



## **4<sup>th</sup> INTERNATIONAL BALTIC SYMPOSIUM ON SCIENCE AND TECHNOLOGY EDUCATION “SCIENCE AND TECHNOLOGY EDUCATION: DEVELOPING A GLOBAL PERSPECTIVE (BalticSTE2021)” : SYMPOSIUM REVIEW**

**Vincentas Lamanauskas**  
*Vilnius University, Lithuania*

Time is running relentlessly fast. The Fourth International Symposium was held on June 21-22 this year. The topic of the Symposium was “Science and technology education: Developing a global perspective”. More than 60 scientists from 18 countries participated in the symposium. Comparing with the symposium which took place in 2019, the geographical distribution of the participants is wide and diverse. Ukrainian, Serbian, Moldavian, Malaysian, Latvian, Slovak etc. researchers participated in the symposium. Another important feature of the symposium is that it was held remotely/online due to the ongoing Covid-19 pandemic.

One of this international symposium ideas is – to show that Baltic region countries also actively participate in natural science and technology education research, especially in STEAM context. The second idea is that Baltic countries as well as other small regions of the world need corresponding close communication and cooperation. During this symposium, these two essential ideas were developed and supported.

The symposium was organised by scientific methodological centre “Scientia Educologica”, the associated member of Lithuanian Scientific Society. The main symposium partner was Publishing House Scientia Socialis, Ltd. It is significant that even in the conditions of a pandemic, the symposium was properly organized.

This time the symposium lasted for two days. The first day of the symposium began traditionally with the opening of the symposium. Instead of traditional musical greetings, a short movie about Lithuania was shown to participants (“Lithuania in 4 minutes”, <https://www.youtube.com/watch?v=Hf81Cq1ONIo>). The symposium participants were also welcomed (remotely) by the IOSTE chairperson dr. Agnaldo Arroio (University of Sao Paulo, Brazil).

Four main (plenary) reports were planned in the symposium. Plenary report subjects comprised a very wide natural science and technology education problematic spectrum. It was discussed about Cognitive processes, Sustainable development, Chemistry education, and Mathematics education.

Plenary presentation authors, presentation topics are given in Table 1.



**Table 1**

*Information about Plenary Presentations*

| Speaker   | Topic  |
|---|--|
| Prof. dr. Małgorzata Nodzyńska<br>Pedagogical University of Cracow,<br>Poland | CHEMICAL VS. NATURAL: COMMON MISCONCEPTIONS  |
| Prof. dr. Paul Pace<br>University of Malta, Malta                             | THE SUSTAINABLE DEVELOPMENT GOALS: MAKING SCIENCE AND TECHNOLOGY GLOBALLY RELEVANT               |
| Dr. Paolo Bussotti<br>University of Udine, Italy                              | A NEW PERSPECTIVE ON MATHEMATICS EDUCATION COMING FROM HISTORY: THE EXAMPLE OF INTEGRAL CALCULUS |
| Prof. Dr. Peter Demkanin<br>Comenius University in Bratislava,<br>Slovakia    | COGNITIVE PROCESSES IN THE THEORY OF PHYSICS EDUCATION   |

Two plenary presentations were made on the first day of the symposium. The plenary was followed by the additional 10 presentations on a wide range of topics. A list of presentations is given in Table 2.

**Table 2**

*Information about Session 1 Presentations*

| Speakers Name and Surname<br>Entity/Academy represented           | Topic of presentation   |
|---|---|
| NYET MOI SIEW<br>University Malaysia Sabah, Malaysia              | Mentor-Mentee outreach program: Revitalizing STEM education in rural secondary schools  |
| LETTAH SIKHOSANA<br>University of South Africa, South Africa      | The development and implementation of the sustainable intervention strategies for solid waste management in primary schools: A case of Nkangala district, Mpumalanga province |
| SAŠA HORVAT<br>University of Novi Sad, Serbia                     | Procedure for assessment of the cognitive complexity of the problems with a limiting reactant   |
| ILVA CINITE, GIRTS BARINOVŠ<br>University of Latvia, Latvia       | Increased student performance on physics concept inventory test after student-centred instructions in universities of Latvia  |
| YI WEN LO, CHIH-HSIUNG KU<br>National Dong Hwa University, Taiwan | Exploring the effectiveness and impacts of using different media to learn science   |
| ANGELA JAMES<br>University of KwaZulu-Natal, South Africa         | How COVID-19 was an enabler for Biological Sciences pre-service teachers' Service-Learning projects   |
| TODAR LAKHVICH<br>Belarusian State Medical University,<br>Belarus | Improvement of the Course Design: Graph-Theory Based Approach in the Case of Organic Chemistry  |
| ROSELINE NYABOKE<br>The University of Toledo, USA                 | Examining the Use of Scientific Modeling by the Graduate Teachers in a Science Methods Course   |
| MICÁIAS A. RODRIGUES<br>Federal University of Piauí, Brazil       | Challenges for teacher education in pandemic times  |
| SOLANGE LOCATELLI<br>Federal University of ABC, Brazil            | Drawings to learn science - some reflections  |

**Figure 1**  
*Symposium Poster*



4<sup>th</sup> International Baltic Symposium on Science and Technology Education  
(BalticSTE2021)

## SCIENCE AND TECHNOLOGY EDUCATION: DEVELOPING A GLOBAL PERSPECTIVE

21-22 June 2021, Siauliai, Lithuania  
(Online)

**Website:** <https://www.balticste.com> **E-mail:** [balticste@gmail.com](mailto:balticste@gmail.com)

PLENARY SPEAKERS



**Prof. dr. Małgorzata Nodzyńska**  
*Pedagogical University of Cracow, Poland*  
CHEMICAL VS. NATURAL: COMMON  
MISCONCEPTIONS



**Prof. dr. Paul Pace**  
*University of Malta, Malta*  
THE SUSTAINABLE DEVELOPMENT GOALS: MAKING  
SCIENCE AND TECHNOLOGY GLOBALLY RELEVANT



**Dr. Paolo Bussotti**  
*University of Udine, Italy*  
A NEW PERSPECTIVE ON MATHEMATICS  
EDUCATION COMING FROM HISTORY: THE  
EXAMPLE OF INTEGRAL CALCULUS



**Prof. Dr. Peter Demkanin**  
*Comenius University in Bratislava, Slovakia*  
COGNITIVE PROCESSES IN THE THEORY OF PHYSICS  
EDUCATION

Symposium Website:  
<http://balticste.com/>

E-mail:  
[balticste@gmail.com](mailto:balticste@gmail.com)

Supporting Journals  
*Journal of Baltic Science Education*  
*Problems of Education in the 21st Century*  
*Gamtamokslinis ugdymas / Natural Science Education*  
*Švietimas: politika, vadyba, kokybė / Education Policy, Management and Quality*

Symposium Organizers





Despite insignificant technical issues, all scheduled presentations were made on time. An in-depth discussion took place, various questions were raised.

The second day of the symposium again was devoted to the two plenary presentations and Session 2. Thirteen reports were presented during the second session (Table 3).

**Table 3**  
*Information about Session 2 Presentations*

| <b>Speakers Name and Surname<br/>Entity/Academy represented</b>                             | <b>Topic of presentation</b>  |
|---|---|
| ANTUNI WIYARSI<br>Yogyakarta State University, Indonesia                                    | Students' motivation and chemical literacy on context-based learning: A case of chemical bonding topic  |
| DUŠICA RODIĆ<br>University of Novi Sad, Serbia  | To what extent do students rely on an algorithmic approach to quantitative problem-solving in chemistry?  |
| NAFAA CHBILI<br>United Arab Emirates University, UAE  | Best practices for geometry teaching and learning   |
| TEREZA HROUZKOVÁ, LUKÁŠ<br>RICHTEREK<br>Palacký University Olomouc, Czech<br>Republic       | Lawson classroom test of scientific reasoning at entrance university level  |
| NARENDRA DESHMUKH<br>Homi Bhabha Centre for Science Education,<br>TIFR, India               | The effective use of technology in classrooms for implementing remedial modules to overcome students' misconceptions  |
| MARKĚTA BARTOŇOVÁ, DANA<br>KRIČFALUŠI<br>Charles University, Czech Republic                 | Worksheets for integrated science   |
| RITA BIRZINA, DAGNIJA CEDERE<br>University of Latvia  | Students' readiness for Massive Open Online Courses (MOOCs) in Latvia   |
| MIHAIL CALALB<br>Tiraspol State University, Moldova   | Assumption of cognitive goals in science learning   |
| KALLE SAASTAMOINEN, ANTTI<br>RISSANEN<br>National Defence University of Finland,<br>Finland | Technology majors' methodology education – comparison of two course approaches  |
| KAREL KOLÁŘ<br>Prometheus, spol. s r. o., Czech Republic                                    | Overview of participation in correspondence competitions (of CZE and SVK) in recent years with a discussion of possible positive and negative effects of COVID-19 |
| ONDREJ VENCELEK<br>Palacký University Olomouc, Czech<br>Republic                            | How to motivate high school students to study statistics  |
| KĀRLIS GREITĀNS, DACE NAMSONE<br>University of Latvia, Latvia                               | In-service science teachers' professional development targeted to promote student conceptual understanding: A review study  |
| POLONA LEGVART, METKA KORDIGEL<br>ABERŠEK, MAJA KERNEŽA<br>University of Maribor, Slovenia  | Primary students' natural science digital literacy competence in digital learning environments  |

During the whole symposium, various country researchers shared their insights on possible further collaboration. All the symposium papers will be published as an open access Symposium Proceedings. It is gratifying that even in the conditions of a pandemic, researchers from different countries can communicate, share experiences, develop academic contacts. This is ensured by today's technical possibilities and solutions. However, this does not change the format of a direct, conventional scientific event.

Thus, the fourth symposium leaves only good impressions and valuable experience. A short report about the Symposium is available on Facebook at: <https://www.facebook.com/media/set/?vanity=ScientiaEducologica&set=a.4700337219983677>

In addition, some video records are available on Facebook:

<https://www.facebook.com/ScientiaEducologica/videos/1675575459498563>

<https://www.facebook.com/ScientiaEducologica/videos/1185072511970190>

<https://www.facebook.com/ScientiaEducologica/videos/1648088482062778>

<https://www.facebook.com/ScientiaEducologica/videos/3808862679338065>

<https://www.facebook.com/ScientiaEducologica/videos/3892220264239869>

<https://www.facebook.com/ScientiaEducologica/videos/132463888987769>

<https://www.facebook.com/ScientiaEducologica/videos/865080267415137>

Although the quarantine conditions complicated the usual symposium, the remote event was a great success. It is expected that the fifth symposium will take place in Šiauliai in June 2023. A detailed information is given in the symposium website: <http://balticste.com>.

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**Vincentas Lamanaukas**

PhD, Professor & Chief Researcher, Vilnius University Šiauliai Academy, P. Višinskio Street 25-125, LT-76351 Šiauliai, Lithuania.

E-mail: [vincentas.lamanaukas@sa.vu.lt](mailto:vincentas.lamanaukas@sa.vu.lt)

ORCID: <https://orcid.org/0000-0002-4130-7899>