

Many research data indicate that basic astronomy ideas (seasons, changes in day and night duration depending on the location, lunar phases, etc.) are not well understood by students and general people of different cultures. We found that one of the reasons of these problems can be identified in the uncritical use of tools and models that can create misconceptions and false beliefs. Traditional globes and wall maps are among them. We designed the “parallel globe”, a globe to be put outside in the sun in a position homothetic to the Earth below the observer’s feet. It is different from the traditional globe, sold with the same orientation (North up; South down) all around the world, because it represents the Earth from the observer’s point of view in the actual space. Well oriented in the sun with small sticks on it, it becomes an instrument that gives information about: what part of the Earth (of the globe) is actually illuminated, i.e. where it is day/night; how the circle dividing sunny from dark sides of the Earth changes during a day or depending on seasons; where it is noon; who has the sun “on the head”; etc.

We use this tool, since years, in teachers’ preparation courses and outdoor stages for general people. This year we promoted an international project, called *Globo Local*, to help disseminating through this tool/instrument our approach to basic astronomy and physics concepts teaching (reference frames; light; geometry of shadows, etc.).

Some schools and institutions from different parts of the world, at equinoxes and solstices 2011, are using their “parallel globe” to help people locating themselves from this new, scientific and democratic, perspective. Photos are taken to give the idea of globes’ position in Colombia, near the Equator; in Italy; in Argentina; in the Antarctic base, etc. There is a web site www.globolocal.net where to find basic information, common procedures to follow, photos and reports sent for the collective construction of a global database. We will present data and analyze difficulties and values of this project in promoting scientific and social education for citizens of the world.

A Laboratory Path on Seasons for 9 -11 Year-old Children

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Several studies have shown that both students of all ages and adults hold many misconceptions about fundamental astronomy concepts. One of the most common misconceived concepts concerns seasons. The main difficulty appears to be the understanding of the mechanism that drives this phenomenon.

Since a few years, the Planetarium of Torino offers a 1-hour laboratory to primary school students where it is demonstrated how seasons work. The laboratory consists of a short explanation of the concept and of a practical demonstration of the phenomenon leading to the seasons.

Afterwards students are asked to fill in a questionnaire. We aimed to evaluate how successful the laboratory was in terms of shorthand long-term understanding of the concept. We focused on questionnaires filled in by 9-11 year-old students who attended the laboratory the last two years.

The analysis highlighted a decent comprehension of the phenomenon not only in short-term timescale, but also in the long-term perspective. It pointed out the need to create a learning progression consisting of pre-activity sessions based on sky observations and post-activity sessions performed by the teachers aimed at fixing and fostering the concepts tackled during the entire path.

Despite the preliminary stage of this program, our research suggests some crucial interventions to improve the learning process demonstrating the importance of continuing this project in the future.