



**Surrounded
by Science**

Newsletter #3

September 2022

**UNIVERSITY
OF TWENTE.**



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The Surrounded by Science project has received funding from the European Union's Horizon 2020 Research and Innovation programme under Grant Agreement no. 101006349. This publication only reflects the author's view and the European Commission is not responsible for any use that may be made of the information it contains.

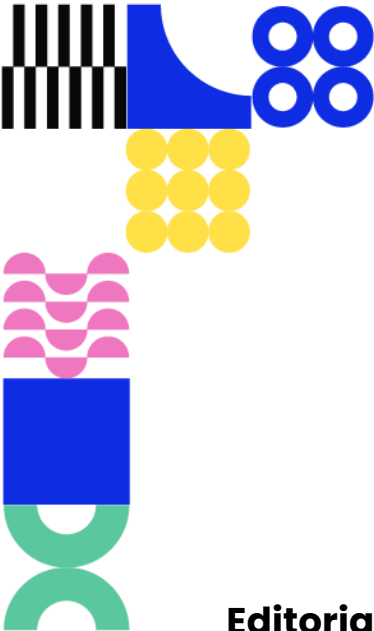
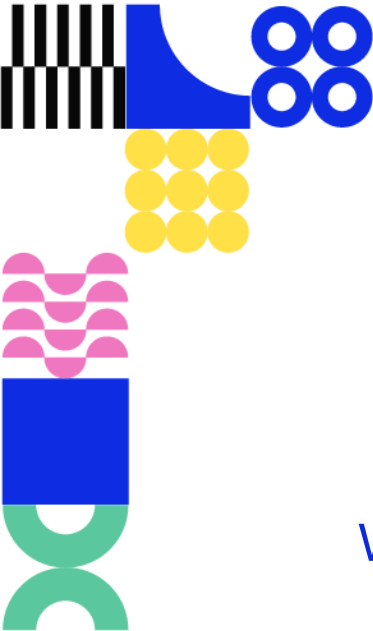


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Editorial

Welcome to the September 2022 newsletter

After a holiday period, a new season has begun and with it comes new challenges. To respond to the opportunities that arise, we have prepared information that we hope will meet our readers' expectations.

In this issue:

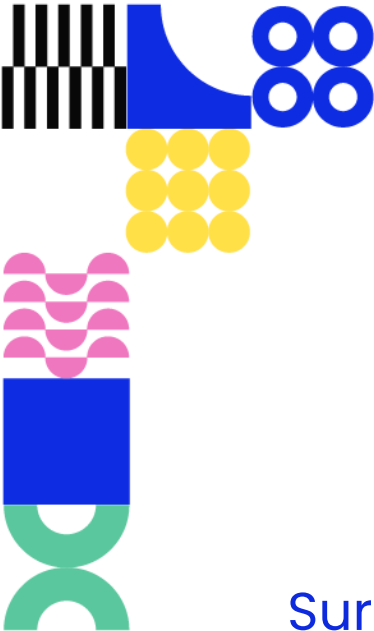
- Read about the Surrounded by Science presence at the [GHOU 2022](#) conference, with a presentation by Natasha Dmoshinskaia on “Key characteristics and success criteria for the design of informal science activities”
- Get to know the exhibition about the Moon, that was held at the seaside promenade in Cascais, organised by our partner NUCLIO and the Municipality of Cascais
- Find out more and get involved in the [REINFORCE](#) campaigns and competitions
- Follow us in a conversation about Asteroid Search with Patrick Miller, director and founder of IASC in his interview featured in *SciPerspectives*
- Browse through our section "*What we're reading, listening to and watching*" to get inspired with insightful resources on out-of-school STEM
- Know more about a new round of events on informal STEM education

We hope you find our newsletter enjoyable and informative, and we look forward to having you as part of our exciting journey. Don't forget to visit our website, subscribe to the newsletter, and follow us on our new Surrounded by Science social media channels!



Sara Anjos & Alice Iordache
Newsletter Co-editors





News

Surrounded by Science at GHOU 2022!

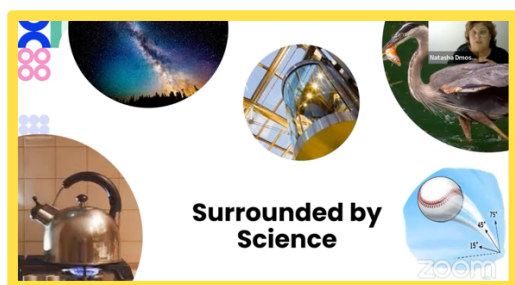


Image credit: Global Hands-on Universe

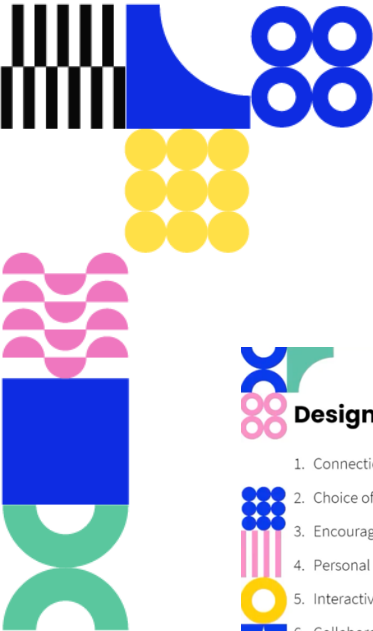
In 2022, the Global Hands-on Universe Conference celebrated its 25th anniversary. The event took place online, from the 22nd to the 25th of August. The online format provided hours of content that could be followed live by the registered participants via Zoom, and by many interested people using GHOU's Facebook page.

Four days of very inspiring talks with 590 registered participants from 39 countries, 8 keynote speakers, 25 oral presentations and 12 workshops. Dr. Natasha Dmoshinskaia, University Twente, presented preliminary findings on the results provided by the interviews of activity providers, teachers and visitors, which allowed to identify "Key characteristics and success criteria for the design of informal science activities".

The Surrounded by Science team conducted 219 interviews with activity providers, teachers and visitors across Europe to identify successful characteristics for three different informal STEM education contexts that activity providers offer: outreach programmes, designed environments, and technology and media products.

These findings were presented by Dr. Dmoshinskaia in a very inspiring talk at session 7 of the GHOU 2022 Conference, held on 25 August. As seen in the following images, developing informal STEM activities that have a connection to real-life situations, choosing a topic and encouraging curiosity, as well as collaboration with others and age- and language-appropriate skills, are important features for both Outreach programmes and designed environments. Other features have also been mentioned as important by respondents.





Design features for outreach programmes



1. Connection to real life
2. Choice of topic
3. Encouraging curiosity/ questioning/ inquiry
4. Personal experience/ interest-based
5. Interactivity
6. Collaboration/ dialogue with peers
7. Age- and ability-appropriate language and tasks



Design features for designed environments



1. Connection to real life
2. Choice of topic (*based on literature*)
3. Encouraging curiosity/ questioning/ inquiry
4. Combining visual, audial and kinesthetic information and activities
5. Active involvement/ interactivity
6. Visually attractive (materials)
7. Authentic materials
8. Collaboration/ family learning
9. Age- and ability-appropriate language

Design Features for Outreach Programmes and Designed Environments

The connection with real life and the encouragement of curiosity are also important features when referring to technology and media products. Accessibility and ease, visual attractiveness, the way information is presented and interaction with the audience, providing active involvement, are fundamental in this context, too.



Design features for technology and media products

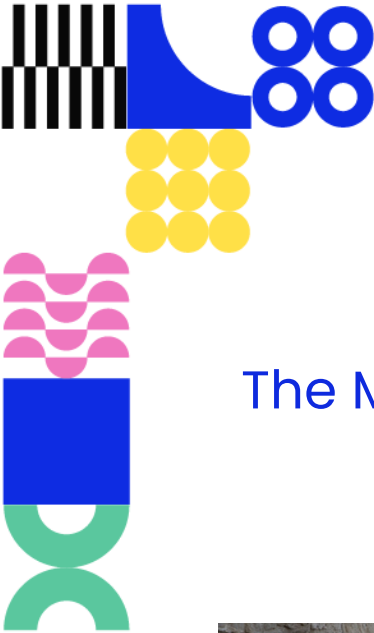


1. Accessible/ easy to use
2. Connection/relevance to real life
3. Encouraging curiosity/ questioning/ inquiry (*based on literature*)
4. Visually attractive (design)
5. The way of presenting information (for media products)
6. Interaction with the audience/ active engagement (for media products)



Key Design Features for Technology and Media Products

These results may be of interest to all those providing activities on informal STEM education, with more findings to come in the future. The recording of the presentation is available at the following [link](#), at 2h15min. Read more about the GHOU event [here](#).



The Moon and Earth 2022 Exhibition at the Maritime Walk of Cascais



Image credit ©CMC/AnaGuerreiro

The Moon and Earth exhibition was organised by Cascais Municipal Council and NUCLIO as an Open Air Gallery (Estoril Maritime Walk) in Cascais, Lisbon, Portugal. Those who walked at the seaside promenade, would be invited to explore the Moon's relationship with Earth, through a series of Poster through the Wall, showing how the Moon influences us in many different ways.

The Moon is the only natural satellite on Earth and its presence has made Earth a more suitable place for life, with the stabilisation of the climate, the tides and the periodic lighting on full moon nights. The Moon is also the only place outside Earth visited by Humankind.

The exhibition was held during Summer Days, since 9 July to 13 September 2022. This is an interesting example of how science centres and museums can go beyond their traditional walls by offering casual science encounters with the general public.



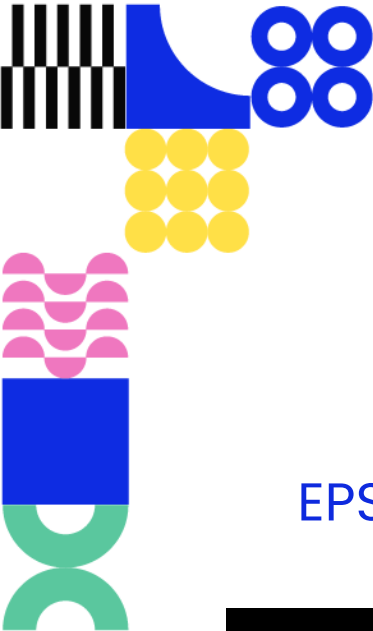
Image credit ©CMC/AnaGuerreiro



Image credit ©CMC/AnaGuerreiro

More information about the event [here](#) and a video on the curator of the event may be found following this [link](#).





EPS Citizen Science Competition 2022



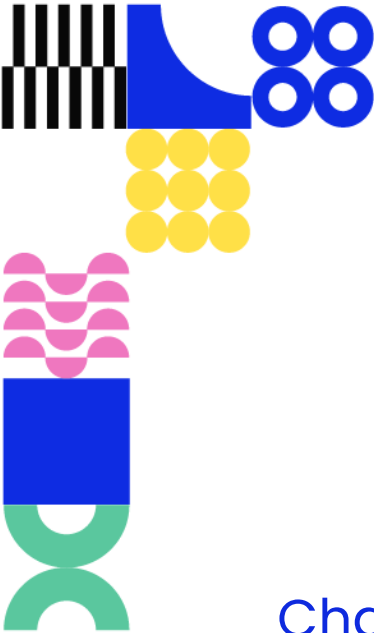
Image credit ©REINFORCE

The European Physical Society ([EPS](#)) is inviting you to join an unique opportunity fit for every science enthusiast: the EPS Citizen Science Competition 2022. Help us support researchers in the fields of High Energy Physics and Gravitational Wave Astronomy to optimize their detectors in order to make groundbreaking new discoveries. Enter the classification challenge on Zooniverse as soon as September 1st, 2022 and win one of the four travel grants to visit [CERN](#) and [EGO-Virgo](#) offered by the EPS.

The grants will be funded by the [Surrounded by Science](#) EU project. The competition is supported by the [REINFORCE](#) EU project, the [FRONTIERS](#) EU project and [Ellinogermaniki Agogi](#).

More information on the competition and how to enter, please visit the competition's official [website](#).





SciPerspectives

Chasing Asteroids: a conversation with Patrick Miller, Director and Founder of the International Astronomical Search Collaboration (IASC) Programme

By Sara Anjos



In our last newsletter we marked an important world event: the International Asteroid Day, which takes place every year on 30 June. This time, we talked to Patrick Miller, the director of the IASC, who in a friendly chat told us a bit about himself and the citizen science programme focused on the asteroid search of which he is director and founder.

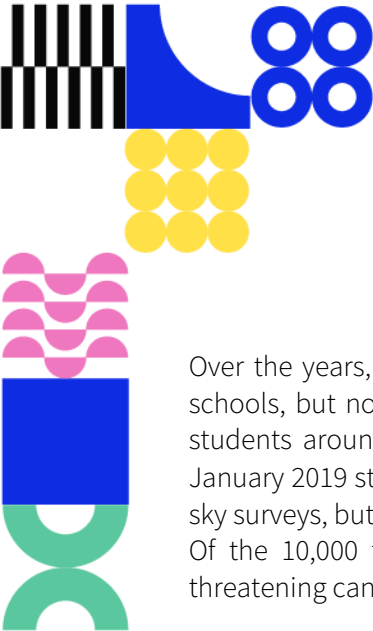


Dr. Patrick Miller

Dr. Patrick Miller is a Professor of Mathematics at Hardin-Simmons University, Texas, USA. He founded the International Astronomical Search Collaboration (IASC) in 2006, after he and one of his students took the initiative to do something for outreach and informal education in astronomy.

They had heard that the *Hands On Universe* organisation was conducting asteroid searches in the early 1990s, but that programme lasted only a few weeks. They thought about starting it up again, which they did in October 2006. At that point, not everything went well, and after some adjustments, the project started to grow.





Over the years, IASC has developed significantly. The first campaign they launched involved five schools, but now more than 6,300 schools are involved, located in 89 countries. So, near 40,000 students around the world participate in the asteroid search every year. To give an idea, since January 2019 students have found more than 10,000 very faint asteroids that were not reported by sky surveys, but by the students. This is of interest to NASA's Planetary Defense Coordination Office. Of the 10,000 that were found, 1% were Near Earth Objects candidates, which means Earth threatening candidates. This is a good parameter to evaluate the IASC, its usefulness and utility.

Patrick Miller explained to us that the main aim of the programme is to empower teachers. As a natural result of teachers bringing the project into the classroom, students can actually make original discoveries, using real data, and be excited about science and astronomy.

For the IASC director, the programme can be easily incorporated into the formal educational environment, "I use it in my teaching classes, and teachers can use it as an educational tool, and they do. It's very exciting to think that you may do a discovery and that discovery may be named after you, so it's more than just introducing science into the classroom is using astronomical data to make original discoveries."

For informal education programmes to succeed in formal education, they have to demonstrate that they fit certain curriculum needs, Miller said. IASC is a tool for teachers and relies on the teacher to integrate it into their classroom in the way they feel best suits their curriculum. Suggestions are offered on how teachers can do this, but ultimately that responsibility lies in the hands of the teacher.

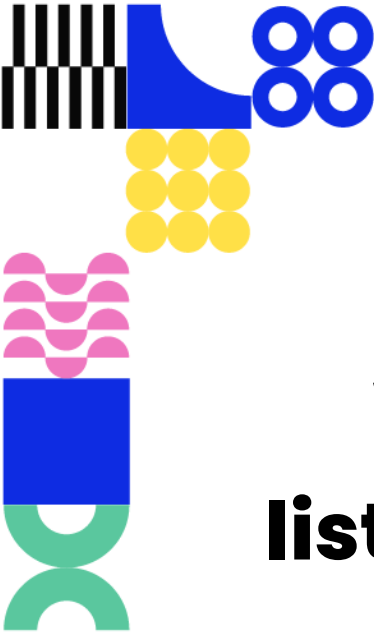
IASC has been included in the astronomy curriculum in Germany, and also negotiations at government level in Brazil and India, for example, have resulted in bringing this informal educational project into formal settings.

Although primarily referred to as an informal education programme, since 2018 the project has received funding from NASA in the context of citizen science, which has allowed it to expand by considering teachers and students as active stakeholders in citizen science.

For us, there is no doubt about how IASC is a unique initiative that is expanding and reaching thousands of schools and with the capacity to expand further, showing how doing science is within everyone's reach.

More info on Dr. Patrick Miller and IASC's work can be found on the [website](#).





What we're reading, listening to and watching

Our new section that presents a curated selection of reads, movies and videos, podcasts, and more on out-of-school STEM learning is here to stay

EDITORS' PICK

Universal Design for Learning (UDL): Rising to Equity

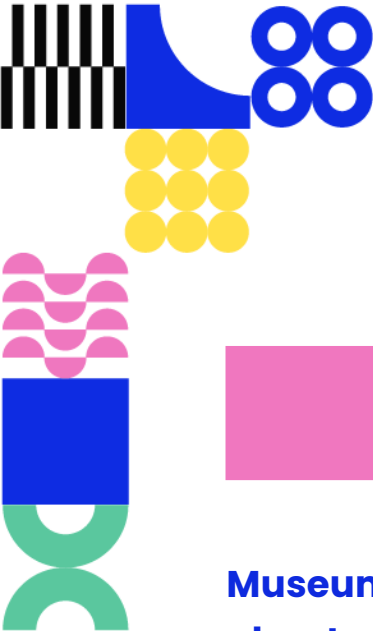
Developed by CAST, a non-profit education research and development organization, the Universal Design for Learning (UDL) is a framework to improve and optimize teaching and learning for all people based on scientific insights into how humans learn.

By following UDL guidelines you will find a set of concrete suggestions that can be applied to any subject or domain to ensure that all learners can access and participate in meaningful and challenging learning opportunities.

Check out what UDL is and how you can apply it in your learning environments.

Find out more at <https://udlguidelines.cast.org/>





READS

Museum staff perspectives about a sustainability exhibition: what do they tell us about scientific literacy?

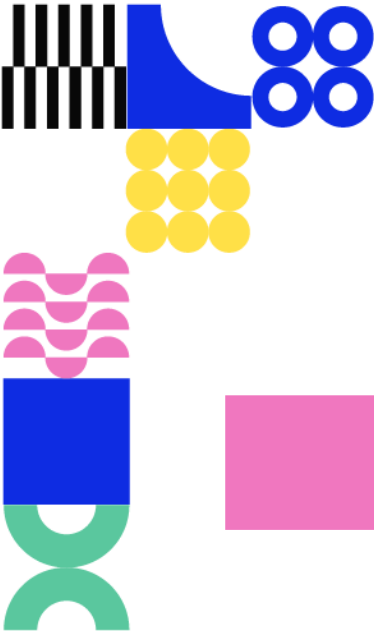
Ana Maria Navas Iannini, Faculty of Education, University of Los Andes, Bogotá, Colombia and Erminia Pedrettib, Ontario Institute for Studies in Education, University of Toronto, Toronto, ON, Canada focus on museum staff perspectives about the exhibition *Our World (Canada)*, that delves into issues of water, food and energy consumption, and waste.



Quality indicators for science communication: results from a collaborative concept mapping exercise

This study published in [JCOM](#) within the Horizon 2020-funded [QUEST](#) project aimed to provide a framework of quality applicable across the whole landscape of science communication. The paper presents the results of a mapping exercise that brought together science communication stakeholders – researchers, journalists, science communication professionals, science decision makers and members of the public – and asked them to collaboratively conceptualize quality. The outcomes of the exercise were collected into a framework of 12 quality indicators, organized into three quality dimensions: trustworthiness and scientific rigour, presentation and style, and connection with society.





MOVIES

Eunice (2018) – Short film | by Eric Garro



Set in New York, Seneca Falls, 1856, 'Eunice' is a period drama based on the life of Eunice Newton Foote, a self-taught scientist who was the first to discover the effects of green house gases on the environment.

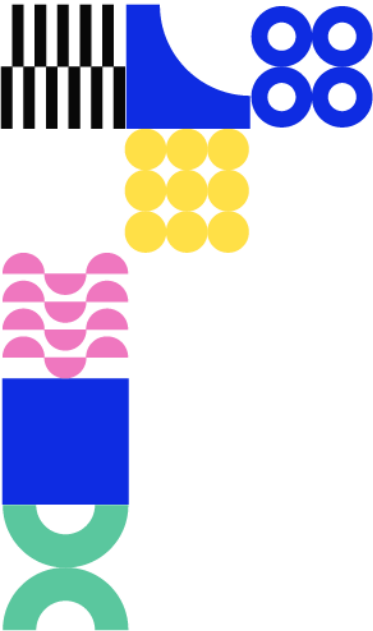
Following her breakthrough discovery about climate change, Eunice Newton Foote had to fight against sexism in her profession and in society for her research to be considered.

Through this short film, formal or informal science education organisations can spark debate on gender and equity issues in the world of science and walk the historical path of many scientific discoveries where women have played an important role.

The movie may be seen [here](#).

More information on [movie credits](#).





Events

ECSITE 2023



Image credit ©2023 Ecsite conference

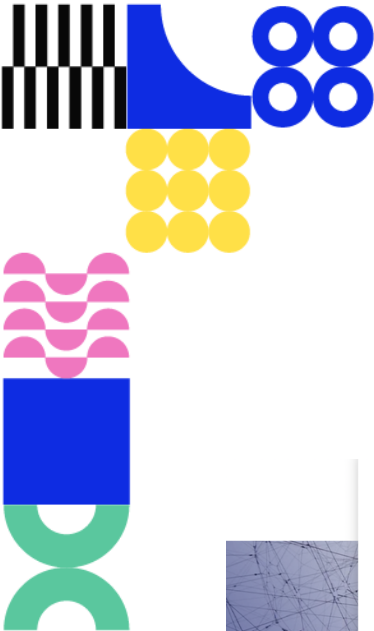
The 2023 Ecsite Conference will be hosted by Esplora Science Centre in Malta, from 15-27 June 2023 and the call for proposals is open until 31 October 2022. Since its beginnings in 1990, the Ecsite Conference has grown to over 1000 international professionals who look forward to this annual gathering to learn, share, debate and inspire each other, in an organic community that grows and diversifies each year.

In 2022 the Surrounded by Science Project delivered an engaging and highly attended panel session entitled *Formal and Informal Science education: Bridging the Gap* that took place on the morning of June 3. To recall this event you may click this [link](#).

The Ecsite network brings together more than 320 organisations committed to inspiring people with science and technology and driving science engagement forward with professional events, projects and publications, aiming to empower citizens to engage and participate in science.

For more information, please visit the conference [website](#).





PCST 2023 Conference



Image credit ©2023 PSCT conference

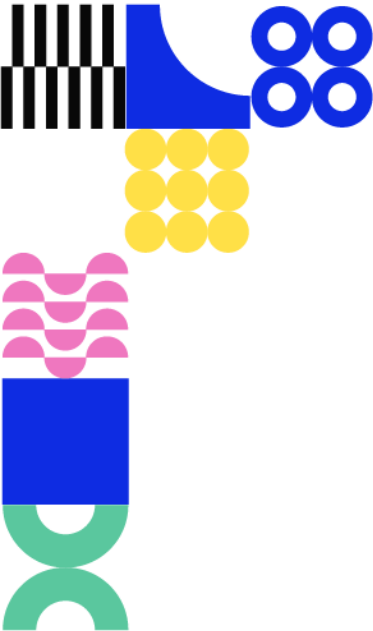
The PCST (Public Communication of Science and Technology) Network aims to improve the theory and practice of the understanding of science communication by providing a forum to consider the latest developments on the field and promote exchanges between practitioners and theoreticians all over the world.

The next PCST 2023 conference will be held in Europe, in Rotterdam, The Netherlands, from 11 to 14 April 2023.

Although the deadline for submitting proposals has passed and submissions have now closed, this is one event that we encouraged to follow. More news will come soon.

For more information, please visit the conference [website](#).





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