

Meet the skies of the world first intercontinental-experimental course of teacher training in astronomy, of a cooperative and participatory type, in a time of physical distancing

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Abstract. For over 30 years, the MCE Sky Pedagogy Research Group (Italy) and Plaza del Cielo Complex (Argentina) had been offering teachers and educators many projects and activities related to training and teaching/learning processes having the sky and the study of the multiple relationships of humans with the sky as a focus of research. We have developed didactical methods based on direct experience, naked-eye activities, cooperation and exchange of experiences. The pandemic forced us to suspend the in-person meetings, which are at the center of our research in the Teaching of Astronomy, so we decided to react constructively exploring virtuality designing the course “Meet the skies of the world”. Two courses were developed from June to September 2020, each one having 4 virtual meetings of 2,5 hours each, with more than a hundred participants from different countries. A Level II course will be developed during the first semester of 2021.

Keywords. Naked eye observation. Collaboration. Teachers training course. Didactics of Astronomy. International.

1. A new way to teach Astronomy to overcome the COVID-19 pandemic

Over the years, as the result of many researches on the Teaching of Astronomy, we have developed didactical methods based on direct experience, naked-eye activities, cooperation and exchange of experiences, and we have proposed, in the city or in nature, residential training workshops in which many teachers and school educators, of all levels and various disciplines from different continents and countries of the world, had participated ([Lanciano 2019](#); [Lanciano et al, 2008](#); [Camino 2012](#)).

The suspension of all meeting activities during the months of the pandemic forced us to suspend the in-person meetings and in particular the residential courses. So, we asked ourselves what positive answer we could try to give. We reacted constructively and creatively, helping us to “travel and meet” under the skies of different countries of the world in a virtual mode, a resource that seemed to be the exact opposite of our

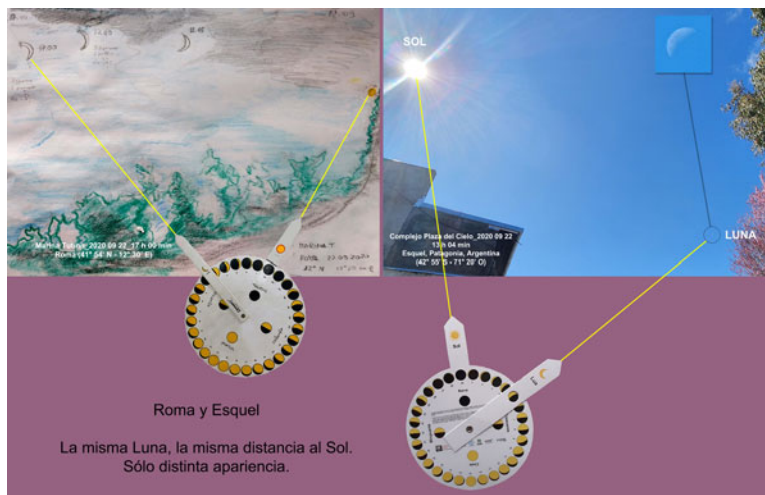


Figure 1. Same Earth, different locations, different skies. Comparison of observations of the Sun and the Moon from North-South and East-West locations.

customary practice, which was based on in-person contact, on direct experience, on acting and reasoning together.

2. Meet the skies of the world: a virtual, collaborative, international course of Didactics of Astronomy

We decided to explore the virtual possibility to meet teachers from distant countries and cultures. So, the course “Meet the skies of the world” was born, proposed by the Italian Group and organized in collaboration with friends and colleagues from Argentina, Colombia and Brazil, open to participants from other countries in Europe and America.

This “experiment” was possible, and had a great pedagogical coherence, thanks to an active collaboration that spans many years through the common International “Globo Local” Project (www.globolocal.net, Lanciano 2012; Lanciano et al, 2019; Rossi et al, 2015). The course had seven coordinators/teachers and researchers: Nicoletta Lanciano (Italia), Néstor Camino (Argentina), Rita Montinaro (Italia), Marina Tutino (Italia), Elisa De Sanctis (Italia), Telma Cristina Dias Fernandes (Brazil), and Liliana Piragua (Colombia).

3. Meet the skies... Level I

Two courses were developed, having 4 virtual meetings of 2,5 hours each, during two months. The first one was during June-July (including a solstice); the second during August-September (including an equinox). Between the meetings, an equal number of hours were planned in order to develop individual work to observe the sky (observing, registering and making drawings and photographs of the position of the Moon and the Sun in the local sky, stars and planets, among others, see Fig. 1), to construct the proposed didactical tools (local horizon representation, Sun-Moon goniometer, celestial planispheres, Earth Parallel Globe), and to study, discuss and exchange their observations, questions, and didactical reflections. For instance, one teacher finds, among the strengths of the course that “insisting on the use of physical tools and objects, which in high school are always too denigrated and considered childish” was very important during the course. Comparing observations of the same phenomena (Moon phase, for instance) from different latitudes and longitudes, led us, each time, to question ourselves about

variables and constants in the sky: what is part of our identity, what is a common feature for everyone because we share the planet, and its impact on Culture and Education. The 4th meeting was dedicated to discussing and evaluating the process developed, and to share future experiences according with each participant interests, student's groups, locations, etc. More than a hundred teachers from Italia, Brazil, Colombia, Argentina, many also living in USA, Sweden, Germany and Portugal, participated in the courses: feeling differences in the sky because our longitudes (the Moon culminating for ones, just rising for others) and latitudes (winter for ones, summer for others).

4. The key items of “Meet the skies of the world” course

Our peculiar and essential activities of observation of the sky by naked eye. Also in a physical distancing course, we proposed to observe the sky, to look through the window to see if the Moon rises during the meeting time, etc. Everything in the course tries to lend support for real observation in the best possible way by means of sharing registers and discussions in plenaries. As stated by Ovide Décroly “Observing is more than perceiving ... means making comparisons, noting global or individual differences and similarities; observing means building a bridge between the world and thought”. In the words of a participant “I am passionate about using educational science experiments as a means of integration and interaction. I realize that we have the best experiment available for this: our sky”. The sky is beautiful and free, for everyone, and a significative tool to comprehend space and time from any place and in any date.

High presence of cultural links. We propose a high cultural level but not a difficult one, and with clear references to various cultures, languages and historical periods: tales of myths and traditions linked to the sky, with references to the history of science, anthropology, general culture, etymology of words related to the sky, and to figurative and poetic art. Furthermore, we have songs that accompany observation, the expectation of a phenomenon, that support the memory of what is being known and that express the meanings in poetic form. They are songs, for example, with words by the Italian poetry Gianni Rodari on the Moon, or the ancient Greek Empedocles on the elements of the Universe, or composed by some of us in the Group on Sky Pedagogy and others by some participants, or from popular traditions of countries.

To practice a multicultural perspective: how different it is to live in the South or in the North of the world! For example, only between the Tropics there are two days in the year with the Sun at the Zenith; only in some region of the world there are four “astronomical” seasons, and in others there are only two seasons like someone from Tanzania told us: “we do not experience the four seasons taught in books, so learning is just by cramming from books without understanding because we have only three seasons -hot, rain, cold- or in some region only two -hot and cool- “. Every aspect linked to the sky -time zones, seasons, phases, the length of the day- are well known to all “in theory”, but experiencing them and meeting them in the words, drawings and photos of someone with whom you speak directly, virtually this time, causes a different emotional attention that strengthens awareness and radically imposes itself on memory. We have added to this the exchange of traditions linked to anthropological aspects that characterize the periods of the year and the deadlines of the calendars: the group thus experienced how, for example, the June Solstice is Summer for the Northern hemisphere but could bring snow to the Southern hemisphere.

We work in contrast to the standardization (of a unique language imposed on everyone in the world and of unique methods of explanation based on texts, without objects, with the word given only to those who “teach”) for a conscious scientific citizenship. So, all the meetings and the chats were developed in Latin languages: Italian, Spanish and Portuguese (as is the tradition of the international meetings of teachers

of Freinet pedagogy from all over the world, in which everyone speaks their own language and everyone collaborates by speaking slowly to help each other understand and communicate).

5. WHAT IF..., IN 2021? WE ARE PREPARING “MEET THE SKIES... LEVEL II”

We've begun to organize a Level II course, inviting those teachers who participated in both Level I courses in 2020; it will have more complex observational activities with specific problems to solve, making explicit what is constant and what changes because of the different topocentric positions and times of observation.

Furthermore, it is in process one of the outcomes of the two courses: the organization of some exchanges of Scholastic Correspondence, a Freinet technique, already widely experimented between Italian and Argentine teachers on sky observation, and between Italian and Brazilian teachers on the use of the Diary of the Sky (Nardi et al, 2020), taking into account the related school levels and the differences in the organization of the school year, in addition to remote face-to-face activities centered to share observations of the Moon, night sky and of diurnal phenomena such as shadows, Earth Parallel Globe and solstices and equinoxes.

We all want to overcome the global situation caused by the COVID-19 pandemic, but anyway we will continue working to share our skies, and to learn and teach, in peace, for a better future world. The Teaching of Astronomy from a multicultural and collaborative perspective is a wonderful way to do this!!

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