

Building the future of mankind in the classroom

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Abstract

Rethinking education and how we engage future generations in the pursue of science literacy is much more than creating the future generation of planetary scientists or space exploration engineers, it is the guarantee of the survival of our specie. Training teachers to the use of cutting edge science tools and resources in classroom is a very important task and is being embraced by one of the largest astronomy education efforts worldwide, the Galileo Teacher Training Program. GTTP is partnering with several important research projects in education by providing support in the construction of a strong support network for educators willing to introduce the scientific method in classroom.

1. Introduction

Different recent studies are highlighting the imperative and urgent need to change the way we teach science and to foster modern approaches to learning^{1,2}. The European Commission is issuing many calls to support research in education promoting the use of Inquiry Based Science Education in classroom. In this talk we will highlight some funded projects that are carrying the IBSE flag and showing how innovative ideas are being tailored in the hands of teachers^{3,4,5}.

2. Cutting-edge science in the hands of students.

The revolution in ICT is changing the way we live our lives, the way we make our choices and shaping the way we take major decisions in our lives. Helping students understand the power they have at their fingertips is crucial if we expect a fair and efficient use of modern technologies. In order to achieve this goal we must start in the cradle of knowledge acquisition: IN SCHOOL. Empowering teachers to this gigantic task is mandatory. In order to gracefully achieve this vision we need to urgently change the way classrooms are built, curricula constructed and

assessment weighed. To help build the necessary bridges between school and ICT modern trends, the European Commission is investing heavily in research on innovative ways for science teaching. Modern eInfrastructures and eScience tools are being introduced in teacher's friendly resources and training efforts taking place in several European countries.

2.1 Discover the Cosmos



Figure 1: Discover the Cosmos teacher training event in Quarteira, Portugal

A coordination action aiming to demonstrate innovative ways to involve teachers and students in e-Science through the use of existing e-infrastructures in order to spark young people's interest in science and in following scientific careers. This project involved 15 partners from 9 countries and promoted the use of eInfrastructures and eScience tools in classrooms. Teachers were trained to the use of specific IBSE templates in classroom and had the opportunity to share with the promoters the advantages and problems faced in order to successfully implement the selected tools and resources in classroom. The educators community was invited to rate existing resources, re-use and repurpose material and create their own ideas in accordance to their specific need (age level, discipline and curriculum content).

2.2 Go-lab

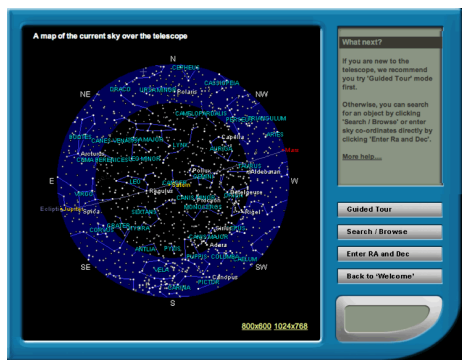


Figure 1: Faulkes Telescope user interface. A robotic telescope, one of the virtual labs for education.

This European collaborative project is co-funded by the European Commission (Seventh Framework Programme) and is a consortium of 19 organizations from 12 European countries. The overall aim of the Go-Lab Project is to provide students an opportunity to gain hands-on experience in science by conducting experiments using modern laboratory equipment by themselves, deepen their knowledge in fundamental sciences, and to motivate them to pursue a scientific career in the future. In the framework of this project several virtual laboratories are being tailored and aggregated to a user friendly portal where teachers will find a one stop shop for innovative ways of engaging students in the scientific thinking.

2.3 European Hands-on Universe



Figure 1: The EUHOU radio antenna in Portugal (Instituto de Telecomunicações, Aveiro)

EUHOU is a collaboration of hundreds of teachers and scientists from 14 countries with the purpose of creating a way for students to get excited by science, primarily through the use of astronomy. The EUHOU consortium as recently launched the first radio antenna network, solely devoted to education. The antennas are now available online, for free, to educators from all over the world. A set of exercises is being promoted fostering the use of the antenna. The first teacher training events are taking place in the countries hosting the antennas. EUHOU is the European consortium of the Global Hands-on Universe association, a non-profit organization gathering scientists and educators from all over the world.

Conclusion

A long road lies ahead of us before we reach the desirable state of development and awareness necessary for the survival of our specie. The path starts in our hands and it is our duty as scientists to ensure educators and students take part in the design of our joint desirable future. Education is the major ingredient and the recipe we already know.

References

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- [4] European Hands-on Universe - <http://www.euhou.net/>
- [5] Go-lab (Global Online Science Labs for Inquiry Learning at School)- <http://www.go-lab-project.eu/project>