

THE EDUCATIONAL VALUE OF THE NIGHT SKY

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Abstract

In this paper we discuss and analyze further the role of the night sky in education and how it can be used as an educational tool to contribute to the development of citizens' / people's knowledge, sensitivity, imagination and understanding of their relationship with their physical and human environment, making them ready to suggest solutions and participate in decision making and implementation. We also present initiatives undertaken in the context of various international educational projects in Greece. Thanks to these initiatives, we have managed to raise public awareness, especially in the case of people responsible for developmental programmes, including light engineers who strive to protect the country against light pollution.

Light pollution is spreading rapidly all over the world and the quality of the night sky is deteriorating. The preservation of the dark sky at prime astronomical locations, the maintenance of its quality and the continuation of public interest in observing the stars depend on education. Since their importance and benefits are generally not sufficiently known or appreciated, it is necessary to continually promote awareness of light pollution and its effects. Thus, the preservation of the astronomical environment is tightly coupled to and requires effective education.

Introduction

Educational crisis – the loss of the night sky

At the heart of the teaching crisis lies the problem of unmotivated students. Contemporary Quality Education encourages for future-oriented thinking and equips all people, women and men, to be fully participating members of their own communities and also citizens of the world.

This leads any individual learner towards achieving his/her fullest potential and enables a graduate student to succeed in an environment that many educational specialists around the world call a “rapidly changing environment.” In an educational model that views students as individuals at the beginning of a life-long intellectual adventure within a constantly changing society, students become the primary actors in the educational process rather than the dutiful audience of the teachers.

Tales around the World give visibility to local, national and international fundamental connection that always existed between people and the night sky. It is also well known that Humanity depends on the goods and services provided by ecosystems.

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maintenance of its quality and the continuation of public interest in observing the stars depend on education. Since their importance and benefits are not generally sufficiently known or appreciated, it is necessary to continually promote awareness of light pollution and its effects. Thus, the preservation of the astronomical environment is tightly coupled to and requires effective education, through educational initiatives, activities, and events for children around the world on the preservation of the night sky, as through this process the future citizens are being prepared.

A successful educational model for preserving the night sky

UNESCO has long proposed a model for environmental studies, which requires



that each project be classified as *natural*, *historical*, *social*, or *technological*, since through this model we have a connection with events in our everyday lives.

Based on this model Commissions 46 and 50 and the International Dark Sky Association (IDA) have planned and implemented educational projects on preserving the night sky, in an effective way.

The goal of the model is “the development of citizens/people with knowledge, sensitivity, imagination and an understanding of their relationship with their physical and human environment, ready to suggest solutions and participate in decision-making and implementation.”

Projects on the preservation of the night sky provide a unique educational opportunity that combines the diversity and critical thinking skills of a liberal arts education with a solid foundation in the basic sciences.

Within activities, which concern the night sky, students have the opportunity:

- to interact with the environment
- to be trained to make and record observations
- to find solutions and adopt new behaviors in the protection of the night sky

These activities

- cover all levels of education, formal and informal.
- are Multi-Disciplinary (involves: Physics + Astronomy + Technology + Environment + ...)
- depend on collaboration to manage scientific work, and
- stress both scientific and social components.

Students and teachers who participate in those activities should make their results on the light pollution problem available to the public by informing and communicating

with local authorities, environmental associations, and scientific societies. By doing so, they contribute to the formation of the “critical mass” that will finally influence planning authorities to produce efficient and effective lighting schemes. This approach has already been effective in many cases.

Activities depth and the educational value of projects on “the night sky”

The Starry Night involves science teachers and students in navigation in astronomy and science in general by giving them access to this priceless heritage.

It is important that the students involved in the project have from its start controlled the project. Each student has been part of the following groups based on their preferences and abilities:

- The Astronomical Group
- The Lighting Group
- The Social Group
- The Public Relations Group

For students to decide exactly what the focus of their area of study will be, they will need to engage in brainstorming. To complete the proposed activities and to understand the status of light pollution in their local area, they will need to work collaboratively. They will thus find themselves engaged in the scientific way of working!

Being part of a project like this, besides giving the students a profound insight into the problem that they have been working on, is very motivating and challenging for finding solutions..

This project has therefore provided the students with a very beneficial educational opportunity, focusing on the subject on the one side while teaching them to coordinate work within a group and between groups working on different aspects of the problem on the other.

In addition it is something one can be proud to be a part of. The challenge of locating and understanding the problems and trying to find solutions to them was a good and educating exercise for all the people involved.

The project has also received a lot of attention from the media and younger (prospective) students at the schools. And it is clear that a lot of students are interested in continuing this effort.



Through the program the students, the public, etc.

- familiarize themselves with the problems of light pollution through astronomy, physics, and computer science,
- consider the cultural and social dimensions of the impact of light pollution, and
- appreciate the preservation of the heritage and environment throughout their country.

Additionally we intend to increase awareness of the effects of light and air pollution and to attempt to influence planning authorities to produce efficient and effective lighting schemes. Well-designed lights will not only cut down light pollution but will also save energy.

By engaging in these activities, each student discovers how the intellect, emotions, body, desires, intuition, and imagination need to interact in order to have effective motivation and learning.

Overview of successful projects

Our educational efforts took place all over the world.

This model was first implemented by the Greek light pollution educational program, which had been arranged through the Greek Ministry of Education and Religion with support and finance from the EU. The two-year program, which ran from 1997 to 1999, was a proposal of the Astrolaboratory of the Arsakeio School of Athens.

In November 2000, people from all over Europe took part in the continent's biggest educational and cultural event on the Web—the "netd@ys project." Both the Greek Educational Project (selected as one of the three labeled projects" for Greece) and the Internet Forum on Light Pollution have been connected to the netd@ys project. Also an international UNESCO-backed conference on "Youth and Light Pollution" was held in Athens in November 2003.

Conclusion

The twentieth century concludes in much the same way as it began--with the redrawing of maps. However the new maps are not so much of geographic territory, but of landscapes depicting new and developing networks of finance, people, and culture. The ultimate work of education is to learn to be a human being. But as we struggle for new identities we must be able to transcend these notions of territory and engage new concepts of energy and place.



Educating the world about astronomy and light pollution is a major challenge that can be met if we work together with interested organizations. Through collaborative efforts we can hope gradually to implement solutions for protecting as a world heritage dark skies and prime astronomical sites for teaching our children to be human beings.

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