

# Incorporating Environmental Education into the Primary School Curriculum: a Teacher's Manual

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## Foreword

The following pages are extracts from a manual produced by the Faculty of Education in February 1991 to implement a pilot project on the incorporation of environmental education (EE) into primary teacher education. The project was under the auspices of UNESCO. A team of six teachers and educators with experience in environmental education collaborated on the project for a number of months. They analysed the primary school curricula and textbooks to identify the EE components and the needed EE components. For the latter they suggested a number of activities suitable for children at the various levels of the primary school, which can serve as examples of what imaginative teachers can do to weave the dimension of the environment into the various subjects of the primary school without unduly disturbing the current curriculum.

The manual was discussed during a national seminar for education officers, curriculum developers, heads of school and teachers, which was organized in collaboration with the Department of Education. The Foundation of International Studies helped in the production of the manual and was instrumental in the organization of the national seminar.

### **The Project Team**

Frank Ventura - Project Co-ordinator

Paul Pace - Project Secretary

Desiree Falzon

Victor Falzon

Alfred Micallef

Anthony Pace

### ***General note on living things in the classroom***

*Our aim is to encourage pupils to look after their environment. With regards to living things, we feel that the best way to carry this out is to teach the child to observe and appreciate them in their natural habitat. For this reason it is advisable not to bring animals or wild plants in the classroom but to take the students to the animals'/plants' habitat. This might put an end to the destructive habit of taking home any interesting or attractive animal or plant found in the countryside. Moreover many wild animals (and plants) need specialist care to survive in captivity and their capture is illegal.*

## Introduction

Children are by nature curious about their environment, whether it is the natural environment or the human environment. As expected, this healthy curiosity is carried over into the classroom where, given the necessary encouragement, they seek knowledge about the things and persons they see around them. Unfortunately the primary school curriculum is already tight and teachers may find it difficult to devote enough time to the pupils' queries if these do not relate directly to the subject matter being taught. Because of this, the school may play only a minor role in educating pupils about the environment and for the environment. A solution to this problem is that teachers could weave the dimension of the environment in the various subjects of the curriculum in such a way that is beneficial both for environmental education and for the subjects concerned.

This manual, from which these extracts were taken, was intended to show how this can be done without interfering with the normal curriculum. The manual starts by introducing the basic concepts and principles of environmental education including:

- the general aims and objectives of environmental education;
- a description of the concept of 'environment' suitable for a primary school child;
- a set of specific attainment targets or objectives for the various components of the environment that spell out in more detail what children can achieve at various levels of the primary school.

## The Concept, Goals and Objectives of Environmental Education (EE)

Environmental Education is relatively new to the educational scene, so it is important to introduce this newcomer by clarifying what the environment means and what environmental education attempts to achieve.

### 1. The Concept 'Environment'

Nowadays society is being besieged by an avalanche of environmental problems that have broadened our understanding of the environment. It is therefore important to elaborate on the meaning of the term '*environment*' that will be used throughout this document.

*"... the concept of 'the environment' includes a complex of natural, built and social components in the life of humanity and that the social components constitute a set of cultural, moral, personal values and interrelations of people in the spheres of labour and leisure activities ..."* (Tbilisi Report, 1978)

*"... environment must be conceived in its entirety - natural and built, personal and collective, economic, social and cultural, technological, ecological and aesthetic."* (Connect, March 1990)

From these explanations it is quite evident that the concept of the environment is very wide and that an effective way of dealing with environmental problems is **not** that of relying solely on technological resources (which might be lacking) but that of acting "*primarily on the values, attitudes and behaviour of individuals and groups in respect of their environment*" (UNESCO - UNEP Moscow Congress, 1987).

Education, being the promoter and implementer of values and attitudes leading to social and cultural change, should seek

*"to envisage objectives and employ new methods capable of making individuals more aware, more responsible, and functionally better prepared to cope with the challenges of preserving the quality of the environment and life, in the context of sustained development for all peoples."* (UNESCO - UNEP Moscow Congress, 1987).

In fact, EE's ultimate goal is the production of 'environmentally literate' citizens who are willing and capable of taking positive environmental actions in their lifetimes (Connect, March 1990).

EE can therefore be defined as:

*" ... the process of recognizing values and the clarifying of concepts in order to develop the skills and attitudes necessary to understand and appreciate the inter-relations among man, his culture and his biophysical surroundings." (Council of Europe, 1976)*

The recommendations of the Tbilisi Conference (1977) have been identified as the basic framework for the construction of EE projects at all levels (UNESCO - UNEP Moscow Congress, 1987). These recommendations are outlined below:

## **2. Basic aims of EE**

- 2.1 to make individuals and social groups more aware of the complex nature of the natural and the built environments resulting from the interaction of their biological, physical, social, economic and cultural aspects.
- 2.2 to provide the necessary knowledge for interpretation of the complex phenomena that shape the environment, encourage self-discipline (through the development of ethical, economic and aesthetic values) which will further the development of conduct compatible with environmental preservation and improvement.
- 2.3 to help individuals and social groups acquire the knowledge, values, attitudes, and practical skills to help them participate in a responsible and effective way in anticipating and solving environmental problems, and the management of the quality of the environment.
- 2.4 to show the economic, political and ecological interdependence of the modern world, that is the fact that decisions and actions by different countries can have international repercussions.
- 2.5 to promote the consolidation of peace, through the further relaxation of international tensions and mutual understanding among States and be a real instrument for international solidarity and the elimination of discrimination (racial, political and economic).

## **3. Categories of EE objectives**

EE should strive to help individuals and social groups acquire:

- 3.1 **Attitudes** – a set of values and feelings of concern for the environment leading on to a motivation for actively participating in the improvement and protection of the environment.
- 3.2 **Knowledge** – a varied experience, and a basic understanding of the environment and its related problems.
- 3.3 **Skills** – for identifying and solving environmental problems and to interact socially through participation, that is be actively involved (at all levels) in action towards resolution of environmental problems.

#### **4. Some guiding principles of EE**

Environmental Education should:

- consider the environment in its totality (see definition);
- be a continuous lifelong process (starting at pre-school years) through all formal and non-formal educational agencies;
- have a holistic, balanced, interdisciplinary approach;
- give students wide insights into various environmental conditions through the examination of major environmental issues from local, national, regional and international points of view;
- focus on current and potential environmental situations, while taking into account the historical perspective;
- promote the value and necessity of local, national, regional and international co-operation in the prevention and solution of environmental problems;
- consider environmental aspects in plans for development and growth;
- provide a mechanism which enables learners to play an active part in their own learning, make decisions and accept their consequences;
- relate environmental sensitivity, knowledge, problem solving skills and values clarification to every age - particularly in the learner's own community in early years;
- help learners identify the symptoms and real causes of environmental problems;
- emphasize the complexity of environmental problems and thus the need to develop critical thinking and problem solving skills;
- utilize a variety of learning environments and a broad array of educational approaches to teaching/learning about and from the environment with due stress on practical activities and first-hand experience.

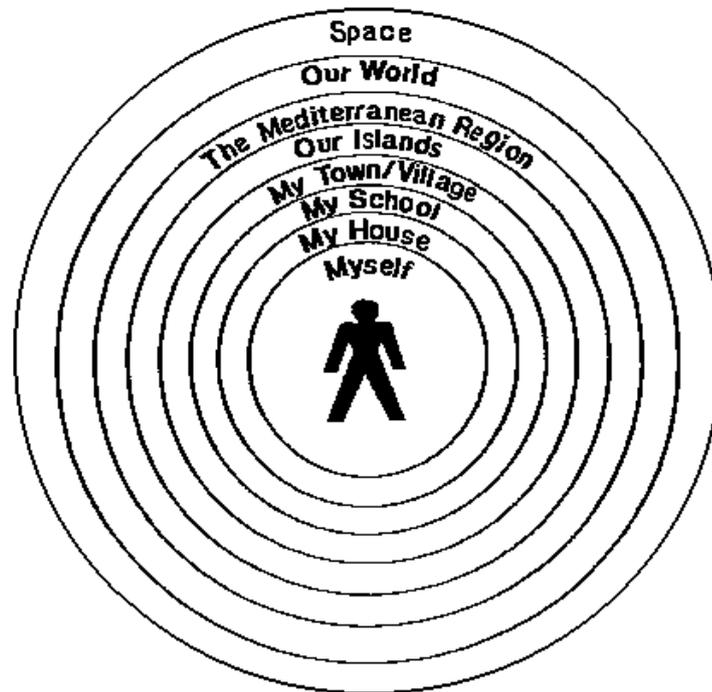
### **Environmental Education Concepts**

#### **1. Spheres of awareness**

In the previous section a general definition of what is meant by the term 'environment' was proposed. But that definition may be too vague and the accompanying principles not sufficiently helpful for teachers who want to select content and devise EE activities for their pupils. A more concrete model of the 'environment' from the viewpoint of a primary school child is presented in the diagram below. The environment is viewed as consisting of a set of concentric spheres of awareness around the child.

This model aims at offering a structured view of the environment and not at presenting a scheme of how the various 'environments' should be treated in school. In fact each sphere of awareness is meant to incorporate the other spheres within it. A limitation of the diagram is

that it cannot show the depth of the treatment of each sphere or the values and attitudes that need to be developed. To facilitate understanding, each of the individual spheres of awareness can be analysed further as follows to explain the area of interest:



## **MYSELF**

- **My Family** - members making up the family and their roles
- **My Toys** - types of toys, materials used and favourite toys
- **Food** - types of food, healthy and unhealthy foods
- **Clothes** - Summer/Winter clothes, clothes for different body parts, clothes for special occasions and fabrics

## **MY HOUSE**

- **Construction** - Layout of house (different rooms and their function), water and electricity supply, play areas in the house, the garden/roof/balcony
- **Animals and Plants** - types of and their care
- **Safety in the house**
- **Practices that conserve energy**
- **Reuse of waste products in the house** (e.g. the reuse of old envelopes).
- **Materials used in the house** (e.g. wood, plastics, soap, aluminium, iron, etc..)

## MY SCHOOL

- **Name of School**
- **School layout** - the school ground, hall, classes and gardens
- **My Class** - layout, items present and different children (tall/short, fat/thin, colour of eyes, skin complexion, strength)
- **People in my school** - my teacher, other teachers, the head teacher (and administration), clerks and caretakers
- **Time table** - basic notions of time
- **My School Uniform** - Summer and Winter uniforms, school badges and their meaning

## MY TOWN/VILLAGE

- **Locality of Birth/Residence** - population, position in Island, urban/rural.
- **Main Industry and Trades**
- **Buildings** - Churches, schools, institutes and historical places
- **Meeting places** - societies/clubs and squares/public gardens/playing fields
- **Shops** - different types of shops and their characteristics
- **Tourist attractions**
- **Streets/Roads** - connections with other villages /towns, transport
- **People we meet** - the postman, milkman, vendors, etc...
- **Services** - the police station, banks, health services, etc...

## OUR ISLANDS

- **Dimensions, population and geographical position** - use of maps
- **Types of rocks found** - their use, origin of our Islands and fossils. Soil
- **Climate** - our behaviour in relation to it
- **Religion** - festas and influence on our traditions
- **History and Culture** - and related places
- **Famous Maltese People**
- **Industry** - Agriculture (and soil management), Fishing, Dockyards, Tourism, etc..

- **The Sea** - Life in it, beaches and harbours
- **The Natural Environment** - Flora and Fauna and their related problems, habitats that need protection and endemic species
- **The spread of buildings**
- **Road Networks** - main roads between villages/towns, panoramic roads (e.g. coast roads, road along cliffs) and bus routes, transport
- **Rubbish dumps**

## **THE MEDITERRANEAN REGION**

- **Mediterranean countries** - population, flags, religions, customs, currency, races and characteristic flora and fauna
- **Links with other nations** - embassies, air links, sea links, telephones, commerce and emigrant families
- **The use of maps**

## **OUR WORLD**

- **Interdependence of living things** - food chains and food webs
- **Different habitats** - deserts, tropical forests, polar regions, etc..
- **Resources** - fuels, minerals, land, food and water (their use and misuse)
- **The Atmosphere and Weather** - the water cycle, gases in air and their importance/use
- **Human influence on the environment** - Pollution and Conservation, international awareness and co-operation as a means of solving environmental problems
- **Use of world maps**

## **SPACE**

- **Our Solar System** - basic knowledge of terms (e.g. planet, star, satellite, etc..), the Sun, the Moon, the Planets and distance (i.e. a different unit of measurement)
- **Day and Night**
- **The Seasons**
- **Other life forms**

## **2. Attainment Targets**

Following the analysis of the term 'environment' and its various components, attainment targets can be set for each sphere of the environment to act as guidelines about the depth required. An attainment target is a specific objective, which a child is expected to attain at a

specific age. These targets provide guidelines to teachers who wish to include environmental education in any of the subjects of the primary school curriculum. The whole ensemble of attainment targets is meant to act as a map of Environmental Education outlining where we wish our pupils to arrive. The map should help teachers to plan activities which can lead pupils, either through incidental teaching and/or systematic teaching, to reach each attainment target over the years of primary education.

Each attainment target is graded by age and primary school year according to the scheme in the table below. Thus an attainment target graded as **[B]** is expected to be reached by pupils aged between 7-9 years who are in Year 3 or Year 4. Some attainment targets have a dual grading. Thus for an attainment target graded **[A, B]** teachers can start activities relating to this target in Years 1 and 2 and continue right through Years 3 and 4. In the case of targets graded **[A, B, C]** activities relating to these targets should commence in Year 1 and continue up to Year 6, with increasing sophistication.

<b>Code</b>	<b>Primary School Year</b>	<b>Age Range</b>
<b>A</b>	Years 1 & 2	5 – 7
<b>B</b>	Years 3 & 4	7 – 9
<b>C</b>	Years 5 & 6	9 – 11

## **MYSELF**

Pupils should be able to:

- recognise and name (in Maltese and English) the main parts of their body. **[A]**
- identify the organs responsible for sensing the external environment. **[A]**
- view the senses as aids to the perception of characteristics of the environment. **[B]**
- understand that the senses have their limitations in perception and need to be supplemented by other instruments. **[B, C]**
- know the roles of parents and older/younger siblings within their own family. **[B]**
- construct a simple family tree. **[B]**
- give reasons for the different clothes they wear on different occasions and at different times of the year. **[B]**
- realize the suitability of clothes' fabric for their intended functions. **[B, C]**
- examine different toys found at home and identify how to play safely with them (to include safety considerations - particular reference to toxic paint and detachable parts). **[A, B]**
- classify different foodstuffs as healthy or detrimental to health. **[A, B, C]**
- describe the precautions taken to ensure that food remains good for consumption over a period of time. **[A, B, C]**
- identify the importance for personal hygiene. **[A, B, C]**

## MY HOUSE

Pupils should be able to:

- consider their house as a place of shelter from the 'elements'. [A, B]
- realize that their house is divided into various rooms each having a different function. [A]
- map out their house layout and identify the services found therein. [B]
- state that houses are built according to regulations that are meant to ensure hygiene, safety and comfort. [C]
- consider whether the facade of their house blends with that of other houses in the neighbourhood (aesthetic considerations). [C]
- understand why Maltese houses have flat roofs (to collect water), windows (to allow air and light to enter) and ventilators (that ensure air circulation). [B, C]
- describe briefly the characteristics of the different materials used in the house for construction and decoration. [B, C]
- recognize the need of maintenance of the structural parts of the house (walls, floor, roofs) and of 'furnishings' (doors, windows, staircases). [C]
- identify sites (in the house) of possible health hazards and devise ways of preventing harm to themselves and other persons. [A, B, C]
- give the names of animals they meet in the house and classify them as pets, pests and other harmless living things. [A, B, C]
- state the conditions required by their pets to live in acceptable conditions. [A, B, C]
- explain why certain animals cannot be kept as pets due to an inability to satisfy their needs. [B, C]
- describe proper ways of dealing with pests (e.g. trying to prevent their entry in the house before trying to control them). [B, C]
- appreciate that certain pesticides can be hazardous to health. [C]
- mention a variety of plants in the house and garden. [A, B, C]
- explain how to deal with unwanted plants. [B]
- state the proper way to care for house and garden plants. [A, B, C]
- appreciate the use of water in the house and the need to conserve it. [A, B, C]
- mention the different types of fuels used in the house. [B]
- identify electrical appliances in the house. [B, C]
- show an awareness of how to conserve and use fuels and electricity safely. [B, C]
- explain correct procedures that can be taken to keep the house warm in winter. [C]
- identify different utensils and furniture found in the house and their use. [A, B]

- identify different methods of waste disposal in the home. **[B]**
- show creativity in the use of waste material (e.g. to make objects for decorations, etc...). **[A, B, C]**

## **MY SCHOOL**

Pupils should be able to:

- engage in activities that make the school environment more attractive. **[A, B, C]**
- explain why live or dead wild animals should not be brought to school. **[A, B, C]**
- know the name and badge (if any) of the school and understand their significance. **[B]**
- draw a plan of the school grounds and gardens. **[B]**
- describe conditions of the immediate environment surrounding the school that affect work in it. **[B]**
- identify the different varieties of plants and animals in the school, grounds and gardens during different seasons. **[A, B, C]**
- care for animals and plants found at school. **[A, B, C]**
- map out the classroom including the furniture in it. **[B]**
- describe the environmental conditions (e.g. warmth, light, etc..) in the class in different seasons and suggest ways how to make the class more comfortable to be in. **[B, C]**
- identify and measure the different characteristics (height, weight, eye colour, etc..) of children in the class and the school. **[B]**
- familiarize themselves with the school community through the identification of the hierarchy and different roles of different school personnel. **[B]**
- describe the school uniform as a characteristic that identifies a population and explain why it varies during the year (Summer /Winter uniforms). **[B]**

## **MY TOWN/VILLAGE**

Pupils should be able to:

- locate the place of their town/village on a map of the Maltese Islands. **[B]**
- show how the general topography of their town/village affects its climatic conditions (temperature, wind, rain). **[C]**
- identify the characteristics that classify their town/village as being urban, rural, industrial, touristic, commercial, historical, maritime or fishing village. **[B, C]**
- mention any special physical features of their town/village:
  - a. Natural environment - valleys, caves, fault lines, etc..
  - b. Human environment - buildings, niches, towers, ruins, gardens, etc.. **[B, C]**
- map a route from their home to a particular place in their town/village. **[B]**

- show a simple understanding of traffic signs and basic principles of road safety. **[B, C]**
- observe the effects of traffic on the surroundings e.g. by considering the frequency and types of vehicles in a particular street. **[B]**
- explain the significance of relevant street names. **[B]**
- mention the various community services (police stations, pharmacies, health care centres, central electrical distribution centre, etc..) available in their town/village. **[B]**
- locate the public leisure facilities (e.g. public gardens, playing fields, bowl pitches, etc..) offered by their town/village. **[A, B]**
- mention the role of the different societies and clubs that operate in their town/village. **[C]**
- identify the different shops found in their town/village, their frequency and distribution. **[B]**
- identify the public servants they meet (e.g. policeman, postman, milkman, etc..) in their town/village and explain the services they offer. **[A]**
- view their town/village as a parish community or communities sharing several features in common:
  - a. the patron saint and the town/village festa
  - b. services offered by the parish (e.g. care for the elderly) **[B, C]**

## **OUR ISLANDS**

Pupils should be able to:

- locate the Islands on a map of the Mediterranean region. **[B]**
- state the names, relative sizes and positions of the islands that make up the Maltese archipelago (Malta, Gozo, Comino, Cominotto, St. Paul's Islands, Filfla, and General's Rock). **[B]**
- describe the natural topographic features such as hills, plateaux, cliffs, valleys, etc.. **[B, C]**
- be aware of the climatic conditions prevalent in the Maltese Islands during different seasons and their influence on:
  - a. the inhabitants (e.g. type of houses built, leisure activities, etc ...).
  - b. animals and plants (e.g. migration, flowering, etc ...). **[C]**
- identify the rock types that compose the Maltese Islands, describe their characteristics and hence explain their use in building, art, craft and decoration. **[C]**
- explain that quarries are the source of most of the rocks used and how they affect the natural environment. **[B, C]**
- state the names and locate positions of the major towns and villages of the Maltese Islands. **[B, C]**
- state the size of the population of the Islands, and of various towns and villages. **[C]**
- state the area of the Maltese Islands in sq. km. **[C]**
- describe how the natural environment is being destroyed because of the uncontrolled spread of buildings. **[B, C]**

- draw on a map the main road network joining the main towns and villages. [C]
- use maps to make scale measurements of the distances between towns and villages. [C]
- identify different types of roads (e.g. pathways, main roads, etc ...). [B]
- name the sources of water supply of the Maltese Islands. [B]
- list and explain the importance of the main industries of the Maltese Islands (tourism, building, drydocks and shipbuilding, manufacturing industry, agriculture and fisheries). [C]
- explain how these industries place a stress on the environment by affecting air, land, water, sea. [B, C]
- locate the main agricultural areas of the Maltese Islands. [B, C]
- describe the differences between agricultural practices and the products of irrigated land (saqwi), non-irrigated land (baghli) and greenhouses. [C]
- understand certain agricultural practices such as terracing, crop rotation, application of fertilizer (natural/artificial), pest control and their effects on the environment. [C]
- list the main agricultural products of the Maltese Islands. [C]
- describe how some resources are obtained from the sea (e.g. water, salt, and food). [B, C]
- locate and name the main harbours and bays of our Islands. [B, C]
- state the different methods of sea transport. [A, B]
- identify different sources of sea pollution. [B, C]
- state the main organisms that inhabit the sea around the Islands and especially those found on the coastline. [A, B, C]
- describe the variety of minor industries of our Islands. [B, C]
- identify the natural land communities of the Maltese Islands (woodland, maquis, garrigue, steppe) from their major physical features as well as characteristic animals and plants. [B, C]
- state that the Maltese Islands contain a large variety of plants and animals - some of which are endemic. [B, C]
- recognize the role of common plant and animal species in simple food chains/ food webs. [B, C]
- develop a proper attitude towards animals (especially invertebrates, reptiles and birds). [A, B, C]
- identify endangered animal and plant species, the problems they are facing and action that can be taken to conserve them. [A, B, C]
- show concern about the large amounts of rubbish that litters most of the Maltese environment and describe ways of reducing it (including recycling practices). [A, B, C]
- justify the need to conserve the Maltese natural environment. [A, B, C]
- give reasons for the existence of legislation that protects the environment of the Maltese Islands. [B, C]
- describe popular traditions related to our Maltese folklore (games, songs, dance, etc ..). [B, C]

- describe the general organization of Government into Ministries responsible for various areas of work and the main features of Parliament and its workings. [C]

## **THE MEDITERRANEAN REGION**

Pupils should be able to:

- locate Malta's place on a map of the Mediterranean region. [B, C]
- state the names and locate the positions of the countries bordering the Mediterranean Sea<sup>1</sup>. [B, C]
- identify the links offered from Malta to neighbouring countries (telephones, airlines, sealinks). [C]
- list the names and locate the main ports of the Mediterranean on a map of the region. [C]
- give an estimate of the distances between Malta and neighbouring countries. [C]
- appreciate the diversity of religions, skin colour, style of dress, languages (Semitic and Romance), customs, and currencies of the peoples of this region. [B, C]
- recall the main products of the fishing and agricultural industry to this region. [B, C]
- understand that the Mediterranean Sea is almost closed and that it is connected to three other seas through narrow connections. [B, C]
- understand the huge pollution problems facing this region (such as sewage, industrial and agricultural pollutants) since the flushing of the sea takes tens of years. [B, C]
- understand the climate characteristics of the Mediterranean region (sunshine, rainfall, storms, etc.). [B, C]
- be aware of the main topographic features of the Mediterranean region such as mountain ranges, deserts, rivers, etc.. . [C]
- understand that some parts of the Mediterranean region are earthquake zones and have active volcanoes. [C]
- be aware of the wealth of historical remains of ancient civilizations and the need to conserve them. [B, C]
- be aware of any characteristic feature (including human constructions, natural features, flora and fauna) of the countries of the Mediterranean region . [B, C]
- appreciate that the Mediterranean region attracts millions of tourists that have an impact on the environment. [B, C]
- perceive the need to protect endangered plant and animal species of the Mediterranean region. [A, B, C]

## **OUR WORLD**

Pupils should be able to:

- state that our planet is a satellite moving in approximately circular orbit around the sun. [B, C]

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<sup>1</sup> The countries of the Mediterranean region are: Italy (Sicily), Yugoslavia, Albania, Greece, Cyprus, Crete, Turkey, Syria, Lebanon, Israel, Egypt, Libya, Tunisia, Algeria, Morocco, Spain, France and Monaco.

- state that our planet is a large sphere whose surface consists of land (continents and islands) and water (oceans, seas and rivers). **[B, C]**
- locate and name the five continents on a world map or globe and appreciate their relative sizes. **[B, C]**
- locate and name the major oceans on a world map or globe. **[B]**
- identify the different temperature zones (polar, temperate and tropical regions) and the different adaptations of the animals and plants that inhabit them. **[C]**
- state certain special features of our planet (e.g. highest point, deepest point, hottest place, etc..). **[C]**
- realize that the atmosphere is a layer of gas containing oxygen that is essential for life and it covers the whole planet. **[B, C]**
- recognize that the atmosphere constitutes a protective shield for the planet against harmful radiation and meteorites. **[C]**
- explain how the atmosphere helps the circulation of hot and cold air and that it is responsible for the various weather patterns that occur. **[C]**
- carry out simple weather observations and understand the basics of a weather report. **[A, B, C]**
- show a basic understanding of the concept of global ecosystems, i.e. the interdependence of living things among themselves and their physical environment. **[C]**
- understand the delicate balance that exists between living things and the drastic effects that can occur if they are upset. **[C]**
- appreciate the variety of Earth resources (living things, minerals, water, land, soil and fuels). **[B, C]**
- identify certain human activities that damage the environment such as deforestation, use of CFCs, burning of fossil fuels, uncontrolled hunting, land clearance, etc.. **[A, B, C]**
- explain how the world population, its needs and activities affect the global environment. **[C]**
- infer how situations such as lack of food and water, lack of proper health facilities, unequal distribution of resources and other economic differences may lead to conflicts and environmental problems. **[C]**
- mention the names and functions of a number of international Non-Government Organizations (e.g. Green Peace and WWF) that work for the conservation of the global environment. **[C]**
- feel that they have a duty to conserve the global environment for the present and future generations of humankind. **[C]**
- investigate ways of how they themselves can relieve some of the pressures on the global environment. **[B, C]**

## **SPACE**

Pupils should be able to:

- explain briefly what is meant by the terms: star/Sun, planet, solar system, satellite, comet, and meteorite. **[A, B, C]**
- identify the planets that make up the Solar System, their relative sizes (compared to Earth), their proximity to the Sun and hence the conditions (different from those of Earth) which make them unsuitable for life as we know it. **[C]**

- show how the Sun has a great influence on life on Earth, climate and weather, growth of plants and hence survival of animals. [A, B, C]
- describe how day and night follow each other. [B]
- state that stars are also suns that are very far away from us. [B]
- note that stars vary in brightness and colour. [B]
- understand how ancient humans have grouped stars into constellations and given them names (e.g. the Great Bear). [C]
- describe how stars can be used to navigate across deserts, seas and stretches of land. [B, C]
- state that certain planets have satellites similar to the Earth's satellite that is the Moon. [B, C]
- follow and record the different phases of the Moon. [A, B]
- explain how solar and lunar eclipses come about. [C]
- state that a number of artificial satellites circle the Earth and can be used for communications by radio and T.V. [C]
- recall and explain the principal milestones in space travel such as the launching of the first satellite, the first human to travel, the landing on the Moon, etc... . [C]
- state that humans have made the first step in the exploration of space by sending artificial satellites to other planets. [C]
- appreciate the possibility of other life forms in space including intelligent beings. [C]

## Environmental Education Teaching Methods

The general strategy adopted for EE in the Primary School Curriculum is that of incorporating EE concepts into the already existing subjects and not that of presenting a new subject. Besides increasing an awareness of the environment, the weaving of an EE dimension in a particular subject enriches the subject concerned and thus makes it more interesting. Hence what is being actually done is that of creating a sort of symbiotic relationship between EE and the subjects taught. Due to this integrated approach the methods adopted are also suitable for the subject into which EE concepts are fitted.

We are aware that the primary school curriculum, especially from Year 4 upwards, is very much influenced by a fairly rigid syllabus due to examinations, and that teachers are restricted in the methods they can adopt. With these constraints it is understandable that most of the activities tend to be classroom based. However, a careful reading of the attainment targets will show that some of these targets can only be achieved through outdoor and extra-curricular activities. Hence teachers should take any opportunity presented by activities outside the normal syllabus to promote EE concepts. In particular activities during day visits to public gardens, museums, archaeological, historical and industrial sites would be ideal to attain certain targets. Special days such as Prize Day, Arbor Day, Environment Day, Earth Day, Commonwealth Day, etc. evidently provide ample opportunities for environmental education activities. Some teachers, especially those in charge of kindergarten classes and Year 1 and 2,

usually adopt a thematic approach to teaching. This is commendable since it is ideal for integrating EE with a number of other areas of knowledge e.g. languages, art & craft, story telling, religion, science, history, geography, physical activity, drama and so on.

While working out the activities, teachers are reminded of the need to involve the children as much as possible. Pupil participation should be as high as possible to allow them to express and explore their ideas thoroughly. Pupil participation can take various forms: thinking and reflecting; reacting (involving their emotions and developing their values); and doing (practical and physical activities). Examples of these would include listening to a story attentively, reading, writing, drawing, observing, classifying, suggesting ideas, handling equipment, making models, singing, making music, drama and so on.

### Environmental Education Activities

*"Teachers practice an art. Moments of choice of what to do, how to do it, with whom and at what pace, arise hundreds of times during a school day, and arise differently everyday with every group of students. No command or instruction can be so formulated as to control that kind of artistic judgement and behaviour, with its demand for frequent, instant choices of ways to meet an ever varying situation," (Schwab,1983).*

Thus a mechanistic view of teaching is not useful. Giving rigid instructions of what to teach and how to teach it will not work as desired. Teachers need to understand the philosophy of the project, accept it and be prepared to put it into action. This section includes guidelines of how this can be achieved.

The grids on the following pages show the occurrence of EE components in the present<sup>2</sup> textbooks/syllabi of the primary school. For each primary school year the grid contains references to units, chapters or pages of textbooks/ syllabi used in that particular year that offer an opportunity for the introduction of EE in particular spheres of the environment. Thus for example a teacher using Ladybird 1a with a Year 1 class can use page 4 to introduce EE concepts identified in the MYSELF sphere of the environment.

- a. the indications can be used as points of departure leading to specific EE ideas, values and skills.
- b. the grids can also be useful for thematic teaching since they show that there exist unifying concepts, relating to Myself, My House, etc... within the various subjects of the primary school curriculum.
- c. several references, mentioned in the grids, can also be combined together and related to other activities such as a visit to San Anton Gardens, a visit to a market place, etc..

Although the grids show that the opportunity for EE is present in a number of places in the primary school curriculum, certain attainment targets cannot be achieved through the material available in the textbooks/syllabi.

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<sup>2</sup> Please note that these grids were accurate at the time the manual was published. Some of the books and syllabi might have changed since then. The reason why they are being reproduced is to illustrate how an environmental education curriculum audit can be compiled.

# **Environmental Education Components in the Primary School Curriculum**

*Please note that the data presented in the following pages refers to the textbooks and syllabi used in primary schools during 1991 (the year of publication of the manual).*

## Grid 1: Environmental Education Components in the Textbooks and Syllabi of the Primary School Year 1

TEXTBOOK/SYLLABUS	MYSELF	MY HOUSE	MY SCHOOL	MY TOWN/VILLAGE	OUR ISLANDS	THE MED. REGION	OUR WORLD	SPACE
<b>FIRST WORDS</b>	p.1, 7, 13, 17, 18.	p.2, 3, 5, 6, 9, 10, 12	p.8					
<b>LADYBIRD 1</b>	p.4-7, 16, 17, 28	p.8, 10, 11, 20, 21-23, 29-31		p.11-15, 17-19, 22-27				
<b>ACTIVITY BOOK 1</b>	p.10	p.8, 13		p.12				
<b>LADYBIRD 2</b>	p.22-27, 35, 36	p.20-21, 41		p.4-13				
<b>ACTIVITY BOOK 2</b>	p.5, 24 + game	p.7			p.11			
<b>LEJN IL-MISSIER 1</b>	p.4, 5, 8, 9, 12, 14, 17, 24, 25	p.4, 5, 10, 15, 16, 20, 28, 29	p.4, 5, 30, 31	p.4, 5, 6, 7, 21, 32, 33, 43, 48				
<b>DENFIL 1</b>	p.6-19, 25-33, 35-45, 80-83, 86 – 88			p.20, 22-24, 34, 46, 47, 50-65, 70-81				
<b>NIMXU FLIMKIEN 1</b>	p.18, 22, 23, 26, 27, 28, 29, 32, 34	p.23, 24, 27, 29	p.24	p.45	p.23			p.23
<b>NIMXU FLIMKIEN 2</b>	p.6, 11, 13, 17, 26, 27, 28, 31, 32	p.6, 10, 12, 21, 29, 38, 47, 48	p.45	p.19, 20, 22, 30	p.17, 34, 37, 39		p.25.	
<b>NIMXU FLIMKIEN 3</b>	p.30	p.8, 11, 13, 14, 25, 34-36, 40, 41	p.41	p.2, 12, 16, 17, 19, 47	p.44		p.42	

## Grid 2: Environmental Education Components in the Textbooks and Syllabi of the Primary School Year 2

TEXTBOOK/SYLLABUS	MYSELF	MY HOUSE	MY SCHOOL	MY TOWN/VILLAGE	OUR ISLANDS	THE MED. REGION	OUR WORLD	SPACE
<b>LADYBIRD 3</b>	p.41	p.6-12, 40						
<b>ACTIVITY BOOK 3</b>	p.8				p.14, 20			
<b>LADYBIRD 4</b>	p.4, 5, 22, 23	p.8		p.18, 19	p.9-17, 20-21, 26-31, 34-39			
<b>ACTIVITY BOOK 4</b>	p.21 (+ game)	p.15			p.1, 2, 7, 24			
<b>LADYBIRD 5</b>	p.11, 12, 14, 15, 40, 41	p.4, 5, 8, 9	p.16-17, 22-27, 30-40					
<b>ACTIVITY BOOK 5</b>			p.2, 13, 19, 21		p.1			
<b>LADYBIRD 6</b>	p.5, 14-18, 39-41	p.4	p.8-13		p.29			
<b>ACTIVITY BOOK 6</b>		p.9, 20			p.1, 7, 12			
<b>LEJN IL-MISSIER 2</b>	p.1		p.3	p.8				
<b>DENFIL 2</b>	p.4, 6, 9, 10, 15, 16, 40, 41, 43, 45, 46, 47, 51, 71, 75, 79, 81	p.65, 67		p.6, 9, 12, 25, 26, 27, 28, 29, 30, 32, 34, 36, 38, 46, 47, 50, 83				
<b>NIMXU FLIMKIEN 3</b>	p.30	p.8, 11, 13, 14, 25, 34-36, 40, 41	p.41	p.2, 12, 16, 17, 19, 47	p.44		p.42	
<b>NIMXU FLIMKIEN 4</b>	p.9, 25, 36, 42		p.2, 13, 33	p.20, 33	p.5		p.17, 18	
<b>NIMXU FLIMKIEN 5</b>		p.36, 42		p.2, 8, 9, 15, 32	p.7, 34, 35			p.24

### Grid 3: Environmental Education Components in the Textbooks and Syllabi of the Primary School Year 3

TEXTBOOK/SYLLABUS	MYSELF	MY HOUSE	MY SCHOOL	MY TOWN/VILLAGE	OUR ISLANDS	THE MED. REGION	OUR WORLD	SPACE
<b>LADYBIRD 7</b>	p.22, 23, 30, 33, 35, 41			p.26, 27	p.10, 11			
<b>LADYBIRD 8</b>	p.4-7, 22			p.13				
<b>LADYBIRD 9</b>	p.10, 29-31		p.6, 7					
<b>LADYBIRD 10</b>	p.4, 8, 9, 12-17, 40, 41	p.18, 40, 41						
<b>PATHWAY 1 (pupil's book)</b>	p.1, 2, 7, 56	p.3, 43		p.12, 32	p.16			
<b>PATHWAY 1 (workbook)</b>	p.6, 7, 23, 25		p.1, 20					
<b>DENFIL 3</b>	Ch.2, 19, 23, 29	Ch.3, 5, 6, 12, 33	Ch.16	Ch.7, 8.	Ch.1, 3, 5, 10, 14, 17, 21, 26, 27, 32, 36, 39, 40. p.28, 74			
<b>NIMXU FLIMKIEN 5</b>		p.36, 42		p.2, 8, 9, 15, 32	p.7, 34-35			
<b>NIMXU FLIMKIEN 6</b>		p.23, 35, 36, 37, 45	p.10, 21	p.11, 44	p.10, 13	p.11		p.24
<b>NIMXU FLIMKIEN 7</b>	p.18, 19	p.46		p.5	p.22-25			
<b>MATHEMATICS 1</b>	p.108, 115		p.52-53	p.113				
<b>LEJN IL-MISSIER 3</b>	p.1, 2, 53			p.5, 6, 57	p.13, 33, 41, 85, 89			
<b>SOC.STUDIES SYLLABUS</b>	Hum. Env. 1, 5, 8, 9. Nat. Env. 7. Geog. Env. 3, 4, 5.	Hum. Env. 7. Hist. Env. 2, 4. Nat. Env. 3, 4, 5, 6. Geog. Env. 7	Hum. Env. 5, 6	Hum. Env. 4, 10. Hist. Env. 3, 5. Geog. Env. 4, 5, 8	Hum. Env. 6, 10. Hist. Env. 1. Nat. Env. 1, 2. Geog. Env. 7, 9, 10	Hist. Env. 2. Geog. Env. 2	Hist. Env. 2. Geog. Env. 2	Geog. Env. 1, 2, 3
<b>SCIENCE WORKSHEETS</b>	p.2-9, 24, 52	p.12, 14, 15, 41, 42, 43, 53			p.11-21, 23, 24, 52		p.49-51	
<b>SCIENCE FIELDWORK ACTIVITIES (YR 3 &amp; 4)</b>				p.6	p.2, 4, 5, 8, 9-16, 17-20			

### Grid 4: Environmental Education Components in the Textbooks and Syllabi of the Primary School Year 4

TEXTBOOK/SYLLABUS	MYSELF	MY HOUSE	MY SCHOOL	MY TOWN/VILLAGE	OUR ISLANDS	THE MED. REGION	OUR WORLD	SPACE
LADYBIRD 11	p.4, 7, 23, 38, 39	p.24-26		p.10-13, 33 – 35				
LADYBIRD 12	p.32, 40	p.4, 5, 8-11, 19, 38, 40						
LADYBIRD 13	p.11	p.5		p.31, 32				
LADYBIRD 14	p.8			p.4, 5	p.16, 17, 24 – 37			
PATHWAY 2 (pupil's book)		Units 4, 7, 9			Unit 5		Unit 1	Unit 10
PATHWAY 2 (workbook)		Units 5, 8		Units 3, 6, 9, 11			Units 1, 2, 5	Unit 10
PATHWAY 3 (pupil's book)		Units 1, 2, 3, 6, 7, 8		Units 1-12				
PATHWAY 3 (workbook)	Units 1, 5, 11	Units 1, 2, 11		Units 1, 3, 10		Unit 4		
DENFIL 4	Ch.29, 40, 42, 47, 52	Ch.4, 10, 11, 20, 41, 54	Ch.5, 14, 37	Ch.31, 38, 55, 57	Ch.1, 7, 21, 22, 24, 25, 27, 28, 39, 49, 50		Ch.15, 32, 33, 34, 51, 56	Ch.9, 12, 13, 30, 44, 45,46
NIMXU FLIMKIEN 7	p.18, 19	p.46		p.5	p.22-25			
NIMXU FLIMKIEN 8	p.20	p.12, 26, 47	p.26	p.9, 12, 20, 38, 39, 48	p.12, 20	p.12		p.28
NIMXU FLIMKIEN 9	p.45, 48	p.25	p.46, 47					
MATHEMATICS 2	p.90, 115, 121	p.28, 63,90, 115, 121		p.15, 90, 115, 121	p.90, 115, 121	p.141	p.141	p.13, 54, 90, 115, 117, 121
LEJN IL-MISSIER 4	p.4, 12, 14		p.13		p.1, 2, 3, 5, 6, 7, 8, 9, +		p.10	
SOC.STUDIES SYLLABUS	Hum. Env. 3	Nat. Env. 4.	Hum. Env. 3, 4. Geog. Env. 7	Hum. Env. 4-6. Geog. Env. 6, 7	Hum.Env.7.Hist.Env.1-4. Nat.Env.1-3,6,7. Geog.Env.1,4.		Geog. Env. 1, 2,	Geog. Env. 3, 4
SCIENCE WORKSHEETS	p.1-8	p.25, 44, 45,56			p.12, 15, 16, 18, 20-22		p.49-57	
SCIENCE FIELDWORK ACTIVITIES (YR. 3 & 4)				p.6	p.2, 4, 5, 8, 9-16, 17-20			

## Grid 5: Environmental Education Components in the Textbooks and Syllabi of the Primary School Year 5

TEXTBOOK/SYLLABUS	MYSELF	MY HOUSE	MY SCHOOL	MY TOWN/VILLAGE	OUR ISLANDS	THE MED. REGION	OUR WORLD	SPACE
<b>LADYBIRD 15</b>	p.4	p.33		p.14-18, 20-28, 36, 37				
<b>LADYBIRD 16</b>	p.4, 20, 21	p.7, 8, 11, 23, 28		p.20, 21				
<b>PATHWAY 4 (pupil's book)</b>		Units: 1, 2			p.39	p.51-53		
<b>PATHWAY 4 (workbook)</b>	Units: 10 (lsn 2); 11 (lsn 3)	Units: 1 (lsn 3); 6 (lsn 4)	Units: 2 (lsn 4); 11 (lsn 4)	Units: 6 (lsn 2); 8 (lsn 3)		Unit 11 (lsn 1)	Unit 10 (lsn 1)	Unit 8 (lsn 4)
<b>PATHWAY 5 (pupil's book)</b>	p.25-27; Unit 9	Unit 3, p.21-23, Unit 10, p.49		p.34, 40, 56-57	p.6-7, 10	p.10		p.17, 20
<b>PATHWAY 5 (workbook)</b>	Units: 8 (lsn 1); 9 (lsn 4)	Units: 3 (lsn 2); 10 (lsns 1, 3)		Units: 5 (lsn 3); 6 (lsn 2); 7 (lsn 3); 9 (lsn 1); 11 (lsn 3)	Units: 5 (lsn 3); 6(lsn 2); 7(lsn 3); 9 (lsn1); 11 (lsn 3)			Unit 4 (lsn 3, 4)
<b>DENFIL 5</b>	p.13, Ch. 3, 4	Ch. 5		Ch. 1, 7, 9, 11, 19	Ch. 10, 16, 21, 23, 24, 28, 29, 31, 32, 39, 40, 41, 42, 43,44, 45, 46, 47, 49, 54, 55, 57, 58, 60	Ch. 35, 36, 39, 53	p.34.	Ch. 13
<b>NIMXU FLIMKIEN 9</b>	p.45, 48	p.25	p.46, 47		p.38, 39, 44, 45, 46, 47			
<b>NIMXU FLIMKIEN 10</b>	p.27	p.17		p.16, 18, 28, 29, 36, 48	p.9, 30, 31, 32-34		p.42	
<b>NIMXU FLIMKIEN 11</b>	p.18, 19, 40-41	p.29, 35, 47	p.10, 11	p.27	p.9, 30-34	p.46	p.37-39	
<b>MATHEMATICS 3</b>					p.46, 110, 139	p.139		
<b>LEJN IL-MISSIER 5</b>	p.11, Ch. 23	Ch. 1		p.127-128	p.6, 68, 69, 77, 78			
<b>SOC. STUDIES SYLLABUS</b>	Hum. Env. 5	Nat. Env. 5	Hum. Env. 6	Hum. Env. 5; Hist Env. 1; Geog.Env. 1	Hum.Env.7;Hist.Env.2-5;Nat.Env.2,3,6,7; Geog. Env. 2,3.	Geog. Env. 4, 5		
<b>SCIENCE WORKSHEETS</b>	p.2, 3, 6, 8-10, 14, 38-44			p.28	p.12, 14, 20-26		p.68, 79-81	
<b>SCIENCE FIELDWORK ACTIVITIES (YR. 5 &amp; 6)</b>		p.1-3, 20, 57	p.6	p.4, 5, 7, 8, 17	p.9-13, 16, 18, 19, 21-24, 26-28, 29-30, 32-36, 37-39, 40, 41-46, 47	p.14	p.48, 50-55, 63-67	

## Grid 6: Environmental Education Components in the Textbooks and Syllabi of the Primary School Year 6

TEXTBOOK/SYLLABUS	MYSELF	MY HOUSE	MY SCHOOL	MY TOWN/VILLAGE	OUR ISLANDS	THE MED. REGION	OUR WORLD	SPACE
<b>PATHWAY 6 (pupil's book)</b>		p.60	Unit 5, p.20	Unit 3, p.49	p.43	Unit 10	Unit 11	Unit 2
<b>PATHWAY 6 (workbook)</b>			p.11		p.16		p.4, 23, 24	p.5, 6
<b>DENFIL 6</b>	Ch. 2, 65	Ch. 28, 30		Ch. 26, 36, 49, 68	Ch.3,8,9,10,14,16,22,27,32, 36,39,42,62, 44,48, 56,66, 67,70	Ch. 12, 17, 25, 41, 52, 58		Ch. 23, 59
<b>NIMXU FLIMKIEN 11</b>	p.18, 19, 40-41	p.29, 35, 47	p.10, 11	p.27	p.9, 30-34	p.46	p.37-39	
<b>NIMXU FLIMKIEN 12</b>					p.46-48			
<b>LSIEN PAJJIZI</b>		p.68		p.64	p.65, 67			
<b>MATHEMATICS 4</b>		p.126	p.69		p.127-129	p.68, 79-81		
<b>BETA MATHEMATICS 4</b>				p.64, 65, 67, 78, 104-107, 118-119, 122-125	p.10			
<b>LEJN IL-MISSIER 6</b>					Ch. 7, 13, 17			Ch. 6, 10
<b>SOC.STUDIES SYLLABUS (Noti ghall-Ghaliema)</b>	Amb. Civ. p.8. Amb. Geog. p.33	Amb. Civ. p.18, 19.		Amb. Civ. p.11, 12, 13, 18, 19, 20. Amb. Geog. p.26, 30, 37. Amb. Stor.-all syllabus	Amb.Civ. p.13, 14; Amb. Geog. p.26, 28, 30, 33-39. Amb.Nat. & Amb.Stor.-all syllabus	Amb. Civ. p.24. Amb. Geog. p.27, 31, 32		
<b>SCIENCE WORKSHEETS</b>	p.2-10, 16, 26, 29-31	p.51-53, 58			p.14, 18, 19, 55-57		p.49, 59	
<b>SCIENCE FIELDWORK ACTIVITIES (YR. 5 &amp; 6)</b>		p.1-3, 20, 57	p.6	p.4, 5, 7, 8, 17	p.9-13, 16, 18, 19, 21-24, 26-28, 29-30, 32-36, 37-39, 40, 41-46, 47	p.14	p.48, 50-55, 63-67	

## Environmental Education Evaluation

One of the purposes of evaluation is to find out whether environmental education is being effective. This can be done by assessing individual pupils or groups of pupils to check on their progress in environmental education. It seems that for this purpose a profile of an environmentally educated pupil must first be established and then this can be used as a criterion against which pupils are assessed. The general structure of the profile can follow the categories of environmental education objectives outlined in the Final report of the Tbilisi Conference (p.26-27). Thus a teacher can gauge his/her pupils' progress by assessing whether they have gained:

**Awareness:** that is awareness of and sensitivity to the total environment and its allied problems.

**Knowledge:** acquisition of a basic understanding of the environment and its associated problems.

**Attitudes:** acquisition of a set of values and feelings of concern for the environment, and the motivation for actively participating in environmental improvement and protection.

**Skills:** acquisition of the skills for identifying and solving environmental problems.

**Participation:** being actively involved in working towards a resolution of environmental problems.

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