



# Bet Shemesh Educational Center

## The Bet Shemesh Science Program March, 2014

*Summary: The Bet Shemesh Science programs provide students at the Bet Shemesh Educational Center with state of the art facilities and instruction to close the gaps in their science education.*

### **About the Bet Shemesh Educational Center**

Established in 1986, the Bet Shemesh Educational Center is an exceptional boarding school for at-risk boys between the ages of 13 and 18. Most of the students at the Educational Center come from families with a Sephardi background. Thirty of our students are from Ethiopian families. Overall, there is a concentration of students from Bet Shemesh itself and from the moshavim in the area. Close to half of the students, however, come from many different areas throughout Israel.

### **The Challenge**

The students who arrive at the Bet Shemesh Educational Center are far behind their peers in science and technology, often having skipped laboratory classes or, in the case of the Ethiopian students, not having had any significant formal education at all.



The majority of the students at the Bet Shemesh Educational Center come from families where the parents did not graduate high school and were not themselves exposed to the sciences or have only a limited background and knowledge base in these areas. As a result, they are not able to introduce these subjects to their children or develop their children's natural curiosity to understand the various life forces surrounding them each day. At the Educational Center, we see one of our major goals as introducing the students to different academic areas, such as the sciences, that they have not had the opportunity to study until now.

Lacking sufficient resources, the mainstream Israeli education system does not provide adequate supplementary education to either at risk Israeli born youth or Ethiopian-immigrant students, thereby severely limiting their chances of success at school and leading to higher school drop-out rates and a greater likelihood to become involved in delinquent behavior.

### **Science Program - Bet Shemesh**

At the Bet Shemesh Educational Center, we believe that providing a quality education is the most effective way to help at-risk youth assimilate into Israel and achieve financial and social success. **The Science Program** is geared to address the critical need for supplementary education in science and technology for our students.



Thanks to the great generosity of the **Gelfand Family Charitable Fund**, we now have a proper facility and study program to introduce the sciences to our students. For some of the students, this represents their first exposure to a modern laboratory and the gaining of an understanding of how their physical world functions.

Following is an overview of the subjects that our students are studying this year:

### **Junior High School**

The students in grades 7, 8 and 9 have a mixture of sciences to introduce them to this academic area. In Biology they are learning about the cell and its organelles, with the help of microscopes, and also about micro-organisms, and biological processes including photosynthesis. In Chemistry they are focusing on the building blocks of food- carbohydrates, fats and protein. In Physics they are covering energy and technology systems, and the concepts of pressure, mass and volume.



**A Bet Shemesh Educational Center student with his electronics project in a regular classroom, before the construction of the new Science Laboratory**

## High School

Once the students reach 10th grade, they have a choice of a number of majors. One is Advanced Biology, a course conducted on the highest level available in Israeli high schools and offering the maximum 5 units for the High school bagrut/ matriculation tests. The students meet 5 hours each week and their course work covers cells, cellular respiration, photosynthesis, plant life, seed development and the propagation of plants. In 12th grade each student will be required to carry out and submit a research project. There is a separate group of 12th graders who are studying biology on a lower level to accommodate their special needs. They will also learn the subject matter required for passing the national matriculation exams, though their tests will be at the 3-unit level.



Another major available at the Bet Shemesh Educational Center is *Science and Technology in Life*, a course of study which combines the study of biology, physics and chemistry. In 10th grade the students begin with Biology subjects covering bacteria and microorganisms, the cell and air quality and pollution. Later in the school year, the curriculum turns to Physics and the students study light, colors and sight. This major, with its integrated approach to all the sciences, continues through 11<sup>th</sup> and 12<sup>th</sup> grade.

## Girls in the Science Program



We have coordinated with a junior high school for at-risk girls from Bet Shemesh to use the science labs on an on-going basis. Two classes of girls, each with 25 students, in the 7th and 8th grades, benefit from the high quality science facility on Fridays throughout the course of the school year. Their own schools do not have any science laboratories, so the availability of such a rich science experience adds greatly to their study and appreciation of science.



In addition, many different girls schools arrange to spend Shabbat at the school for a full program with their teachers and friends. As part of the program, the girls use the science labs on Friday afternoon or on Saturday night, according to their schedule.