

Preparation to Brazilian Astronomical Olympiad on a public middle school

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Abstract. This investigation was derived from the observation and teaching process carried out in elementary classes at the Brigadeiro Eduardo Gomes Municipal Middle School (Natal, Brazil) at the end of 2019. The sciences classes taught were the following: the development of astronomy and astronautics from antiquity to the modern era and, introduction to stellar evolution. The goal was to focus on preparing for the Brazilian Astronomical Olympics (OBA) for students in these classes. The results, both quantitative and qualitative, were quite satisfactory. Taking into account the region's socio-economic vulnerability profile. In this context, the study of Astronomy in the classroom in search of creating new mechanisms to improve pedagogical activities encourages the critical and creative development of students, showing that they have the potential and want to make use of it.

Keywords. astronomy literacy, public middle school, basic astronomy

1. Introduction and school description

The Brigadeiro Eduardo Gomes Municipal School is a public middle school, located in the city of Parnamirim, RN, Brazil. The community in which the school is inserted in the socioeconomic profile of the middle-low class. The students are from several social classes, most of them are from more distant communities and quite lacking in basic public services, which is why they need school transport to school.

The school has a good physical structure, its classrooms were equipped in good condition and fans in full working order, its facilities were well painted and clean, its sports court has recently undergone a renovation. With regard to the physical space, infrastructure, and organization, it consists of 9 classrooms, laboratory, library, bathroom for teachers and students, warehouse, pedagogical technical team room, director's office, management office, teacher office, kitchen, 2 computer rooms and multifunctional room dedicated to special students.

2. The goal and methodology

This pedagogical intervention project had the purpose of experiencing the teaching practice, not only in the theoretical readings and discussions but also to develop methodologies and themes that can be addressed in the daily routine as a teacher, which later could be used for the development of the future interventions. Basically, the methodological procedures during these classes consisted of making several observations both in the

school, in the teachers' room, and finally in the science classes of the three classes of the 6th year of elementary school. Right after the observation period, expository classes were held for 6th-grade students, on relevant themes of stellar astronomy. These classes focus on preparing these students for the Brazilian Astronomical Olympics (OBA).

3. Discussion

A possible analysis of the set of observations and rules in the classroom, it is evident the good preparation of the teacher and students. Within the limitations of basic education in that community, the school has a well-developed physical structure and management for the task they propose to perform. We really appreciate it.

The interventions, i.e., the classes taught focused on the historical development of astronomy and astronautics from ancient times to the modern era, and it was also a preparation for the OBA for students in these classes. The basic material used were: Oliveira Filho (2017), Harwit (2000) and Steiner (2018). The activities were carried out between March 25 and April 25, 2019, the first days with the observation of some classrooms, as well as the teacher and the subjects covered and methodology used by him, to later teach in the three classes observed to teach science/astronomy classes. It is important to note that the structure of the classrooms is common to the school standard, only having simple desks and whiteboards. Multimedia projectors and whiteboards were used in the classes, due to the fact that the methodology used by the professor of the discipline is valued.

During the interventions, We tried not to run away from the teaching structure already used by the Teacher. We learned numerous techniques, methodologies for teaching-learning. Thus, We used an expository class model, in order to work on basic concepts for an understanding of astronomical science. Within this proposal, We tried to start from the students' daily lives, asking questions based on examples that are present in their own daily lives, on television, in the films and programs they watch. We also sought to dialogue with interdisciplinarity, whereas the contemporary teaching-learning practice invites us to work with interconnection and with a network of knowledge. For such an action, We sought to dialogue with History and other disciplines of the natural sciences, such as Biology, in order to attract the attention of students, with the intention of embracing the various languages present in the room, facilitating the absorption of content for most of the class, respecting and challenging each student based on their own language and ability/assimilation capacity and cognition, as learned in the authors Vygotsky and Piaget from Perrenoud (2000), so used in our educational and teaching-learning model. In the approaches in the classroom, We used exercises as didactic resources, with oral and written questions, precisely so that those students who have more resourcefulness and understanding through orality and listening can get good assimilation, as for students who need writing for fixing the contents. The projector was also used to better visualization, through images, for detailed explanations and calculations.

References

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