

# Prospection of the Previous Astronomical Knowledge of High School First Graders at Centro Paula Souza Technical School

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**Abstract.** The teaching of Astronomy in basic education is a theme that is present in the governmental directive documents. The present work aims at the prospecting of the previous knowledge on Astronomy, of the incoming students in the Integrated Technical Education to the Middle of the Technical Schools of the Centro Paula Souza. Therefore, a previous objective questionnaire was applied with five alternatives each, specifically addressing the Sun-Earth-Moon system, referring to Astronomy topics to Elementary School and early High School in students from public and private schools. After quantitative analysis, the data showed a satisfactory prior knowledge about the evaluated subject, confirming a satisfactory background by the students, enabling a more in-depth work on Astronomy with interdisciplinarity with other areas of knowledge, paving the way for a more in-depth study on the subject.

**Resumo.** O ensino de Astronomia na educação básica é tema que se faz presente nos documentos diretivos governamentais. O presente trabalho objetiva a prospecção dos conhecimentos prévios sobre Astronomia, dos alunos ingressantes no Ensino Técnico Integrado ao Médio das Escolas Técnicas Paulistas do Centro Paula Souza. Para tanto, aplicou-se um questionário prévio objetivo com cinco alternativas cada, abordando especificamente o sistema Sol-Terra-Lua, referente a tópicos de Astronomia da Educação Básica Fundamental (nível II) e iniciais do Ensino Médio, em alunos oriundos de escolas públicas e particulares. Após análise quantitativa, os dados mostraram um conhecimento prévio satisfatório sobre o tema avaliado, constatando um embasamento satisfatório trazidos pelos alunos, viabilizando um trabalho mais aprofundado relativo à Astronomia com interdisciplinaridade com outras áreas do conhecimento, abrindo caminho para um estudo mais aprofundado sobre o assunto.

**Keywords.** Teaching of Astronomy

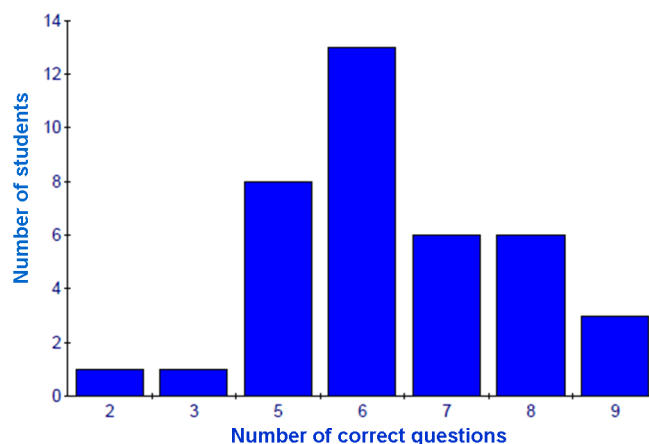
## 1. Introduction

The work was carried out in March 2018, aiming at the prospecting of the previous knowledge on Astronomy of the students entering the Technical Education Integrated to the High School (TEIHS), in the discipline of Physics of the São Mateus Technical School, of the Centro Estadual de Educação Tecnológica Paula Souza (CEETPS), in São Paulo/SP. It was applied a questionnaire with basic contents referring to Astronomy topics in Basic Education (BE), according to the Parâmetros Curriculares Nacionais - PCN (BRASIL, 1998), to students entering high school from state, municipal and private public schools of the eastern district of São Paulo, aiming to deepen the theme for the preparation of students at the 22nd Brazilian Astronomy and Astronautics Olympiad (BAAO) in 2019.

## 2. Development

It was used a previous questionnaire containing ten objective questions with five alternatives each, on topics related to Astronomy and focusing specifically on the Sun-Earth-Moon system, concepts of stars, planets and galaxies (Table 1). During the application of the questionnaire it was not allowed the use of advisory material and communication between the students, to guarantee a better quality in the results.

1. How many natural satellites does the Earth have?
2. The Solar System is made up of how many planets?
3. How many stars are there in the Solar System?
4. The Moon is responsible, among other things, for:
5. The seasons of the year occur due to:
6. What is the name of our Galaxy?

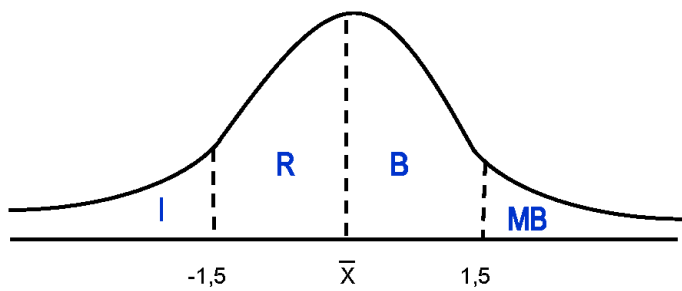


**FIGURE 1.** Graph of the number of students for questions marked correct. Source: Pinto, N. R.

7. Have their own light:
8. Of the planets below they received probes or other objects of investigation:
9. Galileo was the first to observe the stars using:
10. The planets, like the earth, are:

## 3. Results

After correction and analysis of the responses, the results presented in the graphs of Figures 1 and 2 were obtained.



**FIGURE 2.** Gaussian sampling with a standard deviation of 1.5. I = unsatisfactory; R = Regular; B = Good; MB = Very Good. Source: Pinto, N.R.

The graph shows a satisfactory prior knowledge of the students, on the evaluated subject.

The curve provides the cumulative normal distribution of hits, with criteria for evaluation by track and not by grade, measured by competence, where  $\bar{X} = 6,3$ .

#### 4. Conclusion

The data show that there is a satisfactory foundation brought by the students, thus enabling a more in depth work on the subject of Astronomy and that can collaborate for a more dynamic, attractive and meaningful learning (2), allowing the insertion of technological tools and games that provide the interdisciplinarity of Astronomy with other areas of knowledge.

In the preliminary phase for the Professional Master's Degree in Science and Mathematics Education, the work will continue as a research for further development.

#### References

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