Surrounded by Science

Newsletter #7

November 2023

The Surrounded by Science project has received funding from the European Union's Horizon 2020 Research and Innovation programme under Grant Agreement no. 101006349.
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Table of Contents

Editorial

Welcome to the November 2023 newsletter

Welcome to the autumn edition of the Surrounded by Science newsletter! As the leaves begin their graceful descent, we find ourselves immersed in a season of change, reflection, and renewed vigour for the pursuit of knowledge. Surrounded by Science stands as a beacon of collaboration, uniting passionate minds in science education research, and museum educators, outreach providers, and policymakers across Europe. Together, we embark on a journey to craft a systematic assessment methodology, poised to unveil the profound impact of out-of-school science activities. Join us as we delve into the latest developments from the heart of this groundbreaking endeavour!

In this issue:

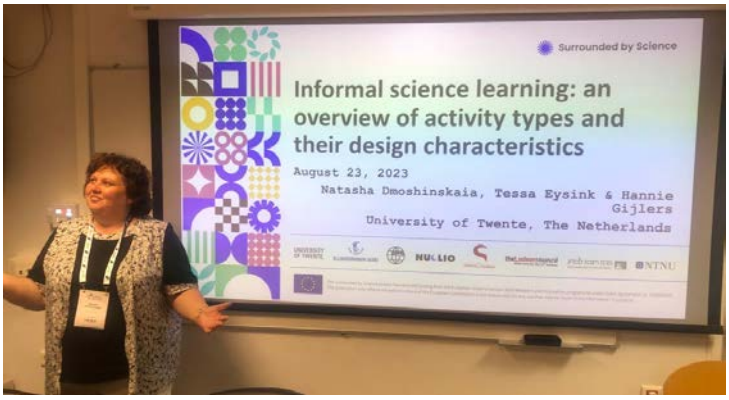
- Read about SbS participation on the 2023 EARLI Conference in Thessaloniki, Greece, under the theme “Education as a Hope in Uncertain Times”
- Find out more about SbS presence at the “Mädchen, MINT und Making” Symposium in Nürnberg, Germany
- Know more about the Surrounded by Science Consortium Meeting in Athens
- Get to know more about the book “Amplifying Informal Science Learning: Rethinking Research, Design, and Engagement” and Informal Science Learning
- Browse through our section "What we're reading, listening to and watching" to get inspired with insightful resources on out-of-school STEM

Be part of our journey and discover the latest developments in our project! Don't forget to visit our website, subscribe to the newsletter, and follow us on social media!

Joana Silva & Pavlos Koulouris
Newsletter Co-editors

News

Surrounded by Science at the EARLI 2023



By Tessa Eysink

From 22 – 26 August 2023, the European Association for Research on Learning and Instruction (EARLI) held its 20th Biennial Conference. The EARLI is an international scientific association for junior and senior researchers in the field of education. The conference was hosted by the University of Macedonia and the Aristotle University of Thessaloniki in Greece. The theme of this year was "Education as a Hope in Uncertain Times".

Dr. Natasha Dmoshinskaia, Dr. Tessa Eysink and Clarissa Lang MSc. from the University of Twente were present on behalf of the Surrounded by Science team. With a total of 2065 presentations, including 9 keynotes, coming from 58 countries all over the world, there were many other educational researchers to meet and discuss ideas with and many inspiring talks to visit. On Wednesday afternoon, the Surrounded by Science team presented the results of the Scanning the Horizon task and the interviews with stakeholders in a paper presentation.

As learning in informal settings such as museums and outreach programmes was little represented, it was a valuable and well-received contribution to the conference.

If you wish to know more about the conference, please visit: https://www.earli.org/events/earli2023

SbS at the “Mädchen, MINT und Making” Symposium

The Surrounded by Science project participated in the “Mädchen, MINT und Making” Symposium in Nürnberg, Germany, on the 11th of September. Hosted by the Friedrich-Alexander-University (FAU) Nürnberg, the symposium and discussions aimed to bring together different stakeholders and discuss ways to bring more girls to STEM-related outreach programmes and what can be done to make it more appealing to them. By bringing together stakeholders from outreach programme organisers to teachers, parents, and researchers, this discussion highlighted the necessity of access to STEM education for learners of all backgrounds.

At the heart of this initiative lies the EnvironMINT project, a joint effort between the FAU Nürnberg, the University of Siegen, and the Rhine-Waal University of Applied Sciences. EnvironMINT focuses on investigating the conditions for successful collaboration between schools, Fab Labs, children, parents, and peers, promoting self-determined, sustainable, and creative Making as a holistic STEM approach.

Surrounded by Science Consortium Meeting in Athens

The Surrounded by Science Project reached a pivotal moment as partners reconvened for the Consortium Meeting hosted by Ellinogermaniki Agogi (Athens, Greece). Spanning across two productive days, October 30th and 31st, the assembly served as a platform for discussions, workshops, and strategic planning sessions, furthering the mission of the project. Analysing the intersections between formal and informal science learning environments is at the heart of Surrounded by Science. In a world where distinctions between education, work, and leisure become blurred, learning — especially science learning — is increasingly taking place everywhere, anytime.
In this context, the project is bringing together experts in science education, policymakers, and user communities to design iSTEM activities and developing a systematic assessment methodology to analyse the impact of such activities. With this mindset, the main takeaways from the project meeting are as follows:

Reflecting on Progress and Envisioning the Future

The partners mapped out exemplary science learning practices outside the classroom that offer a better understanding of the nature and effects of informal STEM (iSTEM) education. Several case studies have been identified to help the project team better understand how users experience these iSTEM activities and how they can affect their science proficiency. This multi-faceted concept encapsulates attitudes and behaviours, such as being excited by science, engaging in scientific reasoning, reflecting on science, and identifying with the scientific community. The main discussions have evolved around the practices educational providers and organisations should implement to help learners build their science identities.

Fostering Engagement through Innovative Tools: The Science Chaser

One highlight of the meeting centred on the Science Chaser app – a key project component aimed at stimulating scientific curiosity and knowledge. The Science Chaser is a tool that both users and providers of iSTEM activities can use. During their visit to science centres or museums (only to cite a few), the former can interact with the proposed exhibitions and activities.

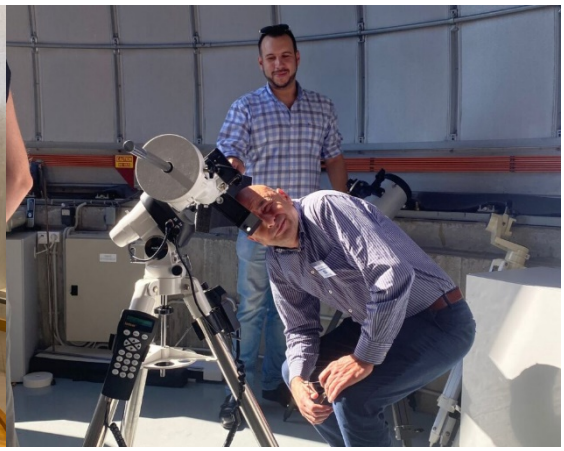
For example, users can scan QR codes during the visit and get additional information or find quizzes and games related to the topic. But what makes the Science Chaser App a game changer is that visitors can use it after their visit to a science engagement organisation to report their post-visit activities. Once one has registered, they will also be able to use the Science Chaser to report every subsequent out-of-school science activity, such as playing an educational game, visiting a website, or watching a documentary.

Maximising Outreach Through Effective Communication

The consortium also placed strong emphasis on dissemination and communication strategies, which are crucial for amplifying the impact of the Surrounded by Science Project. The communication and dissemination team shared their various methods to effectively report the outcomes and findings of the project to a broader audience, thereby maximising its educational reach. One of the points discussed was the organisation of the Surrounded by Science Final Conference, as well as other dissemination events that aim to communicate to the public the best practices gathered and introduce participants to the Science Chaser app.

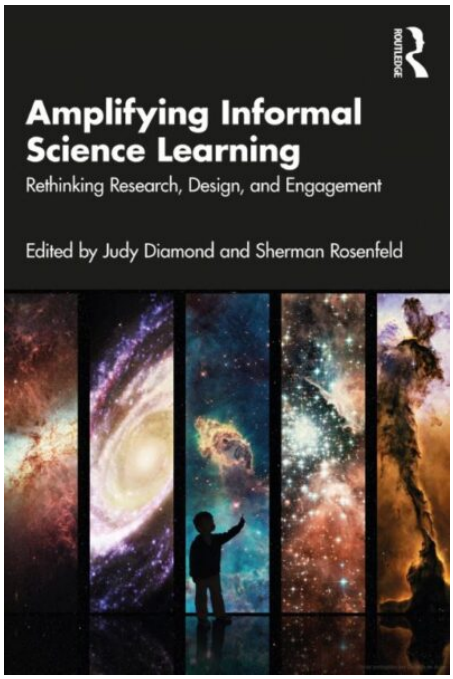
Paving the Way for Future Collaboration

The meeting culminated in a forward-looking discussion where partners contemplated future projects that would continue the work initiated by Surrounded by Science. This aspiration reflects their ongoing dedication to enriching science education and fostering collaboration in the field. Between sessions of discussion, planning, and decision-making, partners also had the chance to enjoy a tour through the school premises and the Observatory of Ellinogermaniki Agogi. The Surrounded by Science Project meeting in Athens was a testament to the commitment and collaborative spirit of the partners involved, marking significant progress in the endeavour to transform informal science education and learning in Europe and across the world.



Amplifying Informal Science Learning: Rethinking Research, Design, and Engagement

Informal Science Learning (ISL) continues to captivate and inspire curious minds, offering a gateway to a world of discovery beyond traditional educational settings. In order to further delve into the profound themes surrounding ISL, the Surrounded by Science (SbS) project spoke with Sherman Rosenfeld, one of the editors of the book "Amplifying Informal Science Learning: Rethinking Research, Design, and Engagement", and a Consortium member, to learn more about his opinions on this topic. Our conversation explored the invaluable insights his book offers, particularly in relation to its relevance and impact on the SbS project.

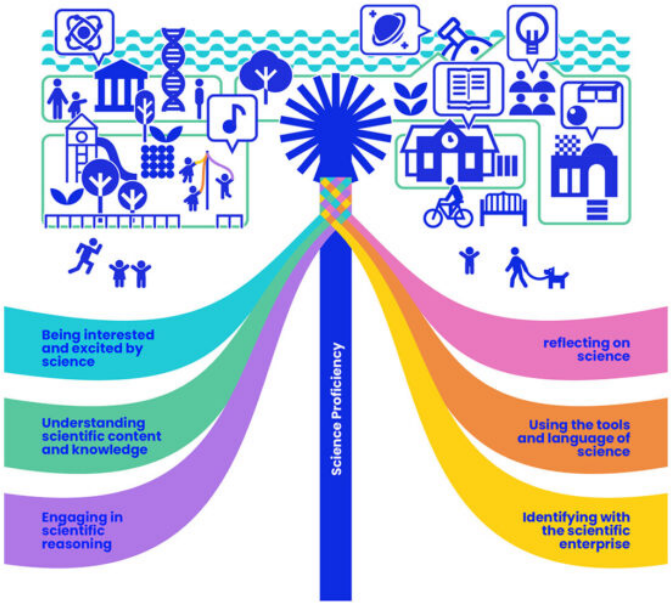


The book comprises 34 chapters written by many different experts from multiple countries and touches on a wide variety of topics and themes. In fact, the essays masterfully united by the editors range from inclusivity to digital engagement, from places and spaces of learning to bridge formal and informal learning, while always following the fil rouge of describing Informal Science Learning state-of-the-art and its future implications. This work is definitely a must-read for anyone interested in STEM education.

Despite every chapter being structured differently, most of them are based on the explanation of specific case studies and the impact that the informal STEM (iSTEM) activities provided on the research subjects. Those essays provide concrete examples of how ISL contributes to enhancing learning outcomes for people across various contexts or age groups.

From explaining climate change effects to people from Pennsylvania rural areas (Chapter 15) to informing the general public about AIDS with a travelling exhibition in the 1990s (Chapter 2), the informal context supports individuals in their pursuit of knowledge. It lights the fire of curiosity through its interdisciplinary nature, fostering extended communities and involving real-world problems. This dynamism motivates challenging questions, fueling inquiry beyond clear and simple answers.

It is precisely this ability to move feelings that makes ISL and its formal counterpart complementary. For example, people in formal contexts learn about science, but with citizen science programmes, they feel like scientists (Chapters 13 and 14). Moreover, when kids study animals in class, they learn about how beasts behave and their anatomy, but only in zoos and aquaria do they develop empathy for them (Chapter 11). iSTEM activities can also change students' perception of their teachers, who are better considered when they apply gamification to learning, as described in the case of the Chemical Escape Room (Chapter 18).



So, the SbS project will start with the groundwork already covered in the literature and elaborate on the ideas further using its innovative methodology. The examples cited above can help us understand what **bridging the gap between formal and informal STEM education** really means and how iSTEM activities improve the Science Proficiency of participants in each of its strands. This doesn't happen only for kids of their school age; ISL is a good companion for each individual's lifelong learning journey, improving accessibility to science knowledge, even taking it to people who cannot afford to visit museums and other science dissemination institutions (Chapters 1, 15, 16 and 20).

Moving forward, the SbS project will continue to leverage its distinctive concepts and tools in order to further improve the quality and accessibility of ISL activities, with the aid of the Science Chaser App. With that in mind, the project also aims to take the research beyond the simple visit to the institution or the activity provided. It will explore **how informal learning can enhance engagement with science in everyday life**, thereby adding greater value to ISL initiatives.

What we're reading, listening to and watching

A curated selection of reads, movies and videos, podcasts, and more on out-of-school STEM learning.

Science of the Human Body

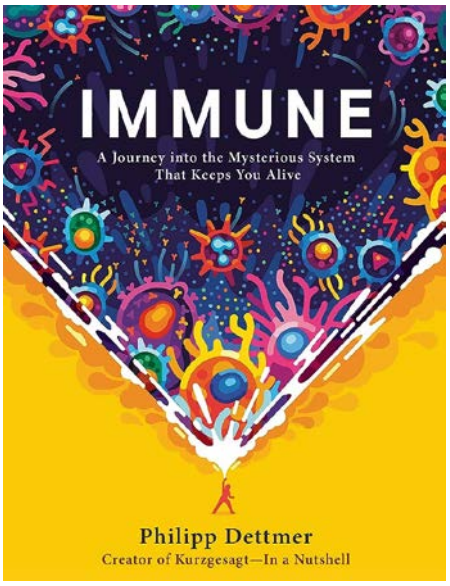
The human body is a marvel of biological engineering, an intricate symphony of complex systems working in harmony to sustain life. From the microscopic structures of cells to the grandeur of organ systems, the science of the human body delves deep into understanding the mechanisms that govern our existence. It encompasses a wide array of disciplines, including anatomy, physiology, genetics, and neuroscience, each offering a unique perspective on the wonders of our physical form.

This journey of exploration uncovers not only the physiological functions but also sheds light on the intricate relationships between our bodies and the environment. Join us on this fascinating voyage as we unravel the mysteries that lie within the realm of the human body.

READS

Immune: A Journey into the Mysterious System that Keeps You Alive

DESCRIPTION



'Immune" embarks on a captivating journey through the inner workings of the human immune system. This complex and vital system, second in complexity only to the human brain, is introduced as an epic and relentless battleground, constantly fighting to protect us without our awareness. As you go about your daily routine, unaware of this fierce struggle within, millions of microscopic warriors combat threats to your well-being.

The book explores the various facets of the immune system, such as antibodies, inflammation, and how it combats threats like viruses, bacteria, allergies, and cancer. Dettmer dispels common myths about 'boosting' the immune system and delves into the ingenious tactics that parasites use to breach our defences. He also provides insights into the inner workings of viruses, including the coronavirus, and how our immune system responds to injuries.

Richly illustrated with vivid graphics and immersive descriptions, 'Immune' transforms the complex topic of immunology into an engaging adventure, challenging preconceived notions about the human body's defense mechanisms and their role in protecting us from various maladies. The book emphasises the critical importance of the immune system, making it a remarkably entertaining and essential crash course in one of the most vital systems in the human body.

ABOUT THE AUTHOR

Philipp Dettmer is the founder and head writer of Kurzgesagt, one of the largest science channels on Youtube with over fifteen million subscribers and one billion views. After dropping out of high school at age fifteen, Philipp met a remarkable teacher who inspired in him a passion for learning and understanding the world. He went on to study history and information design, with a focus on infographics. Philipp started Kurzgesagt as a passion project to explain complicated ideas from a holistic perspective. When the channel took off, Philipp dedicated himself full-time to making difficult ideas engaging and accessible.

PODCAST

My Amazing Body

My Amazing Body is a podcast that explores interesting, unknown, and misunderstood parts of your body, featuring interviews with medical experts and stories from real people.
Each episode runs for about 20-30 minutes.
Listen here.

VIDEOS

Movie | Concussion (2015)

The thought-provoking and critically acclaimed movie “Concussion”, released in 2015, delves into the real-life story of Dr. Bennet Omalu, a forensic pathologist, and his profound impact on the world of sports. Brilliantly portrayed by Will Smith. Dr. Omalu is a dedicated pathologist working in Pittsburgh who stumbles upon an alarming discovery: the prevalence of chronic traumatic encephalopathy (CTE) in American football players. CTE is a degenerative brain disease caused by repeated head trauma and is especially common among athletes who endure countless concussions during their careers.

The story sheds light on the consequences of ignoring the potential long-term health risks of pursuing entertainment and profits.In conclusion, it serves as a powerful reminder of the importance of putting the well-being of athletes and individuals above the interests of industries.

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Our Team

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