

“Promoting Basic Sciences” Campaign reveals the actual contribution Astronomy and Spatial Sciences currently have to STEAM Education In Romania

Authors: Naghi, A. E., Ficut-Vicas, D. , Cautnic D.

Contact E-mail: dana.vicas@gmail.com

Abstract:

With the occasion of the international Year of Basic Sciences for Sustainable Development (IYBSSD2022), the Romanian National Committee for Astronomy (CNRA) has launched a campaign to promote basic sciences in 167 schools all over Romania, from both rural and urban areas. Within this campaign we investigate the role that basic sciences, in particular astronomy plays in school education and the impact of the activities within the campaign in motivating students towards studying STEM and choosing STEM careers. Although the campaign is still ongoing, we would like to present results of the analysis of the initial survey that all participants to the campaign have taken. This analysis shows the contribution Astronomy and Spatial Sciences currently have to STEM Education in schools in Romania and is an essential starting point in building future programs and campaigns that can focus on the urgent needs of the STEM Education in our country.

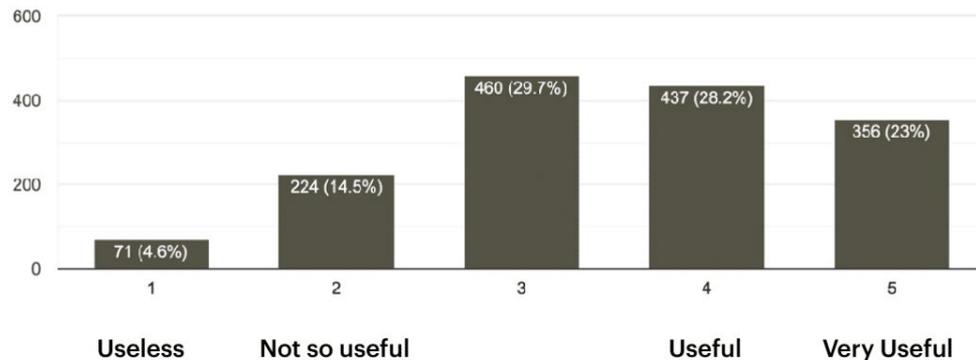


Data

The data presented here comes from the initial survey the students participating in the “Promoting Basic Sciences” Campaign have filled out. **1548 students from 167 middle schools and high schools in Romania have answered this initial survey. Most of the students, 80% are from urban areas, as the young population in the rural areas is quite low in our country. The students sample is quite representative as the campaign participating schools are from different districts all over Romania. The gender balance in the students population surveyed is 59% girls and 41% boys. The only bias this sample could have is the fact that the schools have voluntarily applied to participate in the campaign hence a random selection not of our own making as all the schools in the country were invited to participate.**

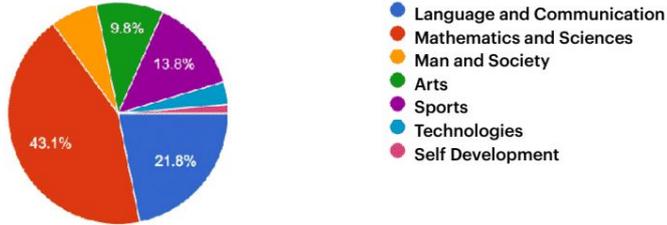


Students answer how useful is their science knowledge in their daily life (1548 responses)



Results & Discussion : Interest towards STEAM

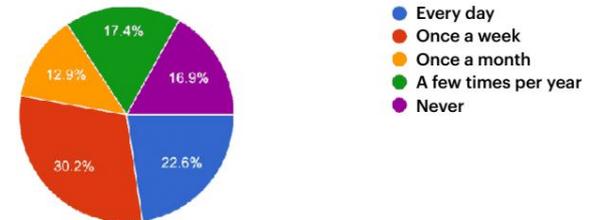
Students answer from what curriculum area is their favourite school subject part of.



Students talk about science even when not in school, but their interest is not reciprocated with appropriate extra-curricular activities to cultivate this high interest.

There is high interest for science among the students, but not many of the students consider science can facilitate the access to a great number of types of jobs.

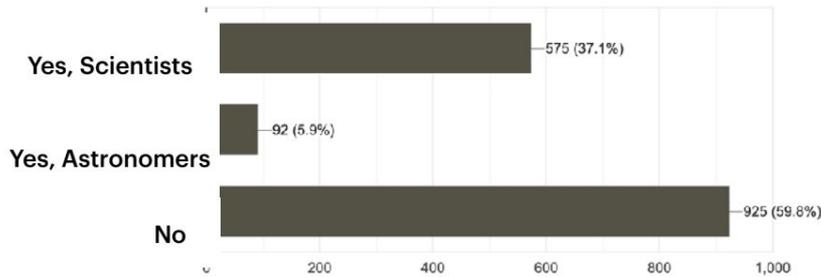
Students answers on how often they talk about science when not in school.



There is high interest for science among the students in Romania.

Results & Discussion : The Role of Astronomy in motivating towards STEAM

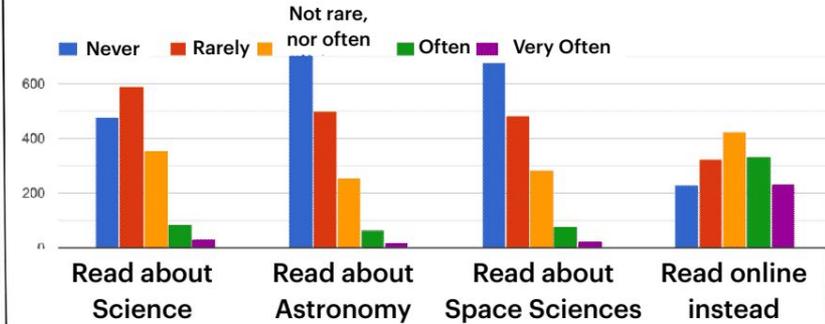
Students' answers to whether they personally know people working as scientists/ astronomers



Astronomy one of the oldest sciences in Romania, has such a fragile presence in our country nowadays that currently is not a factor of influence in STEM Motivation in Romania, nor a source of role models that attract students into science.

The great majority of Romanian students interviewed do not read about science or astronomy, nor do they participate in extra-curricular activities related to science (science clubs, visits to the planetarium, botanical garden, etc)

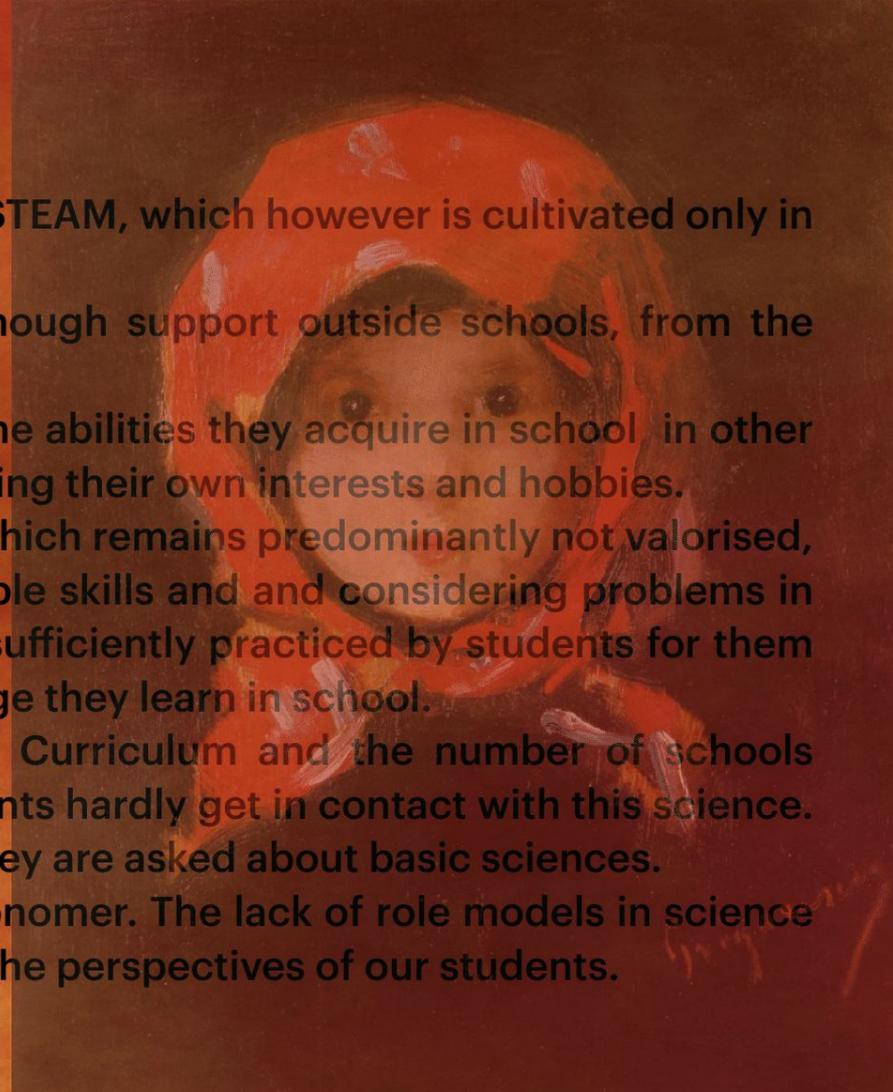
Students answers to whether they read about science or astronomy



Astronomy is not part of the reality of the Romanian students.

Conclusions

- ✱ The students in Romania have a high interest for STEAM, which however is cultivated only in school in predominantly traditional manner.
- ✱ STEAM Education in Romania does not have enough support outside schools, from the family and extra-curricular environments.
- ✱ The students in Romania have difficulties using the abilities they acquire in school in other environments, such as self-study or simply following their own interests and hobbies.
- ✱ Romania has a great potential in basic sciences which remains predominantly not valorised, because interdisciplinary connections, transferable skills and and considering problems in the rest frame of our daily life problems are not sufficiently practiced by students for them to gain confidence and benefit from the knowledge they learn in school.
- ✱ Because Astronomy is not part of the National Curriculum and the number of schools offering optional astronomy courses is low, students hardly get in contact with this science. Sadly, students rarely think of astronomy when they are asked about basic sciences.
- ✱ Only 6% of the Romanian students know an astronomer. The lack of role models in science and astronomy in particular in our country limits the perspectives of our students.



How could Astronomy help?

- * Astronomy can help develop critical thinking
- * Astronomy can help convey metacognitive skills such as objective argumentation, logic formulation and science communication.
- * Astronomy can be a play field where sciences such as math, physics, chemistry, biology, computer science and many more can interact with each other and be understood in more depth from the fascinating perspective of the Universe.
- * Astronomy can act at the extra-curricular level, but there we need to think of long term programs and ways to connect to schools and reach out to students.

