern which the students hold together. The ball of string is thus completely used.

Let the students notice the web-like pattern formed by the string. Then ask them to raise the whole web chest high. Let them hold the web tight so that it remains taut even when pressed down. The students are asked to notice this.

### List of Names for Web of Life

1. Sun
2. Air
3. Water
4. Soil
5. Tree
6. Fruit
7. Parrot
8. Algae
9. Fish
10. Eagle
11. Turtle
12. Insect
13. Frog
14. Mosquito
15. Lizard
16. Leaf
17. Flower
18. Butterfly
19. Ant
20. Student
21. Grass
22. Dead leaf
23. Earthworm
24. Humus
25. Shrub
26. Seed
27. Fungus
28. Snail
29. Monkey
30. Spider
31. Snake
32. Mongoose
33. Kingfisher
34. Washerman
35. Woodcutter
36. Buffalo
37. Honey
38. Honey bee
39. Squirrel
40. Moss
41. Grasshopper
42. Plastic bag
43. Dead wood
44. Paper
45. Crocodile

Ask the students what would happen if some of these aspects did not exist. Let the students representing those aspects drop the string. Notice the visual effect. More aspects may be dropped to dramatise the effect. Now press the web down. It would probably touch the ground, because it is loose.

Ask the students what would happen, if the Sun or any of the three other major elements of nature did not exist. Conclude the game with the students understanding how inter-relationships exist and why they are important.

### **Variation**

Instead of a ball of string one could use three or more, preferably six, rubber balls to play this game. Have the students identify their links, e.g. the Sun to Leaf to Flower to Butterfly to Frog etc. Give one ball to the Sun to pass to the next link e.g. Tree which in turn, passes it to Leaf etc. Each student must know from where the ball comes and where it goes.

In the next round when the first ball reaches the third or fourth link give another ball to be passed and so on with the third, fourth, fifth and sixth balls. It is very difficult to get a perfect flow going in this game. After a few rounds of confusion you may mention how nature functions without the links being broken, so that every aspect is sustained. What would happen if in nature, there is confusion or a lapse or delay in sustaining the next link ?

## Give Back Water



**Why** To encourage children to understand the importance of dehydration and the need to give back the body the water/liquids that it has lost.

**When** During an extra class, science class or any extra/free time.

**What** Plastic bag., colour, water bucket.

**Where** Activity can be conducted inside or outside the room.

**Who** Children and facilitator.

**How** 1 Take a plastic bag (white if available) and draw a child-face and body on the bag.

2 Ask children to sit in a group.

3 Now fill water into the bag till it can hold.

4 Ask children to observe sharply.

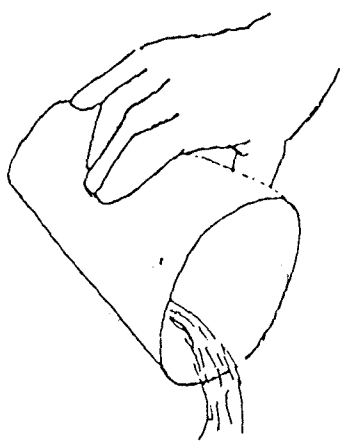
5 Now make a hole at the bottom.



**Why** To help the children understand the need to drink clean water to remain healthy.

**When** During science class or any free time.

**What** 2 glasses (not steel but transparent), white cloth to filter water and a table. Chalk and Board or paper and pen.



**Where** Activity can be conducted in the class or outside.

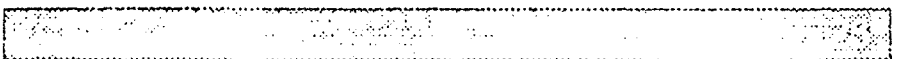
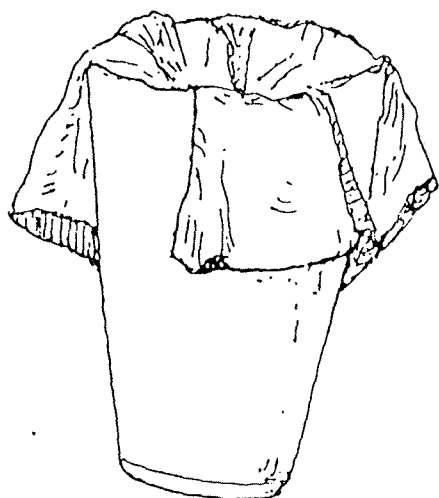
**Who** Children and the facilitator.

**How** 1 Explain the children the need to drink water for living.

2 Mark the glasses "A" & "B".

3 Take glass "A", fill it up with water, add a pinch of sand into it.

4 Ask children to observe. Note observation on the board.



## Reviewing the Process



**Why** The facilitator needs to know how much children have understood. Hence reviewing children's understanding related to topic.

**When** During a class, or extra time or games class.

**What** Glass and a spoon to make sound, pen, paper, object to pass around and a box.

**Where** Activity can be conducted inside the room or outside.

**Who** Children and the facilitator.

- How**
- 1 Make small slips of paper.
  - 2 Write questions related to the topic you want to review e.g. say. "Personal Hygiene". e.g. "Why do we need to take a bath?" "Why should we wash our clothes?" etc.
  - 3 Add some fun also e.g. "Sing a Song" or "Dance" etc.
  - 4 Mix the slips in a box.



ANNEXURE - XI

PLAN OF WORK FOR TEACHING CHILDREN

STANDARD III

Week	Theory	Practical activity	Aids used
I	Pre test Personal hygiene Importance of clean body, toilet practice, brushing, exercise and prayer. Discussion on pre test	1. Asking to note the time spent for various activities 2. The skin (wash drill) 3. Animals in our lives	1. Charts 2. Posters
II	Importance of bathing, eating, habits, cleanliness of body, neat cloths, group living Need for safe drinking water	1. To follow good eating habits 2. To observe others and their cloths 3. Breathing (Nose drill) 4. I am a tree	1. Charts 2. Demonstration of better ways of handling water 3. Taking out to see trees in the campus 4. Breathing exercise
III	Household cleanliness Interior	1. Fresh air and sunshine 2. Posture	1. Demonstration of better ways of sweeping and mopping 2. Play cards 3. Black board drawing
	Exterior	1. Hair 2. Teeth	1. Posters on environmental hygiene 2. Field visit to see waste disposal 3. Demonstration on proper method of brushing teeth and combing hair.
IV	Environment What is environment Components of environment Importance of environment Needs and uses Birds  Animals Plants Water Solar system Different season	1. Clean water saves life	1. Demonstration of proper method of handling water 2. Collecting feathers 3. Making album on birds 4. Cutting nails with pictures  1. Postures 2. Plants pictures 3. Animal 4. Solar system models 5. Seasons 6. Motifs 7. Collecting different types of leaves to make album
V	How environment gets polluted How this affect ecosystem How to overcome these problems As children their role	1. Senses and sleep	1. Posters 2. Charts 3. Each one to say what they will do to protect near environment from degradation
	Final evaluation		

ANNEXURE - XI

PLAN OF WORK FOR TEACHING CHILDREN

STANDARD IV

Week	Theory	Practical activity	Aids used
	Pre test		
I	Personal hygiene Hygienic habits for healthy living Discussion on Pre test	1. To note the duration of time taken for each personal activity in a day 2. The skin (Wash drill)	1. Charts
II	Good food habits  Good manners  Household cleanliness Interior  Exterior	1. To follow good eating habits 2. To observe neat cloths 3. Cutting nails  1. Formation of rains 2. Breathing (Nose drill)  1. Leaf forms	1. Charts  2. Story telling  1. Play cards 2. Demonstration of evaporation and condensation 3. Making album of different leaves 4. Breathing exercise
III	Environment What is environment Components of environment  Importance of environment Needs and uses Birds	1. Sun, earth and moon 2. Sound and noise  3. Fresh air and sunshine	1. Charts 2. Demonstration of sound and noise 3. Taking them outside to show different types of trees and asking them to identify trees
IV	Animals Plants Water Solar system Different seasons  How environment gets polluted How this affect ecosystem How to overcome these problems Children's role  Final evaluation	1. Posture 2. Teeth      1. Nails 2. Senses and sleeps	1. Posters 2. Plants pictures 3. Animal pictures 4. Motifs 5. Asking to make album on animals and plants 6. Demonstration of good posture  1. Posters 2. Charts 3. Cutting nails of the children

ANNEXURE - XI

PLAN OF WORK FOR TEACHING CHILDREN

STANDARD V

Week	Theory	Practical Activity	Aids used
I	<ol style="list-style-type: none"> <li>1. Preliminary Test</li> <li>2. Personal hygiene Better hygienic practices to avoid diseases Discussion on pretest</li> </ol>	<ol style="list-style-type: none"> <li>1. Asking the children to note the time for various activities</li> <li>2. The Skin (wash drill)</li> </ol>	<ol style="list-style-type: none"> <li>1. Charts</li> <li>2. Demonstration</li> </ol>
II	<ol style="list-style-type: none"> <li>1. Good food habits and manners</li> <li>2. Household cleanliness Interior</li> </ol>	<ol style="list-style-type: none"> <li>1. To follow good eating habit</li> <li>2. Wearing neat cloths</li> <li>3. Breathing (Nose drill)</li> <li>4. Fresh air and sunshine</li> <li>5. Good posture</li> </ol>	<ol style="list-style-type: none"> <li>1. Charts</li> <li>2. Demonstrating better manners while talking and eating</li> <li>1. Play cards</li> <li>2. Demonstration of sweeping, mopping, dusting and good posture</li> </ol>
III	<ol style="list-style-type: none"> <li>1. Exterior</li> <li>2. Environment What is environment Components of environment Importance of environment Needs and uses Birds</li> </ol>	<ol style="list-style-type: none"> <li>1. Tree of life</li> <li>2. An endless cycle</li> <li>3. Web of life</li> <li>4. Teeth</li> </ol>	<ol style="list-style-type: none"> <li>1. Taking out to observe a tree</li> <li>2. Charts</li> <li>1. Collection of different types of leaves</li> <li>2. Pictures and charts</li> <li>3. Demonstration of proper method of brushing teeth</li> </ol>
IV	<p>Animals Plants Water Solar system Different season</p> <p>How environment gets polluted How this affect ecosystem How to overcome these problems Children's role</p> <p>Final evaluation</p>	<ol style="list-style-type: none"> <li>1. More than meets the eye</li> <li>2. Hair</li> <li>1. Nails</li> <li>2. Soil salinity</li> <li>3. Population Education</li> </ol>	<ol style="list-style-type: none"> <li>1. Posters and Charts</li> <li>2. Demonstration of combing hair</li> <li>1. Posters</li> <li>2. Charts</li> <li>3. Games to understand interrelatedness of living and non-living things web of life</li> <li>4. Cutting nails</li> </ol>

A N N E X U R E - XII

ENVIRONMENTAL AWARENESS TEST - B1  
(Post Evaluation test)

STANDARD-III

1. Body building foods contain
  - a. carbohydrates
  - b. fats
  - c. proteins
  - d. vitamins
2. Energy giving food is
  - a. rice
  - b. milk
  - c. egg
  - d. dhal
3. The one which provides more nutrient is
  - a. sugar
  - b. vegetables
  - c. salts
  - d. water
4. In house cooked foods are stored in for long time in
  - a. refrigerator
  - b. freezer
  - c. pots
  - d. plastic bag
5. The preservative in pickle is
  - a. sugar
  - b. salt
  - c. chemicals
  - d. alcohols
6. Keeping proper hours for sleep is
  - a. good habit
  - b. bad habit
  - c. unhealthy
  - d. none of the above
7. Brushing before going to bed
  - a. need not be done
  - b. unnecessary
  - c. is healthy habit
  - d. is unhealthy habit
8. Good habits
  - a. will not improve health
  - b. will improve health
  - c. are dangerous
  - d. should not followed

9. Improper maintenance of hair will produce  
a. more hair b. soft hair c. lice d. black hair
10. Eyes should be cleaned  
a. once in a day b. once in a week  
c. frequently d. should not be cleaned
11. Nails should  
a. be grown b. be kept dirty  
c. not be cut d. be cut regularly
12. Use of soaps for washing hands  
a. kills germs b. produce germs  
c. keeps hand fresh d. keeps hand good
13. Body becomes alert by  
a. taking food b. doing exercise  
c. brushing d. toileting
14. Talking while eating is  
a. interesting b. enjoyment c. dangerous d. helpful
15. Eating in between meals is  
a. good habit b. bad habit c. healthy habit d. unhealthy
16. Dirty clothes may cause  
a. scabies b. fever c. elephantiasis d. rabies
17. The Queen of hill stations in South India is  
a. Yercaud b. Kodaikanal c. Ooty d. Ponmudi

18. Besides honey bee help us to get  
a. water    b. juice    c. wax    d. alcohols
19. The bird that cannot fly is  
a. myna    b. parrot    c. penguin    d. cow
20. Pig is a  
a. domestic animal    b. wild animal  
c. beast of burden    d. farm animal
21. Wool is got from  
a. plants    b. animals    c. birds    d. Natural
22. Plants grow only in  
a. water    b. sand    c. stone    d. sunlight
23. The plants are discriminated from animals because of  
a. growth    b. reproduction  
c. death    d. movement from place to place
24. The main source of water is  
a. dam    b. tank    c. pond    d. rain
25. Filtering makes water  
a. soft    b. hard    c. fresh    d. clear
26. Cutting down trees leads to  
a. more rain    b. less rain    c. no effect    d. flood

27. The better source of drinking water is  
a. rain water                      b. tank water  
c. bore well water                d. sea water
28. Water suitable for washing is  
a. hard water   b. salt water   c. soft water   d. dirty water
29. Boiling make water  
a. safe to drink                    b. unsafe to drink  
c. poisonous                        d. hard
30. Clean water saves  
a. food            b. clothing    c. shelter        d. life
31. Sprouting takes place with the help of  
a. water            b. sand            c. air                d. gas
32. The surrounding of the water tap  
a. should stagnate with water    b. should be clean  
c. should have dust bin nearby   d. should not be clean
33. By <sup>the</sup> use of solar cooker  
a. fuel is saved                      b. more gas is used  
c. shortage of electricity            d. storage of kerosine
34. Fast increase of human population is called  
a. growth of population    b. population explosion  
c. migration and automobiles    d. floating population

35. Factories and industries pollute  
a. house      b. vegetables   c. humans only   d. air and water
36. One of the pollutant of water is  
a. sewage      b. smoke      c. fish      d. aeroplane
37. The major pollutant of water is  
a. smoke      b. sewage      c. fish      d. salt
38. Sewage spreads  
a. pleasant smell      b. unpleasant smell  
c. clean water      d. none of the above
39. Sewage are disposed by  
a. burning      b. burying      c. insenoration   d. compost pit
40. Improper drainage will affect  
a. animals      b. housing      c. birds      d. insects
41. Stagnation of water helps the breeding  
a. cockroach   b. butterfly   c. mosquito      d. moth
42. Farm yard manure is got from  
a. dung of cattle      b. industrial waste  
c. chemical synthesis      d. mining
43. Air is purified by  
a. plants      b. animals      c. birds      d. insects

44. Balloon in the air
- a. will not float
  - b. will remain still
  - c. will float
  - d. will shrink
45. Weather changes because of
- a. movement of earth around the sun
  - b. movement of earth around moon
  - c. movement of moon around the earth
  - d. none of the above
46. The shadow of the object is short at
- a. morning
  - b. mid morning
  - c. noon
  - d. evening
47. Floors should be cleaned
- a. weekly
  - b. monthly
  - c. yearly
  - d. daily
48. Weathers depend upon
- a. people
  - b. soil
  - c. sun and wind
  - d. water
49. The liquid that freeze in winter is
- a. tender coconut
  - b. milk
  - c. sugarcane juice
  - d. coconut oil
50. Stars are not visible during day time because of
- a. absence of sunlight
  - b. moon light
  - c. bright light
  - d. clouds

9. Food should not be bought from street vendors because
- a. They are not exposed to dust and flies
  - b. They are clean
  - c. It is cheap
  - d. They are exposed to dust and flies
10. Carrot has a
- a. round edge
  - b. sharp edge
  - c. circular
  - d. none of the above
11. Eating sugarcane keeps the teeth
- a. unhealthy
  - b. bleeding
  - c. clean
  - d. dirty
12. Keeping proper hours for sleep is
- a. important
  - b. unimportant
  - c. accurate
  - d. unwanted
13. The tooth decay is due to
- a. proper brushing
  - b. improper brushing
  - c. thorough cleaning of teeth
  - d. use of good paste
14. Simple method of keeping body clean is
- a. brushing
  - b. bathing
  - c. steaming
  - d. wipping
15. Proper posture of our body is maintained by
- a. prayer
  - b. food
  - c. clothing
  - d. exercise
16. Talking while eating is
- a. injurious to health
  - b. will change to voice
  - c. makes pleasant
  - d. makes to feel food is not enough

17. Chembarampakkam is a  
a. lake b. monsoons c. thunders d. lightnings
18. Animals that give birth to young ones directly are called  
a. oviparous b. viviparous c. ovoviparous d. herbivorus
19. Frog is an  
a. reptile b. amphibian c. invertebrate d. mammal
20. During respiration the gas taken in is  
a. carbon-di-oxide b. nitrogen c. sulphur d. oxygen
21. In plants reproduction through stem is known as  
a. germination b. vegetative reproduction  
c. dispersion d. budding
22. Leather bags are made from  
a. plant sheeth b. animal skin  
c. chemical substance d. minerals
23. Horns of deer is  
a. decorative object b. defence object  
c. unwanted matter d. high medicinal value
24. Tusk of the elephant is  
a. unpleasant b. used for making jewels  
c. a waste material d. no medicinal value
25. Plants in the house makes house  
a. beautiful b. ugly c. harmful d. untidy

35. Stagnation of water is a breeding place for  
a. mosquitoes b. butterfly c. silk worm d. moth
36. A water born disease is  
a. AIDS b. cough c. cholera d. fever
37. Rain is formed with the help of  
a. soil b. trees c. animals d. birds
38. Water in the cloud is  
a. sky water b. mineral water  
c. sewage water d. ground water
39. Cooking should be done in  
a. hard water b. dirty water  
c. clear water d. none of the above
40. Water drops do not stay on  
a. brown paper b. graph paper c. wax paper d. white sheet
41. Sound from Industries are  
a. unpleasant b. pleasant c. sweet d. melodious
42. Smoke has  
a. pleasant smell b. unpleasant smell  
c. good colour d. none of the above
43. Heavy smoke from factories pollute  
a. house b. cloths c. table d. air

44. Garbages are disposed through
- a. burning
  - b. burying
  - c. manure pit
  - d. composit pit
45. Wind blowing during certain months in particular direction are known as
- a. storms
  - b. monsoons
  - c. thunders
  - d. lightnings
46. The liquid that freezes in winter is
- a. tender coconout oil
  - b. milk
  - c. sugarcane juice
  - d. coconut oil
47. Weather depends upon
- a. sun & wind
  - b. people
  - c. soil
  - d. water
48. The common feature for all season throughout the year is
- a. formation of new leaves
  - b. formation of dew
  - c. reduced shadow at mid day
  - d. food
49. Jaundice is frequently found during
- a. winter
  - b. rainy days
  - c. summer
  - d. spring
50. Moon revolves
- a. around sun
  - b. around earth
  - b. around earth and sun
  - d. in between earth and sun

ENVIRONMENTAL AWARENESS TEST - B3  
(Post Evaluation test)

STANDARD-V

1. Growth of bones is due to
  - a. vitamins
  - b. mineral salt
  - c. carbohydrate
  - d. fats
2. Floors are cleaned by
  - a. blowing
  - b. whipping
  - c. dusting
  - d. brooming
3. Books are prevented from insects by
  - a. spraying pesticide
  - b. proper dusting and cleaning
  - c. washing with soap solution
  - d. sundrying
4. Talking while eating makes food
  - a. easy digestion
  - b. enter into food pipe fast
  - c. enter into air pipe
  - d. intake is more
5. Potato is rich in
  - a. protein
  - b. starch
  - c. fat
  - d. vitamin
6. 2/3 of our body contains
  - a. salt
  - b. sugar
  - c. water
  - d. sweet
7. Biting nails is
  - a. good habit
  - b. bad habit
  - c. hygienic
  - d. unhygienic
8. Proper care of hair prevents
  - a. dandruff
  - b. silky hair
  - c. black hair
  - d. long hair

9. Cleaning eyes is  
a. dangerous b. harmful to eye c. important d. unimportant
10. Proper toileting prevents us from  
a. hygienic b. good habits c. fear d. disease
11. After bathing we feel  
a. fresh b. relax c. tired d. restlessness
12. Exercise make body and mind  
a. tired b. fresh c. restlessness d. fatigue
13. Clean person will be free from  
a. sleep b. fear c. disease d. rest
14. In lesser himalayas the valleys are called  
a. duns b. rifts c. peak d. slope
15. Man's basic needs are supplied by  
a. plants b. animals c. soil d. water
16. The movement of root towards water is  
a. geotropism b. phototropism  
c. autotropism d. hydrotropism
17. Egg is got from  
a. birds b. animals c. plants d. insects
18. An example of farm animals  
a. elephant b. dear c. pig d. rabbit

19. The tusk in the elephant is its  
a. teeth      b. horn      c. bone      d. none of the above
20. The plant is fixed to soil by  
a. stem      b. leaves      c. root      d. bark
21. The planting of tree and developing of forest is called  
a. deforestation      b. oxidation  
c. purification      d. afforestation
22. Good source of pure water is  
a. well water      b. river water  
c. tank water      d. deep bore well
23. Plants prepare their own food known as  
a. starch      b. protein      c. fat      d. vitamins
24. Cutting down trees lead to  
a. new plants      b. soil erosion  
c. absorption      d. retention
25. Rapid deforestation will cause early acute of  
a. fire wood      b. food      c. medicine      d. fruit
26. The living world consists of  
a. only plants      b. only animals  
c. only trees      d. plants, animals & human beings
27. Cooking should not be done in  
a. soft water      b. hard water  
c. fresh water      d. clean water



36. Waste materials are
- a. thrown anywhere
  - b. put in dust bin
  - c. not put in dust bin
  - d. left as it is
37. Waste papers are disposed by
- a. burning
  - b. composting
  - c. soakage pit
  - d. burying
38. Malaria is the disease caused by
- a. butterfly
  - b. moth
  - c. mosquito
  - d. silk worm
39. Smoke from vehicles pollute
- a. water
  - b. soil
  - c. land
  - d. air
40. Unpleasant smell will irritate
- a. eye
  - b. ear
  - c. nose
  - d. mouth
41. All living things On earth are
- a. interrelated to each other
  - b. not related to any one
  - c. related to particular group
  - d. independent
42. Mist is formed when water vapour in air condenses
- a. cold objects
  - b. dust particles
  - c. solid substances
  - d. liquid substances
43. Liquid is converted into solid by
- a. boiling
  - b. keeping in large container
  - c. cooling
  - d. keeping in small container
44. Large number of black clouds indicate
- a. rainy day
  - b. sunny day
  - c. cool day
  - d. pleasant day

45. The star that helps to decide direction in night is  
a. great bear    b. orion    c. durva star    d. sun
46. A natural preservative is  
a. chlorine    b.soap    c. sunlight    d. oil
47. The source of light for natural satellites is  
a. sun    b. star    c. plant    d. earth
48. The natural satellite of earth is  
a. Insat-I    b. Rohini    c. Aryabhata    d. Moon
49. Duration of day and night differs in planets because  
a. no equal number of satellites  
b. difference in shape  
c. difference in period of revolution  
d. different people live
50. Season changes because  
a. Earth rounds the sun  
b. Earth rounds in its axis  
c. other planets round the earth  
d. Earth rounds other planets

**ANNEXURE - XIII**

**S C O R I N G      K E Y**

**ENVIRONMENTAL AWARENESS TEST - B<sub>1</sub>**

**Post Evaluation**

**Standard - III**

1. c	11. d	21. b	31. a	41. c
2. a	12. a	22. d	32. b	42. a
3. b	13. b	23. d	33. a	43. a
4. a	14. c	24. d	34. b	44. c
5. b	15. b	25. d	35. d	45. a
6. a	16. a	26. d	36. a	46. c
7. c	17. c	27. c	37. a	47. d
8. b	18. c	28. c	38. b	48. c
9. c	19. c	29. a	39. d	49. d
10.a	20. a	30. d	40. b	50. c

**ENVIRONMENTAL AWARENESS TEST - B<sub>2</sub>**

**Post Evaluation**

**Standard - IV**

1. c	11. c	21. d	31. b	41. a
2. b	12. a	22. b	32. a	42. b
3. c	13. b	23. d	33. d	43. d
4. c	14. b	24. b	34. b	44. c
5. b	15. d	25. a	35. a	45. b
6. d	16. a	26. d	36. c	46. d
7. d	17. a	27. a	37. b	47. a
8. b	18. b	28. c	38. a	48. a
9. a	19. b	29. d	39. c	49. b
10.c	20. d	30. c	40. c	50. b

**ENVIRONMENTAL AWARENESS TEST - B<sub>3</sub>**

**Post Evaluation**

**Standard - V**

1. b	11. a	21. d	31. c	41. a
2. b	12. b	22. d	32. d	42. b
3. b	13. c	23. a	33. a	43. c
4. c	14. a	24. b	34. b	44. a
5. b	15. a	25. a	35. b	45. c
6. c	16. d	26. d	36. b	46. c
7. d	17. a	27. b	37. a	47. a
8. a	18. c	28. d	38. c	48. d
9. c	19. a	29. b	39. d	49. c
10.d	20. c	30. d	40. c	50. a

ANNEXURE - XIV

EXAMPLES FOR STATISTICAL ANALYSIS

1. Chi-Square

Education vs Awareness on the measures to enhance the environmental hygiene (Rural)

Measures	N	Number of members					Total
		Illi-terate	Pri-mary	Middle & S.S.L.C	Higher Second ary	Colli-giate	
Handpump for safe drinking water	1	73	22	48	16	5	164
Boiled & Cooled water to prevent water borne diseases	2	69	21	47	17	5	159
Soak pit for hygienic disposal of waste water	3	14	17	26	17	5	79
Manure pit for safe solid waste disposal	4	23	19	32	17	5	96
Sanitary latrine for hygienic excreta disposal	5	84	23	46	17	5	175
Tree planting for rain, cut down pollution, protect soil and get biomass	6	74	24	41	15	5	159
Biogas plants to avoid pollution	7	39	16	27	12	5	99
Solar cooker to reduce use of fuel wood	8	8	21	31	14	5	79
Kitchen garden for safe disposal of waste water	9	91	22	42	17	5	137
Efficient chulahs to improve domestic environment	10	84	25	49	17	5	180

HYPOTHESIS : Education has no influence on the awareness

The number of sample data is : 50

Mean (E) of the data is : 27

No.	Observed(O)	O-E	(O-E) <sup>2</sup>	(O-E)/E
1	73.00	46.00	2116.00	78.37
2	69.00	42.00	1764.00	65.33
3	14.00	-13.00	169.00	6.25
4	23.00	-4.00	16.00	0.59
5	84.00	57.00	3249.00	120.33
6	74.00	47.00	2209.00	81.81
7	39.00	12.00	144.00	5.33
8	8.00	-19.00	361.00	13.37
9	91.00	64.00	4096.00	151.70
10	84.00	57.00	3249.00	120.33
11	22.00	-5.00	25.00	0.92
12	21.00	-6.00	36.00	1.33
13	17.00	-10.00	100.00	3.70
14	19.00	-8.00	64.00	2.37
15	23.00	-4.00	16.00	0.59
16	24.00	-3.00	9.00	0.33
17	16.00	-11.00	121.00	4.48
18	21.00	-6.00	36.00	1.33
19	22.00	-5.00	25.00	0.92
20	25.00	-2.00	4.00	0.14
21	48.00	21.00	441.00	16.33
22	47.00	20.00	400.00	14.81
23	26.00	-1.00	1.00	0.03
24	32.00	5.00	25.00	0.92
25	46.00	19.00	361.00	13.37
26	41.00	14.00	196.00	7.25
27	27.00	0.00	0.00	0.00

No.	Observed (O)	O-E	(O-E) <sup>2</sup>	(O-E)/E
28	31.00	4.00	16.00	0.59
29	42.00	15.00	225.00	8.33
30	49.00	22.00	484.00	17.92
31	16.00	-11.00	121.00	4.48
32	17.00	-10.00	100.00	3.70
33	17.00	-10.00	100.00	3.70
34	17.00	-10.00	100.00	3.70
35	17.00	-10.00	100.00	3.70
36	15.00	-12.00	144.00	5.33
37	12.00	-15.00	225.00	8.33
38	14.00	-13.00	169.00	6.25
39	17.00	-10.00	100.00	3.70
40	17.00	-10.00	100.00	3.70
41	5.00	-22.00	484.00	17.92
42	5.00	-22.00	484.00	17.92
43	5.00	-22.00	484.00	17.92
44	5.00	-22.00	484.00	17.92
45	5.00	-22.00	484.00	17.92
46	5.00	-22.00	484.00	17.92
47	5.00	-22.00	484.00	17.92
48	5.00	-22.00	484.00	17.92
49	5.00	-22.00	484.00	17.92
50	5.00	-22.00	484.00	17.92

THE RESULT OBTAINED FROM THE GIVEN DATA

- \* The Degree of Freedom (DF) is : 49
- \* The Chi.square value (Calculated) is : 965.07
- \* For the degree of freedom 49  
the Table Value (TV) is : 66.33

Since the calculated value is GREATER than table value, the HYPOTHESIS is **WRONG**.

## 2. ANOVA TEST

### Standard III

Source	SS	DOF	M.SS	'F' Ratio
SSBS	153.72	(3-1) = 2	153.72/2 76.86	76.86/44.23 23.50
SSWS	480.44	(150-3)=147	4809.4 = 3.27	
Total	633.76	149		

$H_0$  = There is no difference in the mean performance between the schools, (III standard student).

For DOF 2 and 147 'F'  $.05 = 3.06$

### 3. Significance of environmental education in concept development

For the final evaluation test, statistical analysis was done using 'Z' test. The following shows it.

$$|Z| = \frac{|X_1 - X_2|}{\sqrt{\sigma_1^2 / N_1 + \sigma_2^2 / N_2}}$$

III standard

$$X_1 = 27.36$$

$$X_2 = 44.72$$

$$\sigma_1 = 3.91$$

$$\sigma_2 = 3.0922$$

$$N_1 = N_2 = 50$$

$H_0$  = There is no significant difference between the marks due to education (i.e.,) There is no effect due to coaching

$$\begin{aligned} Z_{III} &= \frac{|27.36 - 44.72|}{\sqrt{3.918^2/50 + 3.092^2/50}} \\ &= \frac{17.36}{0.706} \\ &= 34.80 \end{aligned}$$

Since the Value is greater than 1.96 SE (5% level) the hypothesis is rejected. So we conclude that there is difference in the performance after coaching.

அனினாசிலிங்கம் மனையியல்

பல்கலைக்கழகம்

(மனை நிர்வாகத் துறை)

கோயமுத்தூர் - 641 043



பொது மக்களின் கவனத்திற்கு!

- \* சுற்றுப்புறத்தை தூய்மையாக வைப்பது ஒவ்வொருவரின் தலையாய கடமையாகும்.
- \* சுற்றுப்புறச்சூழல் அசுத்தமாய் இருப்பதே நோய்கள் வரக் காரணமாகும். அசுத்தமான சுற்றுப்புறம் மக்களுடைய உடலையும், உள்ளத்தையும், உடைமைகளையும் பாதிக்கின்றது. அதனால் ஒவ்வொருவரும் சுகாதாரக் குறிப்புகளைப் பின்பற்றுங்கள்.
- சுகாதாரக் குறிப்புகள்
- \* சாப்பிடுவதற்கு முன்பும், மலம் கழித்த பின்பும் சோப்பு கொண்டு கைகளை கழுவுங்கள்.
- \* குழாய், பம்பு அல்லது பாதுகாக்கப்பட்ட கிணற்றிலிருந்து எடுக்கப்பட்ட தண்ணீரையே எப்பொழுதும் பயன்படுத்துங்கள்.
- \* திறந்த வெளியில் மலம் கழிக்காதீர். எப்பொழுதும் கழிப்பிடத்தையே பயன்படுத்துங்கள்.
- \* உணவுப் பண்டங்களை ஈ மொய்க்காமல் மூடி வைப்புகள்.
- \* குப்பை கூளங்களையும், கால்நடை கழிவுகளையும் எருக்குழியில் இட்டு அப்புறப்படுத்துங்கள்.



அவினாசிலிங்கம் மனையியல் பல்கலைக்  
கழகமும்

அகில இந்திய கலை,  
பழங்காலக் கலாச்சாரக் கழகமும்  
(INTAC)

(உதவி : இந்திய அரசு சுற்றுப்புற சூழல்  
வன பாதுகாப்பு அமைச்சகம்)

இணைந்து நடத்தும்

தேசிய சுற்றுப்புற சூழ்நிலை  
அறிந்து கொள்தல் பற்றிய முகாம்

நாம் நமது சுற்றுப்புறத்தை தூய்மையாக வைத்துக் கொள்ளாவிடில் பல இன்னல்களுக்கு ஆளாகிறோம். குறிப்பாக, வீட்டின் முன்புறத்தில் குப்பையைக் கொட்டுகிறார்கள். வீட்டின் முன்னும் பின்னும், தண்ணீர் தேங்கி நிற்கிறது. இதனால் காலரா, காய்ச்சல், மற்றும் பலவிதமான நோய்கள் பரவுகின்றன.

தண்ணீரை எப்படி சிக்கனமாகப் பயன்படுத்துவது, கழிவுநீரை எப்படி உபயோகமான முறையில் பயன்படுத்துவது என்பது பற்றி அறிந்து கொள்ளுவது மிகவும் அவசியம்.

(பின்பக்கம்)

# சந்தியுங்கள் செயல்படுங்கள்

- ❧ கழிவு நீரை வீட்டைச் சுற்றிலும் தேங்க விடாதீர்கள். அவை காலரா, பேதி போன்ற நோய்களைப் பரவச் செய்கின்றன.
  - ❧ வீட்டைச் சுற்றி மலம், ஜலம் கழிக்காதீர்கள். அவை நோய்க்கிருமிகளின் உற்பத்திக் கூடமாகி விடும்.
  - ❧ சுத்தமாக இருங்கள் - நோயிலிருந்து விடுதலை பெறுங்கள்.
  - ❧ குழந்தைகளுக்கு நல்ல சுகாதார பழக்க வழக்கங்களை ஏற்படுத்துங்கள். அவை நல்ல ஆரோக்கியமான எதிர்கால சந்ததிகளை உருவாக்கும்.
  - ❧ மரங்களை வெட்டாதீர்கள். அவை மழையின் நண்பர்கள்.
  - ❧ எந்த வகையிலும் சுற்றுப்புறத்தை அசுத்தம் செய்யாதீர்கள். செய்பவர்களை விடாதீர்கள்.
- ஒவ்வொரு மனிதனும் ஒரு சுற்றுச்சூழல் காவலர்களாக செயல்படுங்கள்.