

# Solar Eclipse: a didactic alternative for education in Astronomy

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**Abstract.** This article presents a didactic experience in teacher training carried out in the province of Santa Fe, Argentina. The training was carried out on the occasion of a total solar eclipse taking place in this region on July 2, 2019. Prior to this event, the authors, members of NASE, developed training meetings of the Ministry of Education of Santa Fe, on topics of Astronomy. From these workshops, participants of all educational levels with different specialties, carried out with their students school science activities where they applied Astronomy with an interdisciplinary perspective. In this way, the eclipse became an event that made possible an enrichment of astronomical education in the region.

**Keywords.** Solar Eclipse, Didactic experience, Teacher training, Astronomy.

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## 1. Introduction

In 2019, a very important astronomical event took place in the southern hemisphere: a total solar eclipse, and it could be seen especially in a region of the Province of Santa Fe -Argentina. The authors of this article are ambassadors of NASE PG, IAU program for post-graduates, the main objective of NASE is to educate new generations of teachers and re-educate the current ones, in Astronomy topics.

This fact allowed teachers ambassadors of NASE, who were working within the framework of the Teacher Training Meetings developed by the Ministry of Education of Santa Fe, to consider an approach to topics related to Astronomy, with an interdisciplinary perspective. This decision was motivated by both the absence of this discipline at all educational levels as well as the lack of training of teachers in this field of knowledge. Six training meetings were held in different towns located in the south of the province of Santa Fe, where the solar eclipse could be observed. These towns are Rufino, Villa Cañás, Chañar Ladeado, Melincué, Pujato and Rosario.

## 2. Overview

### 2.1. Purposes

Training teachers to guide their students in the study of Astronomy through approaches to the study of the Universe, using activities which allowed the students to acquire concepts and link them with other disciplines. Guiding teachers to include topics related to Astronomy in the different curricular spaces they work in, favoring interdisciplinary school proposals.

## 2.2. Methodology

The training was presented through different actions, which include: Workshops inspired by NASE courses: practical constructions, modeling, observations and experimentations. The principal material support that used was Ros and García (2012) '14 steps to the Universe'. This book develops 14 sections, including conferences and workshops, that constitute an initial teacher training in Astronomy. Concret models -graphic, schemes, mockups and constructions- were used in the workshops with the purpose, as expressed Camino: 'to generate a dialogue between reality and the process of imagination and abstraction necessary for learning the concepts of the astronomical phenomena under study', (2004, p. 82) in this case the solar eclipse. Also, the Information about eclipses of Tignanelli and Feinstein (2005, pp. 108–122) has been considered as conceptual support for these teacher training. The training was presented through different actions, wich include: workshops, discussion groups, observations of the sky with the naked eye and with telescopes, day and – or night, discussions about the contributions of Astronomy – the Total Solar Eclipse 2019 – and its didactic approach to the school science.

## 3. Conclusions

Teachers from more than forty towns in the province of Santa Fe attended these meetings. In total, 114 teachers from different educational levels, modalities and skills training participated. The Interest in the extraordinary astronomical event that constitutes the solar eclipse, the construction of simple devices with accessible materials and astronomical literacy guidelines, observations and records, allowed the participants to investigate the near reality and to become involved in an autonomous way in the study of the environment, such as parts of this environment itself, creating special links that might improve their teaching and learning processes. The trainings achieved the motivation of the teachers who considered the shared resources as didactic tools to do school science where the eclipse was an unbeatable opportunity for the promotion of various student research. Ten of these studies were presented at different socialization and dissemination events of the classroom. Due to its spectacular nature and accessibility to be observed, this event was a meeting point for students, teachers and the community in general, where material of incalculable graphic and didactic value was shared through social networks. This first approach, made up of the training meetings and the didactic proposals that emerged from them, became an interdisciplinary vision of astronomical education in the province of Santa Fe. Finally, the didactic alternative for astronomy education presented, as expressed by Gangui and Iglesias (2015, p. 12) 'gives us guidelines to try to build knowledge in the most efficient and pleasant way that we can access. It takes us along the way, to generate learning that makes sense for people and, in general, for the whole community'.

## References

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