

School Astronomy Club: from Project to Knowledge

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Prepare a generation of young people for the challenges of the future is a task which forces us to rethink the school, not just for being difficult, but also because students feel that the school has very little to offer, especially something that interests them. Thus, the school is dysfunctional, is ill, and needs prompt treatment.

School have to adjust to the new times, and this does not mean changing the old blackboards by advanced interactive whiteboards. The school has to find the way to the students with something that seduce them: the Challenge.

The Astronomy Club that I lead in my school is essentially a Project space. Students who voluntarily joined the club, organize themselves according to their interests around projects whose outcome is not defined from the beginning, which requires them to do, undo and redo. Which obliges them to feel the need to ask for help to mathematics or physics to achieve answers, to feel the passion to study with a genuine purpose of learning.

Some examples of the work: The younger students are challenged to reproduce the historical astronomical experiments that have opened the doors of knowledge such as the Eratosthenes experiment to determine the perimeter of the Earth (on equinox), or by using congruent triangles, determine the diameter the sun. These students are driven to establish distance scales in the solar system, which, to their astonishment, allows them to clear misconceptions that arise from some pictures of books and allows them to have a scientifically correct idea of the planetary orbit and distance separating the planets of the Solar System.

For students from 15 to 18 years, I have to raise the level of the challenges and use the natural tendency of this age bracket to assert making new and exciting things. To this purpose, I am fortunate to have the support of large organizations like NUCLIO, ESA, CERN, and Go-Lab Project, Inspiring Science Education, Open Discovery Space and Global Hands on Universe. Through them the students have participated in various activities such as scientific research of NEOs (Near Earth Objects) of the IASC Project (International Astronomical Search Collaboration (pronounced "Isaac")), an educational outreach program which provides high quality astronomical data from several Professional Astronomy Observatories, to allow students to scrutinize the space with professional tools and be able to make original astronomical discoveries. They use also professional, robotically controlled telescope for astronomical research and education projects, such as the two telescopes of Faulkes Telescope Project (2.0m diameter telescope at Hawaii and Australia) and the Liverpool Telescope of Astrophysics Research Institute of Liverpool John Moores University (2.0m diameter telescope, Canary Islands), to obtain pictures and data from galaxies and nebulae, and try to solve problems using real science data that they have either obtained themselves through their own observations or data acquired from other sources.

These students learn what is, and how to make Science, develop their own skills and knowledge, transferring this enthusiasm to others and promoting a culture of school we all desire.