

Session 6

Astronomy, an Amazing First Contact with Science for High School Students

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Abstract. The contact with science is very important to the development of a conscious citizen, even if he, or she, never work with. Astronomy is an excellent way to do this approximation, simply because everyone can see the sky and has questions about it. This project aims to use observational night to discuss the classroom situations. We have made interventions in a rural local school in Caçapava do Sul (Brazil) during five years which we explain what we will see and, after that, we observe it. Since 2018, we have used the Caçapava do Sul Meteorite, that available a direct contact with a real space rock, when everyone can test the resistance and the weight of this meteorite. During this time it was almost 2 000 people has been attending by us and we noted that the students had increased their notion and comprehension about science in general.

Keywords. Astronomy, Education, Scientific Divulagation

1. Introduction

This work is an experience report about interventions in a local rural school (E.M.M. Antônio José Lopez Jardim) carried out by the ‘Laboratório de Geociências Espaciais e Astrofísica’ (LaGEA), at ‘Universidade Federal do Pampa’ (UNIPAMPA), Campus Caçapava do Sul, Brazil. It had been active during from 2015 to 2020, having carried out two interventions per year.

According to [Lachel & Nardi \(2011\)](#) the teachers do not known well the issues of Astronomy and, almost ever, then during the classes they present alternative conception and popular knowledge about this theme. This problem arises from the recent obligation, by law, that they must explain the basic concepts about Astronomy but they have not studied these during their graduation. In fact, [Oliveira \(2016\)](#) shows when teachers, and their students, participate in events using planetarium and/or night observation they appropriate these concepts and apply them in the classroom.

In order to attack this problem, this project aims to bring a basic knowledge of Astronomy to the teachers. At the same time, it intends to show how this can be applied in the regular courses of high school.

2. Methodology

To support the observational night we have taken talks about what we are seeing (Fig. 1A). The presentations made necessary for us found how to introduce knowledge about Astronomy to the public that is not familiar with this subject or the usual terms used, and how to make this interesting for them. For example, when the planets Venus and Jupiter are visible at night, we explain the main difference between them before

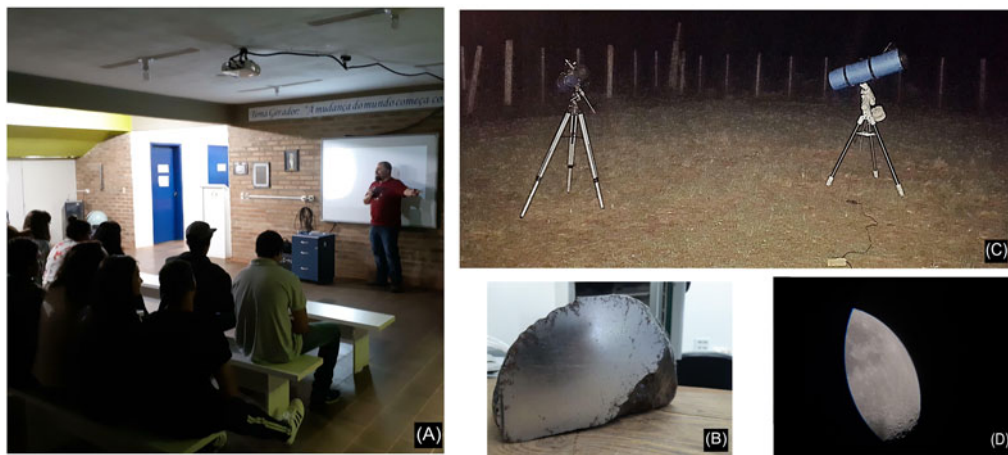


Figure 1. (A) An theoretical explanation before the observational night; (B) the CSM; (C) the telescopes used in this project; (D) a photo took by us during an observational night in 2019.

observe. At the same time, we usually did round tables to discuss how that information could be used in formal learning.

In the matter, since 2018 we have taken an exposition of the Caçapava do Sul Meteorite (CSM), an octahedrite siderite found in the early 1900s (see Fig. 1B). The CSM is presented with the purpose of showing what the rock bodies in the Solar System are composed. We used this concept to explain the importance of understanding the meteorites since they keep records of the composition of the celestial bodies that constitute the Solar System.

3. Observations

We used a 12'' and a 6'' telescope to realize astronomical observational (Fig. 1C). Of course the main target is the Moon (see an example in Fig. 1D), however, according to the epoch of the year we added some near planets (Venus, Mars and Jupiter) to the target list. Naked eye observations, using a green laser to point, was a great success too. During these activities the participants had the opportunity to take a good look at the sky and learn how identify the main constellations and stars.

Unfortunately, once or another the meteorology did not cooperate, then we used a mobile planetarium to show the night sky. A planetarium section is a completely different event, however the sensation is similar to the public. The curiosity about science arise naturally, interesting question comes up after each presentation.

4. Results and discussion

During these five years, the project had seen in almost 2000 people from the local community of this high school (students, their teachers and parents). It was observed that in each new interaction with the same students, as some followed the project throughout their high school, a deepening the questions and solutions presented by themselves. This shows a strong interaction with school subjects and the growing interest in science.

5. Conclusion

In summary, the teachers told us that this experience was fundamental for the students. They noted strengthening what was seen in class and opening up to new questions.

By the same way, some of these students are at the university now, studying Geology, Geophysics, Physics or Maths, much because projects like this one. This assures us that we are forming citizens concerned with Science, Technology and Society.

References

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