The Impact of Implementing an Educational Project, the Solar Village, on Pupils, Teachers, and Parents

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In this project, we suggest building a real model of solar village inside schools, which use only solar energy. Such projects emphasize the importance of energy for a technological society and the advantage of alternative energy sources. In this study, we report on pupils in the 6th grade in three elementary schools in Israel who were active participants in building systems that use solar energy. The study objective was to examine the educational, social, and scientific impact of this project on students, parents, and teachers. The study results showed that the three groups (students, parents, and teachers) highly appreciate the project, educationally and socially. Parents supported the project because they observed the positive impact on their children’s learning. Teachers rated the project highly because of students’ interaction and involvement, as well as their increases in learning skills such as developing reading plans and executing research and writing reports.

KEY WORDS: solar energy; educational project; environmental education; social change.

INTRODUCTION

The word energy means the ability to do work. The need of energy in the world increases to a very high dimension because of natural growth and the use of new technology. The sources of the combustible fuels we depend on, such as coal, oil, and gas, are finite. In addition, the increased burning of fossil fuels raises concerns over global warming and where controls are lax, air pollution. Since we are becoming dependent on fossil fuels for energy and they are running out, it is necessary to find alternative energy sources—one alternative energy source is the sun (Carless, 1993; Tomas 1996; White, 1979).

Solar energy comes from the sun. Solar energy is, in general, generated with the aid of photovoltaic cells from sunlight. Photovoltaic cells are made of very thin layers of silicon, which absorb sunlight and convert it directly to power electricity appliances (Cantrell, 1978; Davis, 1983; Headley, 1979; Ward, 1991).

In this educational project, we suggest building a real model of solar village inside schools, which use only solar energy (National Energy Foundation, 1990a,b, 1991). These educational projects emphasize the importance of energy for a technological society and the advantages of alternative energy sources (National Energy Foundation, 1990a,b, 1991). In this study, we report on pupils in the 6th grade in three elementary schools in Israel who were active participants in building systems that use solar energy (Hugerat et al., 2001, 2002, 2003).

NECESSARY CONDITIONS FOR BUILDING AND EXECUTING THE PROJECT

• There must be a search for a solution to any problem that may come up whether social, economic, or low achievement in learning. This may help also in bringing new ideas and developing new methods that lead to a sounder plan for the initiative.
The principal must be open to adopt new ideas and to encourage new projects at school.

The school faculty must be professional and specialized in his teaching subject, must have good experience in teaching, and is willing to expend the time and effort for the project.

Encouragement from the school superintendent offers support for the faculty and the school to carry out the project.

EFFECTS OF THE EDUCATIONAL PROJECT

Students

The project implementation has a tremendous effect on students. It provides students with concepts and expressions relevant to the researched subject, which they cannot perceive and comprehend without such projects. We may summarize the benefits of the project and its effect on students in the following points:

- Students gain basic concepts and expressions that they can relate to their living environment. They learn how to deal with environmental phenomena, to analyze causes and outcome of things they observe, and to examine the relations between such things. This process helps students to develop different thinking styles and to develop a comprehensive perception for the different phenomena.
- Students improve different skills such as reading plans and diagrams, carrying out research and preparing major assignments.
- Students develop curiosity and concern about the surrounding environment and motivation to study it. The implementation of such initiatives gives students greater and closer feelings of their environment and invites them to protect it.
- Student–teacher and student–school relations become much stronger due to the fact that such educational projects increase the opportunity of participation and teamwork of both students and teachers. In other words, the students’ self-esteem and attitudes toward their teachers and school increase remarkably.
- The implementation of such projects leads to change in the students’ way of thinking and to improvement of their skills and creativity.

The above aspects combined lead to the creation of an educational environment inside the school and improve the chances of success in the learning process.

Parents

Along the advancement in science and the modern discoveries, most parents strive to provide their children with good education and knowledge in modern science in order to help them keep up with such advancements and make better plans for themselves and their children. Therefore, parents are diligent to find the appropriate route for their children that keep them updated with the latest advancements through different courses in educational and social frameworks.

With respect to this project about the solar village in school, the project gave parents the opportunity to know the activities that their children carry out at school, because they were requested to help the children in getting some data for the project.

Schoolteachers

- The plan and implementation of the project led to broader knowledge and skills among teachers in developing different educational and learning activities. The implementation of the solar village project gave the teachers a great opportunity to gain new information relevant to the subject through their active participation in the project. Many of them showed a great deal of creativity and responsibility in the execution of the project.
- The experience of selecting learning material, planning activities, and executing the project’s experiments provided the teachers with deep comprehension of different learning procedures and methods. It made it possible for the teachers to carry out several activities in the subject, which gave them the feeling of independence and self-confidence. They also began to use more methods of teaching, improved their ability to work in teams, and became more active in school. The execution of the project led to great cooperation and improved relations between teachers and students, and made