

Proceedings for the 4th Shaw-IAU Workshop on Astronomy for Education

Leveraging the potential of astronomy in formal education

15 – 17 November, 2022



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The following is a collection of summaries from the 4th Shaw-IAU workshop on Astronomy for Education held 15 – 17 November, 2022 as a virtual event. The workshop was organised by the IAU Office of Astronomy for Education. More details can be found on: https://astro4edu.org/shaw-iau/4th-shaw-iau-workshop/.

The IAU Office of Astronomy for Education (OAE) is hosted at Haus der Astronomie (HdA), managed by the Max Planck Institute for Astronomy. The OAE's mission is to support and coordinate astronomy education by astronomy researchers and educators, aimed at primary or secondary schools worldwide. HdA's hosting the OAE was made possible through the support of the German foundations Klaus Tschira Stiftung and Carl-Zeiss-Stiftung. The Shaw-IAU Workshops on Astronomy for Education are funded by the Shaw Prize Foundation.

The OAE is supported by a growing network of OAE Centers and OAE Nodes, collaborating to lead global projects developed within the network. The OAE Centers and Nodes are: the OAE Center China–Nanjing, hosted by the Beijing Planetarium (BJP); the OAE Center Cyprus, hosted by Cyprus Space Exploration Organization (CSEO); the OAE Center Egypt, hosted by the National Research Institute of Astronomy and Geophysics (NRIAG); the OAE Center India, hosted by the Inter-University Centre for Astronomy and Astrophysics (IUCAA); the OAE Center Italy, hosted by the National Institute for Astrophysics (INAF); the OAE Node Republic of Korea, hosted by the Korean Astronomical Society (KAS); OAE Node France at CY Cergy Paris University hosted by CY Cergy Paris University; and the OAE Node Nepal, hosted by the Nepal Astronomical Society (NASO).









4th Shaw-IAU Workshop on Astronomy for Education

What would you need to know to be able to strengthen the role of astronomy in schools? You might want to look at how curricula are created in the first place, and you will want to profit from the experiences of those who have already been successful in including astronomy in their countries' curricula. You would likely be interested in the various roles that astronomy can play in practice, in both primary and secondary schools. You might turn to astronomy education research for answers to questions about what fosters student interest in the STEM subjects science, technology, engineering and mathematics — and since at least part of the answer appears to be that cutting-edge results, such as those involving black hole shadows or exoplanets, are of particular interest to numerous students, you might want to look into including those topics in school teaching. Last but not least, you might look for synergies between astronomy and raising awareness for one of the most pressing challenges of our time: climate change.

That, at least, were our assumptions when we considered which sessions to include in this year's Shaw-IAU Workshop, and from the feedback received so far, we seem to have hit the mark. The workshop itself was truly global, with 600 participants from more than 90 countries. We particularly salute those participants who had to make special efforts to attend, circumventing state-imposed restrictions on international communication. With these proceedings, as well as the videos and posters from the workshop that are available online, we make the various contributions available beyond the confines of the workshop itself.

Although the total count is only up to four, the Shaw-IAU Workshops have already become something of an institution. Their genesis, of course, is directly linked to the International Astronomical Union's establishment of its Office of Astronomy for Education in late 2019, hosted at Haus der Astronomie and the Max Planck Institute for Astronomy in Heidelberg, Germany, and the evolution of the Shaw-IAU Workshops has paralleled the building of the OAE as a whole. The online format started out in 2020 as a pandemic necessity. But we soon realised that the kind of online meeting the Workshops provided was a highly accessible format that would allow us to make these workshops truly global, and to set the threshold for participation as low as possible. We acknowledge that there still *is* a threshold – since internet access with sufficient bandwidth is required – and we will continue to look for ways of increasing accessibility even further. Perhaps the hybrid format pioneered by the OAE Center China-Nanjing this year, which combined the virtual and international Shaw-IAU Workshop with an in-person teacher workshop (as well as a nation-wide online workshop) is a model for the future?

On the part of the Office of Astronomy for Education, we hope that these proceedings will help you to make better and more effective use of astronomy in support of primary and secondary school education. It's a big universe out there — let's encourage students to explore it!

Markus Pössel Director, IAU Office of Astronomy for Education Heidelberg, December 2022

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astroEDU Workshop

Organising Committees

Local Organising Committee:

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In addition to the efforts from the OAE office in Heidelberg, Germany, the following OAE Centers and Nodes made key contributions to organising this event:





astroEDU Workshop

Session organisers: Livia Giacomini (INAF, Italy), Giulio Mazzolo (Switzerland), Edward Gomez (LCO, UK), Gwen Sanderson (OAE Heidelberg), and Federica Duras (INAF, Italy)

WORKSHOP SUMMARY

The objective of the "Let's learn with astroEDU!" interactive workshop was to introduce astroEDU (https://astroedu.iau.org/en/) and to present the publication process of new educational activities to new potential authors, reviewers or collaborators. About 150 participants from more than 50 different countries attended the two sessions. More than 20 participants left their email to be contacted after the workshop.

Each session of the workshop started with a general presentation of astroEDU, its audience and the activities already published (approx. 30 min). The second part of the workshop, titled "How to transform an educational activity in an astroEDU online resource", lasted about 1 hour and was more interactive. Participants were guided through two different case studies of activities already published (Make your own Sun! and Let's play with powers of 10). They were invited to take part in the review and publication process by answering a set of questions both in the chat and via polls, describing their own point of view, and by joining the discussion. Finally, they were also invited to submit their own activities to astroEDU for publication.

We found the response of participants to be very positive and that workshops are very effective at introducing astroEDU to the community. To maximise the number of participants, we decided to limit the interaction to polls and questions in the chat, asking participants to keep their microphone muted. We think that repeating the workshop with smaller groups (less than 20 participants) would make the workshop more interactive.



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