

Overview of educational approach of a citizen science program for planetary sciences knowledge.



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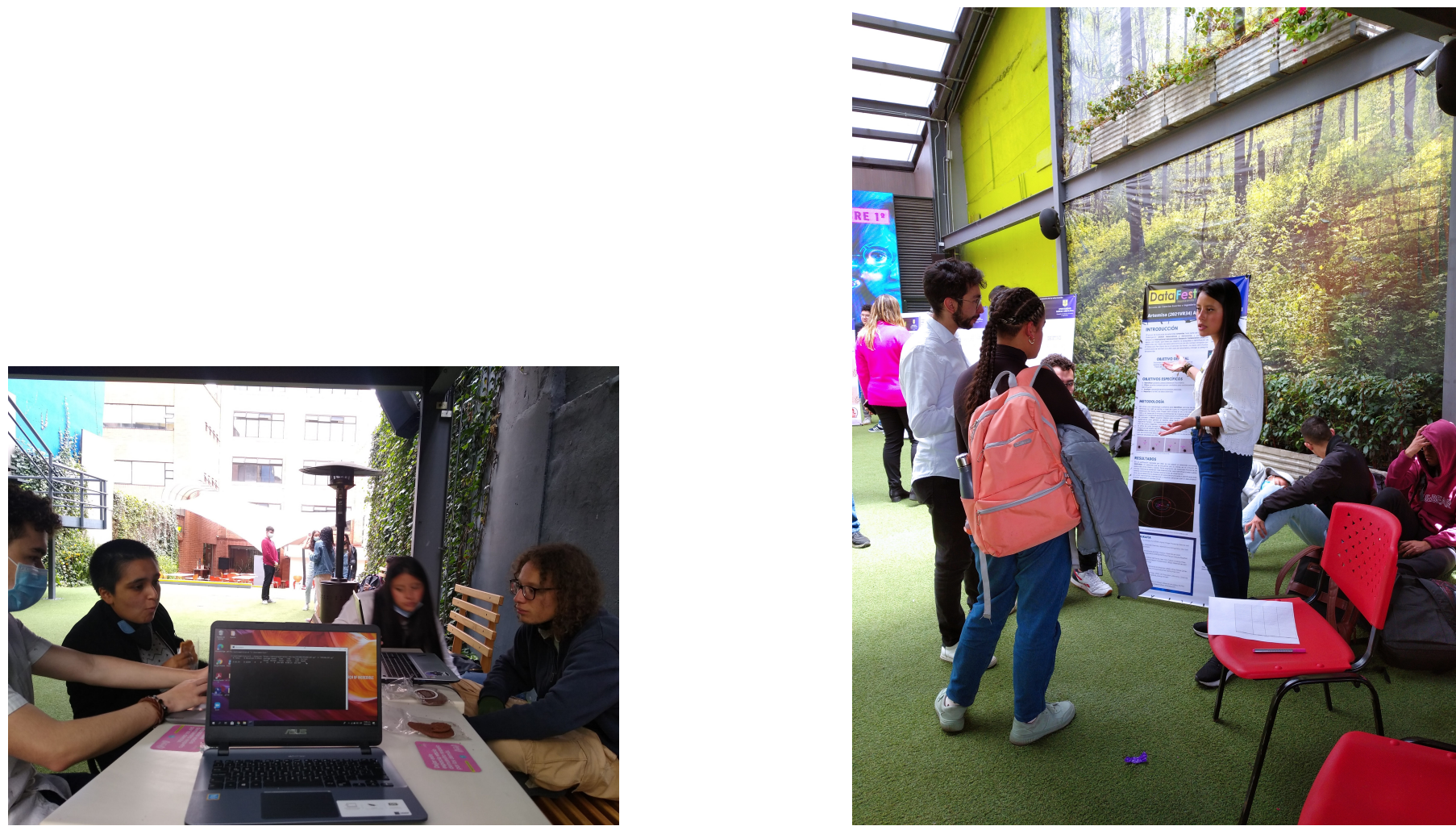
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1. Introduction

All around NEO, fireballs, meteorite events, and impact events of some of these objects on Earth lead both, the general public and scientific community alike to ask, how often are such impacts on the Earth, and what is the hazardous level them to the earth? One of the challenges with addressing these questions is communicating under the expertise and the research basis of these topics. Through research, education, and outreach project in Colombia and at the University Sergio Arboleda named SAROS [1], we have developed a STEM and one citizen science program in searching for new asteroids that provide high-quality astronomical data to citizen scientists around Colombia. These citizen scientists are able to make original astronomical discoveries and participate in hands-on astronomy programs not only for the University but for the general community as well. The aim of this work is to give the correct understanding of such objects of the solar system, but also to teach how these objects are essential for the complete understanding of the birth of life on our planet as well as the understanding which of them represents a real danger for us on Earth [2]

2. Outreach in planetary sciences

SAROS is an interdisciplinary student group in the Mathematics undergraduate program at Sergio Arboleda University. This group is dedicated to studying physics, mathematics, and astronomy. We develop projects for research, education, and outreach in Astronomy and planetary sciences.



4. Events in planetary sciences.

For two consecutive years, the Colombian asteroid festival has been developed between the Mathematics programs and the astronomical observatory of Sergio Arboleda University. We presented several kinds of activities such as talks, an exhibition of meteorites, and a poster presentation. The aim of this kind of event is the awareness and a deep understanding of minor solar system objects which has been one of the main interests in planetary sciences research.



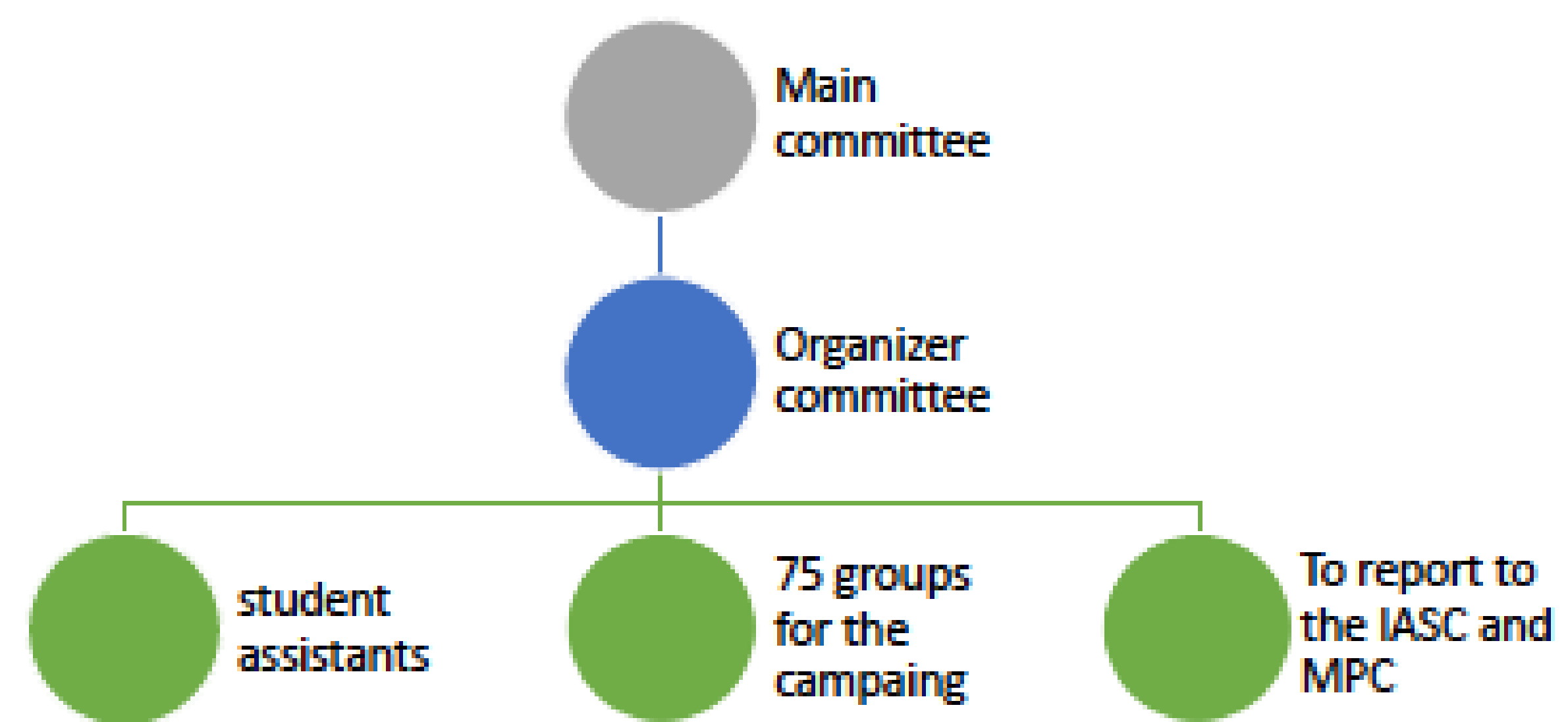
7. Reference

References

- [1] A Araujo. An educational project for interactive teaching of planetary science in colombia. In *METEORITICS & PLANETARY SCIENCE*, volume 57. WILEY 111 RIVER ST, HOBOKEN 07030-5774, NJ USA, 2022.
- [2] Javier Roa, Davide Farnocchia, and Steven R Chesley. A novel approach to asteroid impact monitoring and hazard assessment. *arXiv preprint arXiv:2108.03201*, 2021.

3. Colombia search for asteroids

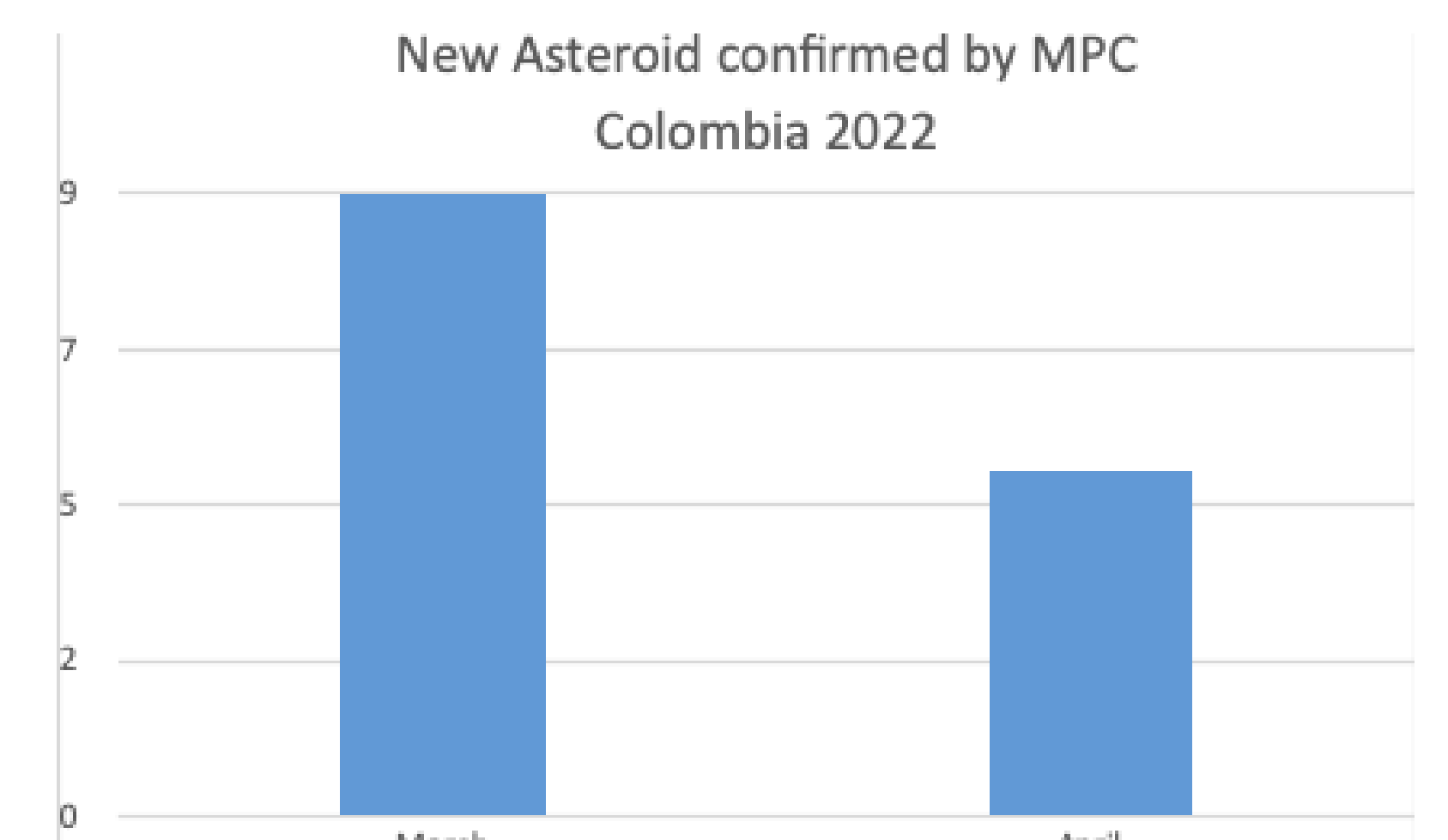
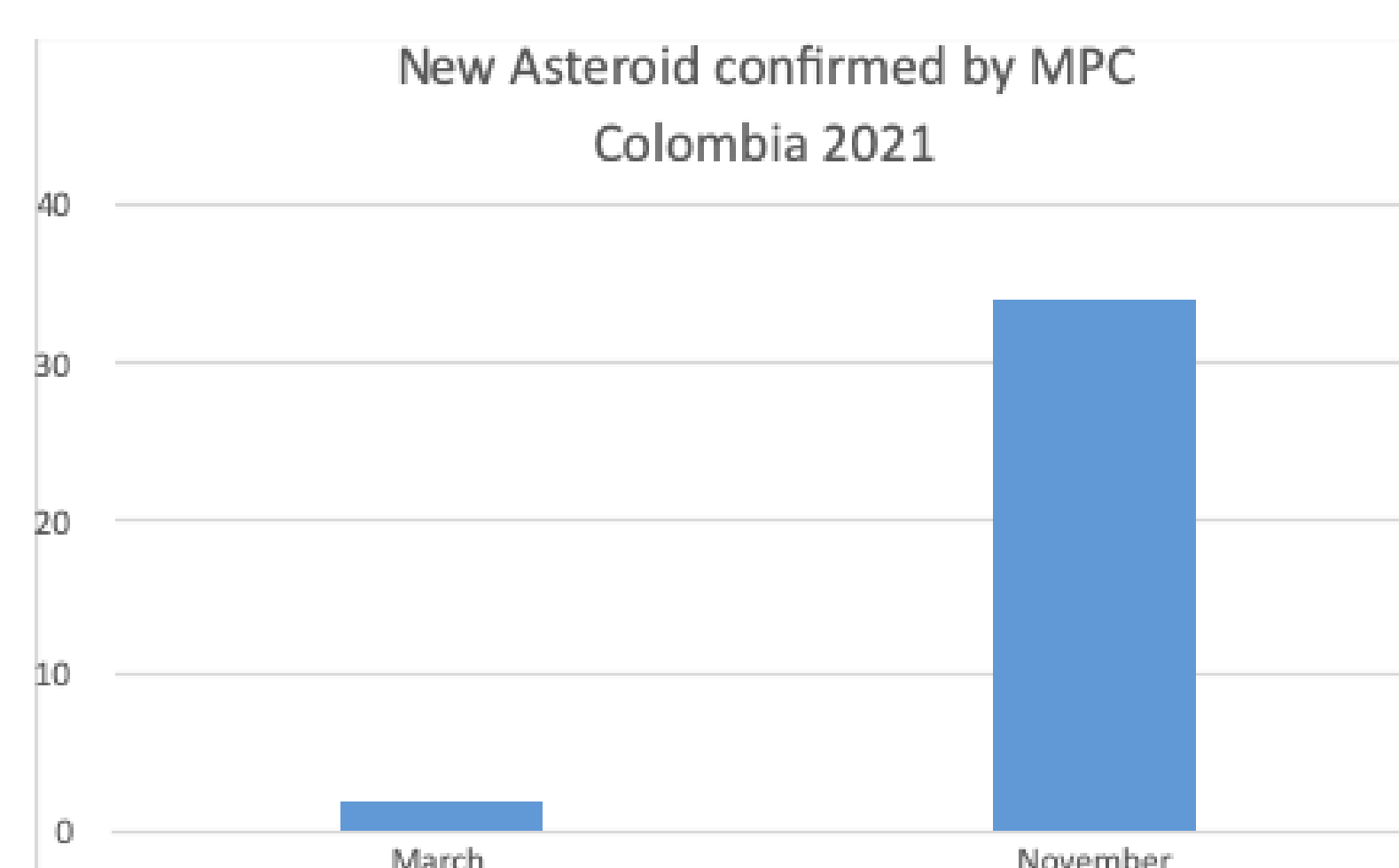
The International Astronomical Search Collaboration (IASC) is a **citizen science program** that provides high-quality astronomical data to citizen scientists around the world. In Colombia, several Universities, institutes, and scientific organizations like the Universidad Sergio Arboleda, The Astronomical Observatory of the Universidad Distrital in Bogotá have developed this project and carried this experience around the whole country. These citizen scientists are able to make original astronomical discoveries and participate in hands-on astronomy. We organize the campaigns in 75 groups, in the following, we present how we are organized ^a



^a<https://acefyn.com/microsites/nodos/astroco/oaecolombia/>

5. Provisional asteroids for Colombian's campaigns 2021-2022

Here we present the provisional discoveries for the Colombian teams. A preliminary detection is the first, original observation of a new asteroid. The asteroid must be observed a second time within the next 7-10 days. If it is, then the detection is changed to provisional status by the Minor Planet Center (MPC). Asteroid discoveries with provisional status are maintained in the MPC database for many years until there have been a sufficient number of observations to determine the orbit fully.



6. Conclusions

We proved that this citizen science program provides high-quality tools for the development of knowledge in planetary sciences and astronomy as well.

1. The students and general community have increased their knowledge of minor planets' solar system objects.
2. School teachers have incorporated the activities into their classes.
3. More students have been motivated to study STEM careers.