

## **NEGEV 180° : A Regional Center for Excellence in the NEGEV Desert Region**

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This paper describes a unique program in the Negev desert in southern Israel, an area geographically distant from the cultural and economic centers of the country, with a sparse population living in small communities. Based on the experience gained at the schools for gifted children initiated by JDC-Israel in outlying regions of the country between 1986 and 1992, Negev 180 aims to utilize regional cooperation to raise the educational level of the entire region by reaching out not only to gifted children, but to all the talented children in the schools of the region as well as to their teachers and their parents. The Negev desert covers some 60% of the State of Israel. Despite its weak economic and educational infrastructure, the Negev can serve as a natural laboratory for the investigation and study of subjects such as: desert agriculture, the exploitation of water in a desert environment, the physiological adaptations of desert flora and fauna, the exploitation of solar energy in the desert, or marine science at the Inter-University Institute at Eilat. The Center is based on two axes: 1) a

computer communications network and 2) research environments in the schools, and will emphasize research projects carried out under the guidance of scientists. Work on the projects in these environments will encourage a creative approach to learning and research, team work, personal responsibility and the ability to locate, analyze and process scientific information. All the school environments will be linked by a computer communications network based at the Ben Gurion College at Sde Boker which will link them to one another and to research institutes in Israel and abroad. The system will also create social opportunities by bringing together students and teachers from widely divergent small settlements usually isolated from each other.

JDC-Israel's efforts in nurturing excellence in education began in 1986 with the North Star project - a program for gifted children at the Tel Hai Community College, and a unique Science Education Center for high-school students and teachers at the Migal Applied Research Institute in the Upper Galilee near the Lebanese border.

Following this, JDC initiated projects for gifted children operating from the Inter-University Institute for Marine Science in the Red Sea town of Eilat (set up in 1990), at the Negev College near the Gaza Strip (in 1991) and at the Ben-Gurion College in Sde Boker in the Negev desert (in 1992). More than 800 students, including new immigrants in outlying areas of the country are currently participating in these projects.

JDC defined its role in these projects as that of a social entrepreneur (catalyst and facilitator). After the initial startup of the programs JDC continued its involvement in the development process until the local bodies became capable of taking over full responsibility, with the assistance of the Ministry of Education and Culture.

The weak educational and economic infrastructures of these regions (which have almost no advanced industry) have created a pattern of negative migration, an internal (i.e. within country) brain drain of the more able and ambitious elements of the population attracted to the richer opportunities that exist closer to the center of the country.

The schools for gifted children were set up in the belief that in peripheral regions like this it is vital to develop a

high-quality educational basis for children with high potential. Fostering the talented younger generation in the hope that they will remain in the region and contribute to its development is an important element in stabilization of the region and the retention of a high quality population.

The aims of the schools were initially defined as:

- a. The advancement and fostering of gifted children and the development of their intellectual, creative and social skills, including exposure to the fields of science and technology, social sciences and art.
- b. The creation of unique learning programs which draw on the potential of local resources and the characteristics of the locality where the children live.
- c. Strengthening the links between the scientific and educational communities in the region.

The schools were developed within already existing frameworks, such as a community college or an applied research institute, so as to exploit the region's natural and human resources.

This paper describes a further stage - the creation of a regional center for excellence - which represents an even bigger step forward. By exploiting the

cooperation which had already been achieved between the various settlements and the scientific and educational communities through these programs for the gifted, Negev 180 aims to use regional cooperation in order to raise the educational level of the entire region by reaching out, not only to gifted children, but to all the talented children in the schools of the region as well as to their teachers and their parents.

### **The Regional Center For Excellence In The Negev Desert**

The Center is located at the Ben-Gurion College in Sde Boker, a complex of academic and educational institutions which engage in educational and research activities related to the Negev desert region. The two major academic institutions at Sde Boker, The Jacob Blaustein Institute for Desert Research and the Ben Gurion Research Institute and Archives are both affiliated to the Ben Gurion University of the Negev in Beersheba.

The Negev desert region in southern Israel covers some 60% of the area of the State of Israel. The sparse population of the Negev lives in small, scattered communities: development town kibbutzim (cooperative

settlements based partly on agriculture and partly on industry) or moshavim (semi-cooperative agricultural settlements), and come from widely different segments of the general population.

The aim of the Regional Center for Excellence is to create a model of a regional partnership in which, while each individual community retains and develops its own independence, together they create the critical mass necessary to advance the entire region.

The Negev is a particularly suitable location for this project. The desert setting, together with the existing scientific infrastructure of the region, provide a natural laboratory for the investigation and study of subjects such as: desert agriculture, the exploitation of water in a desert environment, the physiological adaptations of desert flora and fauna, the exploitation of solar energy in the desert, astronomy at the Mizpe Ramon Observatory, or marine science and the interface between land and sea at the Inter-University Institute in Eilat.

The program at the Regional Center will fuse between two opposing approaches to man's struggle with life in the desert which have developed over the centuries. The totally-active approach takes an egoistic form, considering only the needs of man

and ignoring those of the natural environment. The life-style of the passive approach yields to the forces of the desert. The ideological challenge facing man today is how to merge these two approaches to achieve well-balanced development of the desert by using and working with the power of both science and nature rather than by entering into conflict with the forces of nature.

The approach aims to provide a response to the social and educational challenges of the modern age. The objective is to set up within the schools educational environments where the students can develop the intellectual ability which will be essential for success in the not too distant future. These educational (research) environments will all be linked through a computer communications network developed specifically for this program which will also link them with scientific and academic institutions in the region, elsewhere in the country and abroad.

### **Characteristics of the Research Environment**

#### ***a. At the Local Level(the school):***

- \* In the initial phase the Environment will consist of an open physical space

containing four to eight terminals, a small library and a group discussion area. At a later stage the environment will consist of a larger, flexible space to which could be added other elements such as: group discussion rooms, more terminals, multimedia stations, individual work corners, a lounge area, etc.

- \* The program expands the "learning space" available for each student through the communication network which will link all the institutions and, settlements participating in the project. This linkage will give each students the opportunity for maximum development enabling to acquire information from distant professional sources while remaining in their home location.
- \* Accessibility - The environments in the school will be open and available to the students at any time (they will also be able to link their home computer to the network).
- \* A change in the role of the teacher - the increasing accessibility of databases is changing the traditional role of the teacher as a source of information. The teacher will have to become the pupil's companion and guide in the learning and creating

process.

**b. At the Regional Level:**

\* The computer communications network being developed for the project will include access to existing databases as well as databases being developed specifically for the project. Electronic mail, including conference calls and bulletin boards, will allow ongoing links with the scientific community: small applied agricultural research establish-

ments in the Negev, and academic institutions. The network will allow cross fertilization between the experience and information acquired in each environment.

\* Types of activities at the regional level:

1. Activities initiated by the Center-These will focus on pre-defined, planned projects. Each project is ensured an ongoing network of support and guidance from the project staff led by a scientist. The scientist is responsible for the training and guidance of teachers and students participating in each project.

Each year, in parallel to the operation of a number of projects, others will be developed in the area of social and life sciences using the human scientific resources of the

region. The scientific staff at Eilat, for example, will concentrate on the marine sciences and the interface between sea and land (desert) while that at Sde Boker will emphasize such topics as water resources.

2. Activities initiated by students and/or teachers - This second type of activity will begin in the second stage of the project (in the second or third year of operation). A group of students or individual teachers will select a topic of interest to them and then, through the network, attempt to contact experts in the fields and other potentially interested

groups so as to set up a project group. Implementation of stage two will serve as an indicator of the success of the program.

**The Educational Objectives of the  
Research Environments**

\* Imparting independent learner skills - Rather than being a passive participant who merely absorbs information, the student becomes an active partner in the education process by acquiring the inner motivation to search for the information. The environment will encourage the development of vital technological skills,

such as networking, the management and use of computer databases, etc.

\* Encouraging team work - Study and research will be carried out in teams which focus on a topic of common interest. The groups will learn together using varied methods, such as data bases, including those they create themselves, and other information sources.

\* Encouraging responsibility and self discipline - A high level of responsibility and self discipline is required of each student both as regards the research process and the operation of the Environment.

\* Using a multi-disciplinary approach - The environment will be linked to databases and experts in a wide range of disciplines, giving the students a multi-dimensional grasp of reality.

\* Social relationships - Children who have grown up in a heterogenous environment generally develop more fruitful and high quality dialogues than those who grew up in a more homogeneous environment. The project, by linking children and teachers from settlements each of which have their own specific social, employment and geographical characteristics, will also contribute to the enrichment of the

dialogue between the students and between the students, the teachers and the parents, and allow the development of new social contacts.

### **Potential Customers of the Environments**

We define four types of customers or service providers (the target population):

\* Students: The students are the main consumers of the services of the research environment. The environment will initially work with junior high pupils and later activities will be expanded to serve high school students as well.

\* Teachers: They may be either consumers or may play a support role in promoting various research initiatives. The teachers can also use the services of the Environment for their own research projects or personal enrichment. The teachers play a vital role in supporting their pupils' work in the environment. The goal is that a group of teachers will eventually be formed who, on the basis of their activities in the research environment, will develop innovative educational projects both as regards content and teaching methods.

\* Parents: The aim is for parents and

their children to work together in the environment. Eventually parents will work in the research environment exactly like any other student and joint activities will be developed between parents, students, and teachers.

\* Participating academics : Researchers, research institutes, small agricultural applied research establishments and universities will participate in activities by making themselves available to help with the research initiatives of teachers, pupils and parents in their relevant fields by guiding and clarifying questions on the research and in defining methods. The contacts might take place through the network, through visits by the research group to the focus of the project or visits related to a specific research projects.

### **Working in the Research Environment**

The environment serves as a flexible tool for the implementation of the learning and research initiatives of teachers, students and parents from the schools linked to the network. The research process might eventually involve the following steps:

a. Definition of the subject - by an individual or group of students.

b. Setting up a research group - by publicizing the idea through the network.

c. Location and analysis of data by the research group - the questions and findings will be clarified through a spiral process including the following stages:

1. Location of relevant information from : databases, literature, video films, scientists and research institutes linked to the network, etc.

2. Classification and mapping of the information in regard to its usefulness to the research process.

3. Study of the information according to the research plan.

4. Definition of questions and the need for further information, and so back to stage 1.

d. Collocation of the results - editing of findings, discussion and conclusions. The process will be carried out through electronic conference calls between the different environments using such media as graphs, pictures, films, computer animation. The material, which will remain in the project's database will serve other research groups in the project or outside bodies.

e. Production and publication of the research - using multimedia.

f. The learning process might comprise the following stages:

1. At the group level (through the network): The group decides how the work will be carried out and the allocation of responsibility among the participants.
2. At the individual level: the individual collects and studies the data and findings.
3. At the group level (through the network): each participant presents his work to the group. The group discusses it and defines the continuation of the process, including allocation of responsibility.
4. End of process or return to stage 2.

### **The Research Projects**

The first three research projects to be carried out in the 1994/95 school year are: The Young Ecologist, The Young Historian, and the Young Journalist.

The Young Ecologist Project began as a pilot program at the beginning of 1994, although with a different techno-

logical basis from that planned for the Center.

***The Young Historian:*** In this project the students will experience each stage of real historical research. Using the more familiar analogy of a detective investigating a case the students will examine evidence, ask questions and gather and analyze data. When they have reconstructed the scene of the historical event they will attempt to answer questions as to why it happened. This project is led by researchers of the Ben Gurion Research Institute and Archives headed by Tuvia Frieling, Director of the Institute.

***The Young Ecologist.*** The students will carry out research in two areas, the effect of changes in temperature, humidity and precipitation on the population of desert flora and fauna and the effect of changes in physical conditions (e.g. temperature, salinity) on the desert fauna in various water sources. The students will make a number of field trips to take measurements which will be fed into a common database. Each group of students will then select a specific question to focus on.

***The Young Journalist:*** The participating

students will experience all aspects of producing a newspaper containing real journalistic material on events in their own area. For this project a local "editorial board" (including coordinator, editor, reporters, columnists, photographers, etc.) will be set up in each location (Environment), a regional "editorial board" will initially be located at the network center in Sde Boker.

We believe that this program model will have an effect on all the educational activity in the schools of the entire region as more students become involved. High school students in the higher classes will carry out projects which we hope will, in the near future, become an officially recognized alternative to the matriculation examinations.

Furthermore we hope a model of cooperation will develop which will foster the growth and prosperity of the region and allow it to develop a competitive edge by providing educational services to other regions of the country.

Today in light of the peace with Egypt and the now foreseeable peace with Jordan and our other Arab neighbors, we might be able to look forward to joint educational and learning programs in the area of marine science on the shores of the Red Sea and or