

Session 8

Astronomy education and culture

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Abstract. The 2020 pandemics has brought about a revolution in education, thanks to the pervasiveness of online teaching. Contents, methods and techniques can now be rapidly shared across the globe. On the downside, a number of disciplines have been neglected or dropped altogether. Our paper aims to address the following questions: How has Astronomy in culture been affected? Why is it important to keep it alive? What are the solutions? We suggest that it has been dismissed for two reasons: first, it is perceived as a niche topic – some sort of erudite chatter about non-essential curiosities – that can be sacrificed in favour of more practical information; second, it is heavily culture-specific, meaning that it requires extra effort from the teachers, as it cannot be easily copied or translated from other sources.

Astronomy is first and foremost a science of nature, although astronomical elements can also be found in other sciences, arts, folklore and religion. It used to be a subject in the school curriculum. However, it has become increasingly obvious that education through clear-cut disciplines is not always the most effective strategy. This is particularly true today, when everything around us is changing faster than ever. Many students will soon choose professions that do not even exist yet. In response, teachers have switched to inter-, multi- and transdisciplinary methods, which provide more flexibility and a better perspective.

Furthermore, 2020 has brought about a revolution in education, thanks to the pervasiveness of online teaching. Contents, methods and techniques can now be rapidly shared across the globe. Not all teachers were prepared for this; here is where astronomy and astronomers can help. On the one hand, those accustomed to observing the sky at a distance have adapted faster to online teaching, on the other hand, astronomy is found both in the classical scientific education (mathematics, physics, chemistry, biology, geography, etc.) and in the arts (literature, music, history, religion, etc.).

We will first look back at the history of astronomy in order to draw important points that need to be addressed in education; secondly, we will look ahead at widely available technological resources (websites, online videos, podcasts, etc.) to show how we can easily and efficiently provide empowering resources to open the mind of the new generation. It is important to show them that the recent discoveries about the universe are not only the product of top technologies, but also the outcome of research and observations that have been carried out around the world for millennia.

Astronomy teaches to draw connections not only between different branches of science, but also between science and arts, science and religion, science and local traditions, between the universal and the particular. In fact, one of the cornerstones projects of International Year of Astronomy 2009 that has been adopted by IAU and UNESCO is

“Astronomy and World Heritage”. Its main goal is to establish a link between Science and Culture on the basis of research aimed at acknowledging the local cultural and scientific values connected with Astronomy. Just as the sky belongs to all of us, so does the cultural heritage on Earth. Ignoring or neglecting it does not only threaten its survival, but also risks altering future humanist thinking. Therefore, it is crucial to raise awareness about the topic, which is now an underrated aspect of education.

The internet generation has been using computers to capitalize and store the information concerning the past of world Astronomy, to come to know better the history of their native places through the history of Astronomy and to get a glimpse into the future of the society they belong to.

If we look at the relationship between Astronomy and History, we have a very wide margin to “travel” with the students both in time and in space. Not only does the history of astronomy go back right to the beginning of civilization, but it can also be encountered everywhere on Earth. Teachers can select the best examples from their own country or region. In this way, the knowledge of astronomy is intertwined with that of the history of one’s own people. To take one example, related to the Romanian history: if we talk about the prehistoric monument Stonehenge, we must also mention a similar monument in Sarmizegetusa Regia, the capital and the most important military, religious and political centre of the Dacians prior to the wars with the Roman Empire.

The same method can be used for the relation between astronomy and art. Teachers can give many examples from the arts, such as Van Gogh’s famous painting *The Starry Night* or Beethoven’s *Moonlight Sonata*, and find examples from the culture of their own people. They can easily illustrate them online, drawing parallels between the knowledge of the sky and the artwork they picked out. For many nations, folk art can also be used as a relevant source. Architectural or ornamental details, sometimes even oral folklore, provide evidence not only of a solid knowledge of the sky but also of the deep interest in the universe, from the closest elements to infinity.

A delicate issue is the relationship between science and religion. In many countries, religion is taught in schools as a discipline from the very first years. Specific training is crucial, both for teachers of religion and for those who teach scientific issues related to the origin of the universe. The Book of Genesis can easily clash with the scientific information that students receive about the birth of the universe.

Finally, there is one more astronomy-related area that needs to be addressed: astrology. Dismissing the topic altogether does not seem to be a good idea. The pseudo-scientific information pouring in through the media turns out to be completely counterproductive from an educational point of view. Teachers have an excellent opportunity to discuss the fine line between science and pseudo-science, between real and fake news, between science fiction and conspiracy theories.

Of course, any universe-related subject requires well-trained teachers who understands the topic, are able to select the most appealing resources and motivate students to read, to travel and, last but not least, to look up at the stars. No matter how many powerful instruments one might have, nothing compares to the emotion that the sky can give you.

1. Conclusion

Astronomy is the science of the Universe but also a universal science. In the times of globalization, of online teaching, when school curricula are severely simplified, when science is advancing at an unprecedented rate, astronomy can offer the bridge between disciplines, the way to understand each one of them and the inspiration to build the (wo)man of the future.