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# ENVIRONMENTAL EDUCATION

Environmental education is an essential component of environmental programs. Its foremost goal is to prepare both the individual and society for the task of protecting the environment by raising their level of environmental knowledge, understanding, responsibility and ethics. The challenge of environmental education is to close the gap between knowledge and ethics, to internalize environmental knowledge so that it will be reflected in new behavioral norms.

To foster young people's interest and involvement and to promote the development of new patterns of behavior, environmental education is based on three elements: study *in* the environment, *about* the environment, *for* the environment. The Ministry of the Environment is committed to instilling one central message in every man, woman and child in Israel: "I am ready to take responsibility for the environment."

## FORMAL EDUCATION SYSTEM

The Ministry of Education is responsible for formal environmental education in Israel. Over the years, the Education Division of the Ministry of the Environment, environmental education centers (see below), and teachers throughout Israel have worked side by side with the Ministry of Education to develop formal environmental education curricula based on environmental education principles for all levels of education—from kindergarten to university.

Emphasis is focused on kindergartens and on the early years of elementary school as a means of instilling behavioral patterns that will last a lifetime. In line with the new approach, an educational kit replete with posters and enrichment material has been prepared in Hebrew and Arabic; kindergarten teachers undergo special training; and environmental materials are distributed to kindergartens—from compressible cans for reducing waste volume to composters for transforming garbage to compost. The Ministry of the Environment has recently initiated a literature survey of environmental education material for the purpose of preparing a compendium of available educational resources for preschoolers.

In primary school, environmental studies are often integrated into such traditional subjects as nature and social studies, agriculture, history, and geography, although recent years have seen new initiatives to teach the subject from an interdisciplinary and multidisciplinary perspective. In the lower grades, environmental education largely focuses on the immediate environment of the



students—school, neighborhood, industry, gardens and parks—as a first step toward responsibility for the larger environment—community, city, country and world. An innovative program, initiated in 1997, reflects this value-oriented approach to environmental education for the first to fourth grades. The program combines knowledge and values in an approach that integrates between social education, environmental education and homeland and social studies. The themes of the program revolve around involvement, reciprocity and responsibility in the interrelationships between individual, society and environment. Additional programs follow up on this approach in the middle years of education, largely in conjunction with the geography curriculum.

In the coming school year (2002/3), in line with a government decision to promote recycling and reduction of waste in all ministries and affiliated bodies, special efforts will be directed at recycling. Interactive and multi-media educational kits, including CDs, activity books and videos, are being prepared to accompany



the initiative. In addition, plans are being completed for a large-scale battery collection campaign in all of the country's schools—some 3,500 in all. The campaign will be supported by posters, stickers, competitions, and recycling corners in classrooms. The aim: to involve children in recycling activity and increase environmental responsibility (see [Solid Waste Chapter](#)).

Unique high schools specializing in environmental studies have also emerged. Since the first environmental program focusing on the desert environment as a model for natural and human ecological systems was first established in 1976 in Sde Boker in the Negev, dozens of specialized junior and senior high schools have sprouted throughout the country offering programs in environmental studies, science, nature and society.

In 1984, the Ministry of Education approved an environmental studies program for high school matriculation examinations, at two levels of study. The basic program provides an understanding of the concepts and foundations of environmental study and focuses on an individual environmental subject related to a specific location in the vicinity of the school. The more intensive program includes these elements with the addition of a special project, dubbed "ecotope"—a student research study which involves fieldwork, observation, surveys and a paper. In all cases, study of such issues as water scarcity, urban problems or air pollution is accompanied by community work, cultivation of environmental values, use of modern technology and methodology, development of independent study and nurturing of such values as responsibility and respect for humankind and the natural environment. About a third of all Israeli high schools (some 200) currently offer the matriculation program on the environment. This translates to over 4,500 high school students who conducted environmental projects last year.

In light of growing interest in environmental studies at the high school level, the Environment and Education Ministries have initiated the establishment of instruction centers for students who prepare "ecotopes" within the framework of their environmental studies. The centers train teachers to guide and supervise students in their "ecotope" projects, serve as lending centers of scientific equipment (e.g., air and noise monitors) to schools, and teach students to use scientific equipment in the field. At the same time, students participate in workshops that provide basic knowledge of research methods, bibliographical work and databases.

## A LOOK AT "ECOTOPE" CENTERS

"Ecotope" centers have been set up in different regions of the country, mostly within the framework of municipal environmental units or associations of towns for the environment. A prominent example is the Agan Beit Natufa Town Association for Environmental Quality in Sakhnin which provides educational services to thousands of students, Jews, Arabs and Druse alike. In this town, a regional center was established for demonstrating environmental technologies, energy conservation, solar energy use, exploitation of methane for electricity and heat generation, inexpensive wastewater treatment, and compost production. This center also serves as an important educational center welcoming thousands of students from the vicinity to participate in "ecotope" high school projects each year.

Efforts are currently centering on inaugurating yet another "ecotope" center on the premises of Western Galilee Compost in Haifa Bay. This plant, which collects unsorted municipal waste for the purpose of separating dry components for recycling and transforming the organic fraction into compost, already houses a so-called "Center for Recycling Studies." Its location, in close proximity to an industrial area, rivers, the coastal strip, a major road, and a nature reserve, makes it a perfect candidate for hosting an "ecotope study center" as well.

## GLOBE PROJECT

In 1995, Israel joined the Global Learning and Observations to Benefit the Environment (GLOBE) project. A joint steering committee of the Ministry of the Environment and Ministry of Education administers the professional and procedural aspects of the project including provision of educational materials, teacher training workshops and personal guidance, computer and Internet facilities, skills, and purchase of scientific equipment. Environmental education coordinators from Israel's environmental education centers serve as school guides.

In recent years, the project has been integrated into the curriculum of about 60 participating schools, and timeframes were set for teaching GLOBE skills. During the three-year program, environmental observations are made in the areas of atmosphere and climate, hydrology, land cover

and soils. Outdoor enrichment activities, nature and study tours to different sites in the country, and volunteer activities on behalf of the environment (forestation, site adoption, cleanup campaigns, etc.) accompany the studies.

## ENVIRONMENTAL EDUCATION CENTERS

The implementation of environmental education concepts into the school curriculum is a major challenge, requiring new criteria, teaching methods and innovations in the learning process. To achieve these goals, the Ministry of the Environment has established Environmental Education Centers within the framework of municipal environmental units. The centers operate throughout the country, in the Jewish and Arab sectors, serving as focal points for community environmental activities.

The centers assist the formal education system in planning and preparing environmental curricula (in conjunction with local teachers), conduct in-service teacher training programs, and support the introduction of innovative educational approaches. They provide educational material for both teachers and interested citizens, promote informal environmental education by stimulating public involvement, initiate and coordinate lectures, seminars, environmental tours and training courses, and promote environmental events.

## ENVIRONMENTAL EDUCATION INITIATIVES

Non-governmental organizations, in cooperation with the Ministries of Education and the Environment, are essential partners in environmental education initiatives. For example, in the area of solid waste, recycling centers have been set up in different parts of the countries,



in cooperation with a non-profit association dedicated to promoting industry-community links. The centers are designed to educate both students and the general public toward waste minimization, recycling and reuse. They collect defective products and waste materials from industrial plants for supply to schools, kindergartens, artists and the general public. Associated activities such as teacher training sessions on recycling and student workshops on creating works of art from waste materials contribute to growing awareness of the environment, in general, and of waste reduction and recycling, in particular.

### ADOPT A SITE PROJECT

To ensure that both the educational system and the community take part in environmental commitment programs, an "Adopt a Site" project has been launched. Within this framework, educational institutes, youth movements and community centers adopt sites in their immediate surroundings and clean, maintain and care for them. Sites may include national monuments, open spaces, public gardens, or river sections. Schools or organizations that are interested in joining the program are required to prepare an environmental program and to commit to taking responsibility for the site for at least three years.

In yet another realm, the Ministry of the Environment, in conjunction with educational and animal welfare organizations, has initiated a pilot project in 12 schools throughout the country whose aim is to educate children toward responsibility and commitment to animals and to prevent cruelty to animals. Within the framework of the program, older children partner with younger children in activities which are meant to prevent violence and encourage community involvement with the aid of animals. Promoting animal welfare is expected to lead to a host of other benefits including sensitivity to the needs of others, personal responsibility and prevention of violence.

Following is a short description of some of the country's educational projects in the field of the environment:

### GREEN NETWORK

In 1998, the Heschel Center for Environmental Learning and Leadership teamed together with Project Involvement of the CRB Foundation to launch the Green Network, a network of schools committed to actualizing a new vision of environmental education. The Green Network, which now includes some 40 schools, links schools and community groups across the country by engaging them in environmental

learning and supporting action in their local communities. The Network is building a core staff of educational facilitators to work with schools in developing new projects and approaches and is "greening" the school culture and curriculum by teaching skills and know-how, providing community educational experiences that include activism, citizenship and real-life learning, and introducing environmentally friendly practices into schools. Activities include operation of composting facilities, organic gardening, adoption of natural and disturbed areas (including polluted streams) as caretakers, cleanups with the participation of thousands of young people, dispatch of letters and petitions to local authorities, ministers, and environmental organizations, and cooperation with local industries and businesses.

### ■ ENVIRONMENTAL PETITION

Seven students from Green Network schools participated in the UNEP International Children's Conference on the Environment in England. In addition, participating students signed a petition calling upon the country's leaders to respect and care for both the human and the natural environment. In the petition, the children emphasized their right to a world that is free of pollution and includes open spaces, flora and fauna. Their petition ends with the following declaration: "We, the children of the 'Green Network' and the 'Society for the Protection of Nature' want to grow up in a natural, healthy and safe world, in the present and in the future, and we will contribute our part to shape a world that is good to live in."

### STUDENT FORUM

In 1999, the Israel Society for Ecology and Environmental Quality Sciences, in conjunction with the Ministries of Education and the Environment, launched a program to enable youth to become engaged in designing creative solutions to environmental problems. The goals of the program are to engage students in a dynamic environmental education experience, to give them an opportunity to be recognized for their achievements, and to foster environmental stewardship. In 2000, 700 middle and high school students from across the country participated in a competition to design a model environmental city for the 21st century. In 2001, more than 1,000 students participated in a competition to develop an environmental business which would both save the environment and make money. The most innovative projects were chosen and exhibited at the Conference of the Ecological Society and in the International Exhibition for Environmental Technologies.

In 2002, the competition is focusing on an educational project. Students were called upon to come up with creative and original ideas for transferring knowledge, awareness, motivation and tools for environmental action to students in lower grades. Such ideas may take the form of games, kits, books, computer games or videos. Ideas for future years include environmental journalism, environmental law, environmental engineering and environmental advocacy.

### MIGRATING BIRDS KNOW NO BOUNDARIES

This unique multi-disciplinary program, developed in cooperation with the Ministry of Education, is advancing technological and scientific education and education for excellence in Israel. The program, which was launched in 1996, is being implemented in more than 200 schools representing different levels and sectors: high schools in the Jewish and Arab sector, special education schools, primary schools in Israel and the USA, and universities and colleges. Both the Internet site ([www.birds.org.il](http://www.birds.org.il)) and the accompanying teacher's guide are available in both Hebrew and English. As part of the project, students around the world can track migrating birds with attached satellite transmitters through the Internet, in real time. They can also track weather changes and learn how those changes affect migration patterns.



### FLOATING ECOLOGICAL LABORATORY

The Ministry of the Environment, in cooperation with the Blossoms of Science project of the Jordan Valley College, has established a floating ecology laboratory on Lake Kinneret. The laboratory, aboard a vessel, allows young people to investigate ecological principles that relate to the lake and to follow up on changes in different



parameters of water quality throughout the year with the aid of sampling, monitoring and analysis equipment. The educational program is targeted at junior and senior high school students.

## THE ENVIRONMENTAL CLASSROOM

The Society for the Protection of Nature in Israel (SPNI), Israel's foremost non-governmental environmental organization, maintains field schools, urban nature centers and local branches. Every year, it reaches thousands of children and youth through its educational trips, courses, training programs, public campaigns and publications.

The SPNI is committed to instilling environmental values in children of all ages beginning with nature clubs for 5-10 year olds, orienteering courses that reach more than 9,000 teenagers, and a so-called Environmental Classroom for elementary school children. The latter is an enrichment program that aims to strengthen the connection between the student and the surrounding environment, to enrich knowledge about the environment, to connect social and environmental issues, and to promote active participation for the environment. The program is carried out in over 30 elementary schools throughout the country.

## INFORMAL EDUCATION

Formal education is augmented by informal education programs which play a pivotal role in fostering environmental awareness. Special events, lectures, field trips, seminars, periodicals, posters, television shows and films are utilized to increase environmental consciousness in the general public. The National Nature and Parks Protection Authority, for example, has developed educational material, visitor centers, educational centers and ecological centers at nature reserves and national parks throughout the country.

In recent years, heightened concern about environmental issues has resulted in increased activism among the populace. New non-governmental environmental organizations have been created on the national level, while grassroot groups have organized in many areas to pressure authorities to find solutions to environmental problems at the local level (see [Non-Governmental Organizations Chapter](#)). NGOs, and especially the Society for the Protection of Nature in Israel, with its extensive network of field study centers and guided outings, have achieved major successes in instilling a conservation ethic in the population.

Programs for environmental activists are promoted in different areas of the country, as joint projects of government offices, municipalities, academic institutions and volunteer organizations. Both young and old are being recruited and trained to advance plans on the municipal and neighborhood level. Projects include adoption of a seashore, rehabilitation of a neighborhood, and promotion of recycling activities in kindergartens.

Community centers play a particularly important role in encouraging environmental activism on the local level, and the Association of Community Centers has been an active partner in training courses for community level environmental activists. Other community initiatives range from environmental courses and lectures to recycling libraries which collect industrial waste products and transfer them to schools or artists for reuse. Industry too has shown a greater readiness to work on behalf of the environment, and new lines of communication have been opened between the industrial sector and the community. Without doubt, community involvement strengthens the bond to the local environment and to the country so that the immediate environment (whether river, park or street) becomes an extension of the home—to be nurtured and protected.



Arik Bar-Sade

## SPECIAL EVENTS TO PROMOTE ENVIRONMENTAL EDUCATION

Special events are an important part of any publicity effort directed at the general public. They help acquaint Israelis from all walks of life with environmental issues. The presentation of environmental awards to outstanding individuals, local authorities and industries for their environmental activities is now an important part of many annual events. Such events are accompanied

by school competitions, youth marches, photography and art contests, cleanup campaigns, workshops and environmental exhibitions.

To promote environmental education in the formal school system, several competitions have been launched. One competition stresses academic excellence. It awards prizes for outstanding research projects on the environment to 11th and 12th graders and recognizes high schools that promote environmental studies. A second competition focuses on environmental responsibility. School prizes are based on such criteria as the cultivation of the school and its immediate environment, cleanliness and community action.

## ENVIRONMENTAL SUMMER CAMPS

As a joint initiative of the Ministry of the Environment, local authorities and the Association of Community Centers in Israel, dozens of environmental summer camps were opened in 2000 and 2001 to raise environmental awareness among children in distressed areas and development towns throughout the country. In 2001, some 14,000 children from all sectors (Jewish, Arabic, Bedouin and Druse) participated in the camps. The Ministry of the Environment subsidized the cost of the camp for a third of the children. This year environmental protection will be the central theme of summer camps in Israel.



## INSTITUTES OF HIGHER LEARNING

During the 1990s, most of the country's major universities and colleges opened graduate or undergraduate level programs in environmental studies and management. The range of academic programs is very rich—from Haifa University's expertise in environmental economics,

to the Technion and Tel Hai College's engineering expertise. Environmental classes are offered in a wide range of disciplines. For example, in 1990 there was one environmental law class offered at the Hebrew University of Jerusalem. Today, most law schools have two or three classes dedicated to environmental and natural resource law. Furthermore, recent years have witnessed a marked growth in attendance in general electives about the environment.

Innovative academic programs have emerged in several institutes of higher learning. For example, the Arava Institute for Environmental Studies, based on Kibbutz Ketura in the Arava Valley, offers an interdisciplinary graduate/undergraduate program designed for Middle Eastern and international students. Tel Aviv University's Porter School for Environmental Studies has inaugurated a laboratory capable of creating three-dimensional computer simulations of the potential environmental impacts of proposed projects. Haifa University launched an interdisciplinary graduate program in natural resources and environmental management in 1999. The graduate program at the Hebrew University of Jerusalem focuses on water pollution control and treatment technology, air resources quality management, industrial hygiene, environmental health and environmental chemistry. The Weizmann Institute of Science continues to serve as a post-graduate center for science research where students can pursue an interdisciplinary degree in environmental sciences. The Netanya Academic College has launched an Environmental Law Center. Further south, the Institute for Desert Studies at Ben-Gurion University of the Negev has become renowned for its graduate courses on theoretical and experimental aspects of desert ecology offered to both Israeli and foreign students.

The country's colleges and universities are also working together with the Ministry of the Environment and other organizations to promote environmental awareness. For example, scientists and educators from Bar-Ilan University, Tel Aviv University and Beit Berl College have taken an important part in developing educational material. In a recent initiative, the Zoology Department of Tel Aviv University has worked along with the Ministry of the Environment to produce a set of posters on biodiversity in Israel, with special attention to the country's animal population through the ages (see [Landscape and Biodiversity Chapter](#)).

A particularly interesting development is the introduction of environmental behavior into university campuses. A nationwide student environmental organization, Green Course, was set up in 1997. The group has members on all major university and college campuses around the country

and works to raise student awareness and consciousness through lectures, surveys and festivals. Members publish information pamphlets, establish recycling facilities, prepare petitions and assist in the creation of an environmental education curriculum for universities.

## GREEN CAMPUS AT THE TECHNION

In 2000, the Technion-Israel Institute of Technology launched a "Green Campus" initiative dedicated to promoting environmental behavior on the university campus. This university, which is dedicated to technological and scientific advancement, has initiated paper recycling, advanced public transportation, and promoted sophisticated systems for water and energy savings in order to spearhead a positive change in environmental norms on campus and throughout the country. The initiative is accompanied by the publication of Green Pages every two weeks with information on Green Campus activities (e.g., battery, printer cartridge and toner collection for safe disposal and recycling), tips for conservation, and notices on new initiatives and competitions. In addition, the university boasts an Ecological Garden, extending over some two hectares in the heart of the campus, which aims to increase the environmental awareness of students, researchers and residents alike.

## ADVANCING ENVIRONMENTAL EDUCATION

Environmental education has received a new boost within the framework of preparations for the World Summit on Sustainable Development in Johannesburg. Renewed efforts are focusing on the "greening" of kindergartens, schools and college campuses. At the same time, Internet sites, both of the Ministry of the Environment and of other organizations, are increasingly incorporating children-oriented corners. The Ministry of the Environment has called upon schools to present innovative ideas for advancing environmental education in the school system and has allocated one million shekels for this project over the next two years. Children have been encouraged to write to the world leaders who will gather in Johannesburg with their vision of an environmental future.

In order to strengthen young people's commitment to the vision of sustainable development, the Ministry of the Environment, in cooperation with governmental and non-governmental organizations, has initiated the preparation of a "green label" for schools with an environmental orientation. The idea is to develop an official standard, based on objective environmental indicators, which will assess a school's environmental performance and commitment. Schools that comply with the environmental parameters specified in the standard will be awarded with a "green label."