Science and society in education

Promoting Responsible Research and Innovation through Science Education

Final conference of the EU PARRISE project

20 August 2017

Dublin City University, Dublin, Ireland

This project has received funding from the European Union’s Seventh Framework Programme for research, technological development and demonstration under grant agreement no. 612438.
Table of contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welcome</td>
<td>3</td>
</tr>
<tr>
<td>Where did we all come from?</td>
<td>4</td>
</tr>
<tr>
<td>What is PARRISE?</td>
<td>5</td>
</tr>
<tr>
<td>SSIBL figures</td>
<td>6</td>
</tr>
<tr>
<td>Program Final Conference: overview</td>
<td>8</td>
</tr>
<tr>
<td>Plenary panels, biographies</td>
<td>10</td>
</tr>
<tr>
<td>Parallel program: overview</td>
<td>13</td>
</tr>
<tr>
<td>Poster sessions</td>
<td>16</td>
</tr>
<tr>
<td>PARRISE related activities during ESERA 2017</td>
<td>18</td>
</tr>
<tr>
<td>PARRISE work packages</td>
<td>20</td>
</tr>
<tr>
<td>PARRISE partners</td>
<td>21</td>
</tr>
</tbody>
</table>
Welcome

Bringing science and society to the science classroom, that was the challenge of the PARRISE project partners, when we kicked off almost 4 years ago. The 18 partners from 11 countries, speaking 11 languages, embarked on a long journey. The aim was to integrate responsible research and innovation in teacher professional development for primary to upper secondary education. For this purpose, a new didactic approach has been developed: ‘Socio-Scientific Inquiry-Based Learning’ (SSIBL). This approach has been tested by the partners in their teacher training programs during two consecutive years. After each round, we improved our SSIBL approach.

At our conference we will discuss the outcomes of the project, show you various flavours of SSIBL and we will finish with looking ahead: how can we assure that the PARRISE project outcomes and those of related EU-projects can live on?

We thank all our partners for their hard work, ideas and initiatives and we thank the European Commission for funding our project.

We wish you a pleasant and informative day!

Christine Knippels, Frans van Dam

PARRISE coordinators
Where did we all come from?

This figure displays the countries which are represented by either the PARRISE team or the guests of today (note: Qatar and Singapore are difficult to see, but people from these countries are present!).
What is PARRISE?

PARRISE – Promoting Attainment of Responsible Research and Innovation in Science Education – shares and improves good practices of professional development of science teachers for primary and secondary teachers across Europe. These good practices integrate inquiry-based science education (IBSE), learning based on socio-scientific issues and citizenship education. This integrated approach is called Socio-Scientific Inquiry-Based Learning (SSIBL). The SSIBL approach introduces the challenges of Responsible Research and Innovation in education.

The overarching aim of the PARRISE project is to collect and share existing good practices across Europe. In addition, the project develops learning tools, materials and professional development courses for science teachers based on the SSIBL approach. PARRISE builds on recently developed IBSE insights and fosters implementation of SSIBL in educational practice.

The PARRISE project started on 1 January 2014 and will end on 31 December 2017. The project is led by the Freudenthal Institute, Utrecht University, Utrecht, The Netherlands.

www.parrise.eu

What is Socio-Scientific Inquiry-Based Learning?

Socio-Scientific Inquiry-Based Learning (SSIBL) draws together three approaches, called ‘pillars’, common in schools but often independently pursued – Inquiry Based Science Education (IBSE), Socio-Scientific Issues (SSI) and Citizenship Education (CE) – within the umbrella of Responsible Research and Innovation (RRI) which aims at bringing together various stakeholders (consumers, interest groups, scientists, policy-makers, business) to bring realistic, balanced, just and ethically-based outcomes to the innovation process covering the entire R&D process from its inception to distribution of social goods. SSIBL operationalises this aim within school education broadly, and science education more specifically.

SSIBL operationalises RRI in the context of education. It is learning through asking authentic questions about controversial issues arising from the impacts of science and technology in society. These questions are open-ended, involve participation by concerned parties, and are aimed at solutions which help to enact change. The SSIBL approach has three aims:

1. Encouraging young people to participate in research and innovation issues which are influenced by science and technology;
2. Promoting interest in science, mathematics and technology so young people become scientific researchers;
3. Supporting young people in acting as knowledgeable social agents through inquiry informing responsible research and innovation.

For more information and examples of SSIBL in teacher professional development and the classroom, please visit our website: www.parrise.eu/our-approach. During the Fall of 2017, a growing number of good practices of Teacher Professional Development (TPD) programs can be found here.
SSIBL figures

The following figure is taken from PARRISE deliverable 1.4\(^1\). It displays the elements of SSIBL and their relation to each other.

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**RRI** – Responsible research and innovation  
**SSI** – Socio-scientific issues  
**CE** – Citizenship education  
**IBSE** – Inquiry-based science education

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\(^1\) Levinson, R. & PARRISE-Consortium (2017). *Adapted framework after trials by WP 2-4 in round 2, D1.4*  
PARRISE, funded by the European Commission under the 7th Framework Programme, Utrecht University, The Netherlands / University College London- Institute of Education, UK.
A simplified figure of the SSiBL-approach, showing its three main characteristics.

Authentic questions
(from Socio-scientific issues)

Enaction
(via Inquiry Based Learning)

Action

Personal  Social  Content
Program Final Conference: overview

Plenary session
Room: HG 23

10.30-10.45 Opening
Christine Knippels, PARRISE coordinator & Utrecht University, The Netherlands
Introduction of conference, short discussion of PARRISE results, what to expect of the day.

10.45-11.00 Brief introductory questions
- Shu-Nu Chang Rundgren, PARRISE & Stockholm University, Sweden (primary education)
- Marcus Grace, PARRISE & Southampton University, UK (lower secondary education)
- Anat Yarden, PARRISE & Weizmann Institute of Science, Israel (upper secondary education)

11.00-12.00 Plenary panel session 1
Socio-Scientific Inquiry-Based Learning and Responsible Research and Innovation
Moderated by Elena Kyza, PARRISE & Cyprus University of Technology

Panel members:
- Russell Tytler, Deakin University, Australia
- Ralph Levinson, PARRISE & University College London-IOE, UK
- Per-Edvin Persson, Finland
- René von Schomberg, European Commission, Belgium

12.00-13.30 two-course lunch
Venue lunch: restaurant (5’ walk from nursing building)

13.30 – 16.00 parallel sessions
Coffee / tea / water will be served in the corridor adjacent to break-out rooms

<table>
<thead>
<tr>
<th>ROOM HG 18</th>
<th>ROOM HG 19</th>
<th>ROOM HG 10</th>
<th>ROOM HG 17</th>
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</thead>
<tbody>
<tr>
<td>50 min</td>
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<td>Workshop 4</td>
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<tr>
<td>13.30-14.20</td>
<td>Workshop 1</td>
<td>Workshop 3</td>
<td>‘Climate schools and climate regions’</td>
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<tr>
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<td>(carrousel)</td>
<td>Workshop 2</td>
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<td>‘Raising authentic questions’</td>
<td>(carrousel)</td>
<td>‘Arguments in motion’</td>
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<td>‘Mapping controversies’</td>
<td>Lecture (25’)</td>
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<td>‘Effective TPD culture’</td>
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<td>14.20-14.30</td>
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<td>Break</td>
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<td>14.30-15.10</td>
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<td>15.10-16.00</td>
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<td>Workshop 2</td>
<td>Workshop 3</td>
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<td>(carrousel)</td>
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<td>‘Effective TPD culture’</td>
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</table>
16.00-16.30 Break – coffee & tea

16.30-17.30 Plenary panel session 2
**The future of Responsible Research and Innovation in education**
Room: HG 23
Moderated by Christine Knippels, PARRISE coordinator & Utrecht University, The Netherlands

Panel members:
- Peter Gray, Norwegian University of Science and Technology, Norway
- Doris Jorde, University of Oslo, Norway
- Pedro Reis, University of Lisbon, Portugal
- Maria Karamitrou, European Commission, Belgium
- Chrystalla Koukouma, Ministry of Education and Culture, Cyprus

17.30-17.40 Concluding remarks
Christine Knippels, PARRISE coordinator

Drinks
Plenary panels, biographies

Introductory panel

**Shu-Nu Chang Rundgren** coordinates PARRISE work package 2, ‘Teacher Professional Development in SSIBL - Primary Education’. She is professor of didactics and science education at Stockholm University, Sweden.

**Marcus Grace** coordinates PARRISE work package 3, ‘Teacher Professional Development in SSIBL – Lower Secondary Education’. He is professor of science education and head of the Education School at Southampton University, UK.

**Anat Yarden** coordinates PARRISE work package 4, ‘Teacher Professional Development in SSIBL – Upper Secondary Education’. She is a professor of science teaching, head of the Department and head of the Life Sciences group at the Weizmann Institute of Science, Israel.

Panel 1 Socio-Scientific Inquiry-based Learning and Responsible Research and Innovation

Moderator: **Elena Kyza**, PARRISE work package 6 (Dissemination) leader, associate professor in information society, Cyprus University of Technology, Cyprus

**Russell Tytler** is Alfred Deakin Professor and Chair in Science Education at Deakin University. He has researched and written extensively on student learning and reasoning in science. His interest in the role of representation in reasoning and learning in science extends to pedagogy and teacher and school change. He researches and writes on student engagement with science and mathematics, socio-scientific issues, school-community partnerships, and STEM curriculum policy.

**Ralph Levinson** is a Reader in Education at the Institute of Education University of London. He is also programme director of the MA in Science Education, and he teaches on the MA and PGCE programmes, as well as CPD courses. He also supervises doctoral students. His main research interests are in socio-scientific issues and scientific literacy, science and social justice, science education and creativity, chemistry education and pedagogy in science. Dr. Levinson has led research projects for leading organisations such as The World Bank, The Wellcome Trust and the British Academy. He is currently engaged on two EU projects, including PARRISE.

Professor **Per-Edvin Persson** is nowadays a free consultant advising science centres and museums e.g. on core crystallisation, strategic morphing and institutional evaluations. He was the Director of Heureka, the Finnish Science Centre in 1991-2013 and during his leadership the centre achieved an international reputation, circulating its exhibitions to 25 countries in four continents and reaching an accumulated attendance exceeding 25 million. He was President of the international branch organisation Association of Science-Technology Centers (ASTC) in 2004-2005 and of the European science centre network ECSITE in 1997-1998 and is now Honorary Fellow of both organisations. His special interest regarding science centres has been about their impact, on which he has published several papers.
René von Schomberg is a science and technologies studies specialist and a philosopher. He is an author/(co-editor) of 14 books. He holds PhDs from the University of Twente, the Netherlands (Science and Technology Studies) and J.W.Goethe University in Frankfurt am Main, Germany (Philosophy). He has been a European Union Fellow at George Mason University, USA in 2007 and has been with the European Commission since 1998.

Panel 2 - The future of Responsible Research and Innovation in education

Moderator: Christine Knipps, PARRISE coordinator, assistant professor in biology education, Utrecht University, The Netherlands

Peter Gray is European Projects adviser for the Department of Teacher Education (PLU) at the Norwegian University of Science and Technology (NTNU) in Trondheim, Norway. He completed his Ph.D. at the University of Stirling, where he also worked on the Early Professional Learning project, funded by the Teaching and Learning Research Programme (TLRP) as well as several EU-funded projects. He started working with NTNU in 2007 and was proposal writer and subsequently project manager for S-TEAM (Science-Teacher Education Advanced Methods). Since 2012, he has worked on a significant number of European collaborative projects and proposals. Currently, his research interests include responsible governance in research, the theory-practice gap in teacher education and the theory and practice of learning spaces. He is an expert evaluator for the European Commission in the fields of RRI, STEM education and gender.

Doris Jorde is professor in science education at the University of Oslo in Norway and leader of the Centre for Professional Learning in Teacher Education (ProTed). She previously was the director of the Norwegian center for Science Education, University of Oslo. Doris Jorde has her PhD in Science Education from the University of California, Berkeley. She has been working at the University of Oslo since 1984 as a professor in Science Education. Her research area has included classroom studies of science teaching and learning as well as the use of ICT in science. She has recently served as the vice rector at UiO, with responsibilities for studies and internationalization. She served on the high-level group on science education for the EU, working with the "Science Education NOW report. She has worked with many different EU projects, including Mind the Gap, Steam, Mascil, Assist-me and Ark of Inquiry.

Pedro Reis is Sub-Director and professor in science education at the Instituto de Educação, Universidade de Lisboa (Portugal). In addition to his PhD in science education (U. Lisbon), he holds a BSc degree in biology (U. Lisbon). He previously was Head of the Sciences and Mathematics Education Department and Vice Rector at the Polytechnic Institute of Santarém (Portugal). His area of research included classroom studies of science teaching and learning and ICT integration in science education. He has been involved in research, teacher training and curriculum development projects in Europe, Africa and Latin America (supported by the European Commission, the World Bank, the Calouste Gulbenkian Foundation and several Governments).

Maria Karamitrou is part of the ‘Mainstreaming Responsible Research and Innovation in Horizon 2020 and the European Research Area’ sector in the Unit RTD-B7 ‘Science with and for Society’ of DG
Research and Innovation (European Commission), in the context of Horizon 2020 (the EU Framework Programme for Research and Innovation – 2014-2020) and the European Research Area. Initially trained as an economist (MBA), Maria Karamitrou has held various managerial positions in the financial and pharmaceutical industry prior to joining the European Commission (DG Research and Innovation) in 2012. She has since been involved with EU-funded projects in the area of Science Education.

Chrystalla Koukouma is an Education inspector which involves inspection, evaluation and support of teachers and schools for quality assurance. Currently coordinating chemistry teacher training, chemistry curriculum development, chemistry teachers’ entrance examination and students’ university entrance examinations. Member of the Working Group Schools of the Directorate General of the Commission for contributing to Europe 2020.
Parallel program: overview

Workshop 1 – Interactive strategies for raising authentic questions
Location: room HG 18

Organiser: Ruth Amos, UCL-IOE, UK

This workshop has a ‘carrousel format’; participants select and visit an activity in the room and then move to another activity, etc.

Interactive activities:
1. Using artefacts & objects to stimulate authentic SSIBL questions
   *Ruth Amos UCL-IOE, London, UK*
   In exploring ways to stimulate students asking their own meaningful questions in SSIBL, we have developed an approach in which objects and artefacts which tell a story of the issues surrounding our use of material resources are revealed to students using the ‘mystery box’ strategy. Students raise questions about their origins and how they are connected ahead of carrying out research into potential SSIs.

2. Developing suitable research questions that can be used in the classroom
   *Sanne Dekker, Radboud University Nijmegen, The Netherlands*
   Students’ authentic questions are very diverse and not all of them are suitable for research. In this part of the workshop, we show participants how you can build on the authentic questions of your students. We introduce a tool, the ‘question machine’, that can be used in the classroom and helps teachers and students to discuss which questions can be researched by the students themselves.

3. A visit to the supermarket as powerful trigger of authentic SSIBL questions around the issue of “genetically modified food”
   *Christine Heidinger, University of Vienna, Vienna, Austria*
   The participants in our workshop will experience how a simple visit to a supermarket – symbolized by the presentation of food products on the counters which are labelled as GMO-free – can stimulate a variety of questions around the issue of “genetically modified food”. The participants develop their own questions and get to know which questions students, pre-service teachers and in-service teachers in our SSIBL-T PD courses developed during this activity.

Workshop 2 - Interactive strategies for mapping controversies
Location: room HG 19

Organiser: Roald Verhoeff, Utrecht University, The Netherlands

This workshop has a ‘carrousel format’; participants select and visit an activity in the room and then move to another activity, etc.
Interactive activities:

1. Moral dilemmas in the biology classroom  
   Roald Verhoeff, Utrecht University, The Netherlands  
   We will connect different viewpoints (e.g. ethical, medical, personal) about a three-parent baby controversy (prevention of mitochondrial diseases) from different actors, and discuss potential tensions between these different viewpoints. How these viewpoints could be further explored in classroom practice will also be explored.

2. Enhancing SSIBL in classroom though a Post-it activity  
   Shu-Nu Chang Rundgren, Stockholm University, Sweden  
   Through a post-it activity, participants will experience the SSIBL 3-step model for enhancing school students’ socio-scientific inquiry and argumentation skills.

3. Mapping an agro-ecological controversy: didactical opportunities and reflexive perspectives  
   Grégoire Molinatti, University of Montpellier & Lucas Nédélec, Jean Simonneaux & Laurence Simonneaux ENSFEA, Toulouse, France  
   We will introduce the concept in connection with the “démarche d’enquête”, using examples from research in the ‘sociology of science’ field to education and look at how to make the stakeholders’ main arguments and links between them explicit. Participants will:
   - collectively choose a controversy around the topic "agriculture and ecology" to map a specific controversy (e.g. pesticides and bees, animal welfare)
   - discuss the didactical opportunities and limits of the tool
   - lead a reflexive discussion on how to use mapping to consider the role of school / education / educators.

4. Discussing organ transplantation in the classroom  
   Rachel Cohen, Weizmann Institute of Science, Israel  
   Based on the Weizmann Institute’s TPD workshop, a controversy map about organ transplantation will be presented. This is a subject with different viewpoints and actors, concerning ethical, medical and personal issues. These perspectives will then be examined in a debating activity in the classroom.

Workshop 3 (workshop and lecture)  
Location: room HG 10

Workshop: Arguments in motion  
Jan van Baren-Nawrocka, Radboud University Nijmegen, The Netherlands  
In this workshop, participants will be involved in the classroom activity ‘Arguments in motion’. The goal of the activity is to help students explore different viewpoints and arguments about a given statement. Participants will divide over four quadrants (pro vs contra and rational arguments vs feelings) and change to take different positions on the statement. In this way, participants will experience how teachers can help students to adopt and review their position.

Lecture: To organize an effective TPD culture - workshop for Head teachers, education managers and policy stakeholders  
Christina Ottander and Katarina Ottander, Umeå University, Sweden  
Previous research on teachers’ responses to change in the curriculum or to new innovations has shown that they do not easily make changes in practice. For teachers to commit to new goals and
strategies, it is important that a TPD satisfies three basic needs for: competence, relatedness, and autonomy. For Head teachers and education managers, it is important to organize a TPD that is cost-effective. This workshop will present a model for TPD that mixes online material with face-to-face meetings where teachers discuss, co-plan and collectively reflect upon experiences from their changed practice. The model focuses on the processes by which teachers advance their skills (competence), make their plans relevant to their contexts (relatedness) and exercise ownership (autonomy) in the process of change. Hence, it is an effective professional development model designed to address teachers’ views of student learning goals and needs. The model can be implemented with minimal interference in teachers’ time schedules.

**Workshop 4 - Collaboration with climate schools and climate regions within pre- and in-service teacher education.**  
Room: HG 17

*Diana Radmann, Bernhard Schmölzer and Franz Rauch, University of Klagenfurt, Austria*

The workshop will focus on partnerships and collaborations between universities, schools and communities in the context of climate regions in Austria. These regions are supported by public institutions (like the Federal Ministry and Regional/Local Governments). In particular, experiences (based upon research data) which involve pre-service teachers in community based projects at schools in the Austrian Federal State of Carinthia will be presented and discussed. The workshop will offer an exchange of experiences and mutual learning about partnerships and co-operation in teacher education.
**Poster session**

During the poster session, the following authors will be present with their posters.

<table>
<thead>
<tr>
<th>Title</th>
<th>Author(s)</th>
<th>Role in PARRISE</th>
<th>Country</th>
</tr>
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<tbody>
<tr>
<td>Laboratory work and socio-scientific issues about water quality: is it possible to cover both scientific skills and citizenship education?</td>
<td>Ammie Berglund</td>
<td>Teacher</td>
<td>Sweden</td>
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<tr>
<td>SSIBL about sleeping habits – Scientific surveys about health inspired of media and news</td>
<td>Anna Lodén</td>
<td>Teacher</td>
<td>Sweden</td>
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<td>Vaccination: Do or don’t!</td>
<td>Cecilia Reardon</td>
<td>Teacher</td>
<td>Sweden</td>
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<td>Nanotechnology – Invest or not? Student argumentation on how to relate to future research.</td>
<td>Charlotte Lagerholm</td>
<td>Teacher</td>
<td>Sweden</td>
</tr>
<tr>
<td>PARRISE: Innovation in science teacher education. Secondary school SSIBL activities developed in Portugal during Teachers’ Professional Development (TPD) courses</td>
<td>Cristina Dias</td>
<td>Partner</td>
<td>Portugal</td>
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<tr>
<td>This is next: Light bulb investigation</td>
<td>Edit Szombati</td>
<td>Teacher</td>
<td>Hungary</td>
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<td>Plastic, biodegradable or fabric bag: Which one would you choose to carry your groceries?</td>
<td>Efi Dariou</td>
<td>Teacher</td>
<td>Cyprus</td>
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<td>Bringing an end to global hunger: Incorporating a humanistic perspective into science education</td>
<td>Eran Zafrani</td>
<td>MSc student</td>
<td>Israel</td>
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<td>Fostering Environmental Awareness: Montessori Pupils Investigate the Effects of Mass Tourism in the Dolomites</td>
<td>Guido Caracristi</td>
<td>Teacher</td>
<td>England</td>
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<td>Habits and healthy lifestyles: A SSIBL-approach with interdisciplinary studies and ICT</td>
<td>Helen Forsgren</td>
<td>Teacher</td>
<td>Sweden</td>
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<td>Renewable sources in use</td>
<td>Ildikó Takáts Lucz</td>
<td>Teacher</td>
<td>Hungary</td>
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<td>Can museum artefacts support beginning science teachers to ask socio-scientific questions?</td>
<td>Jasper Green</td>
<td>Teacher</td>
<td>England</td>
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<td>How to control your cholesterol: through statins or naturally (through exercise and nutrition)?</td>
<td>Maria Miti</td>
<td>Teacher</td>
<td>Cyprus</td>
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<td>Kidney Transplantation: a natural or an artificial kidney?</td>
<td>Maria Miti</td>
<td>Teacher</td>
<td>Cyprus</td>
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<td>Mining for justice: The truth behind mobile phone technology</td>
<td>Paul Davies</td>
<td>Teacher</td>
<td>England</td>
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<tr>
<td>Antecedence and presence of SSIBL in Hungary</td>
<td>Peter Tasnadi</td>
<td>Professor</td>
<td>Hungary</td>
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<tr>
<td>Genetically modified anopheles parasites</td>
<td>Sara Lilja</td>
<td>Teacher</td>
<td>Sweden</td>
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<td>Plastic food packaging: &quot;With nanomaterials or without?</td>
<td>Tasoula Moullotou</td>
<td>Teacher</td>
<td>Cyprus</td>
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<td>Adoption: Give a child the most wonderful gift - A family</td>
<td>William Berthagen &amp; Bobica Willert-Andersson</td>
<td>Teachers</td>
<td>Sweden</td>
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<td>Snuffing in Sweden</td>
<td>William Berthagen &amp; Bobica Willert-Andersson</td>
<td>Teachers</td>
<td>Sweden</td>
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PARRISE related activities during ESERA 2017

Want to hear more? There are quite a few PARRISE-related activities during ESERA 2017.

Symposium

Responsible Research and Innovation (RRI) in the science classroom: Students’ learning outcomes

Organizer: Anat Yarden, Weizmann Institute of Science, Israel

Discussant: Professor Isabel Martins, Universidade Federal do Rio de Janeiro, Brazil

- Students’ attitudes towards RRI as a result of a lesson developed in the IRRESISTIBLE project
  Sherman Rosenfeld, Shelley Rap, Esty Zemler, Ron Blonder
  Weizmann Institute of Science, Israel

- A SSIBL project to promote high school biology students’ learning and motivation
  Cristina Dias, Maria Joao Fonseca
  University of Porto, Portugal

- High school students’ engagement in a socioscientific project: Development of identity in practice
  Eran Zafrani, Anat Yarden
  Weizmann Institute of Science, Israel

- Building students’ capacity for democratic participation and responsible innovation through science education
  Eleni Kyza¹, Yiannis Georgiou¹, Andreas Hadjichambis², Andria Agesilaou¹
  ¹Cyprus University of Technology, Cyprus, ²Cyprus Ministry of Education and Culture, Cyprus

Orals

- Teachers’ design of socio-scientific inquiry-based teaching and learning sessions
  Christina Ottander, Katarina Ottander
  Department of Science and Mathematics Education, Umeå University, Sweden

- A co-design approach to teachers’ professional development about responsible research and innovation
  Eleni Kyza¹, Andreas Hadjichambis², Yiannis Georgiou¹, Andria Agesilaou¹
  ¹Cyprus University of Technology, Cyprus, ²Cyprus Ministry of Education and Culture, Cyprus

- Pre-service teachers and socio-scientific inquiry: Opportunities and challenges
  Marie-Christine Knippels, Michiel van Harskamp, Roald Verhoeff, Paulien Postma
  Freudenthal Institute, Utrecht University, The Netherlands
• Teaching science using socio-scientific inquiry-based learning: UK pre-service teachers’ perspectives
  Andri Christodoulou¹, Ruth Amos², Marcus Grace¹, Ralph Levinson²
  ¹University of Southampton, UK; ²University College London-Institute of Education, UK

• Science and technological innovations as drivers for educational change: Teachers’ perspectives of an inquiry-based project into the unknown.
  Helen Hasslöf, Mats Lundström & Jesper Sjöström, Malmö University, Sweden

• Relations and responsibility in pre-service science teachers’ talk about nanotechnology education.
  Jesper Sjöström, Helen Hasslöf & Mats Lundström. Malmö University, Sweden (this paper is part of the SIG 4 symposium “Addressing complexity in Science/Environment/Health pedagogy”)

• Emotions, values and knowledge in students’ argumentation about farm animal welfare
  Laurence Simmoneaux, ENSFEA, EFTS, Université Toulouse, France

Posters

• Improving science teachers’ knowledge and awareness of socio-scientific inquiry-based learning
  Rachel Cohen, Anat Yarden
  Weizmann Institute of Science, Israel

• Primary school pre-service teachers’ confidence and need concerning socio-scientific inquiry-based learning
  Shu-Nu Chang Rundgren, Carl-Johan Rundgren
  Stockholm University, Sweden

• Primary teachers’ reflections-in- and on-actions concerning socio-scientific inquiry-based learning activities
  Carl-Johan Rundgren, Shu-Nu Chang Rundgren
  Stockholm University, Sweden

• Initial science teacher education through socio-scientific inquiry of climate issues involving communities and schools
  Diana Radmann¹, Franz Rauch¹, Bernhard Schmölzer²
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• PARRISE Promoting Attainment of Responsible Research and Innovation in Science Education
  Marie-Christine Knippels
  Freudenthal Institute, Utrecht University, The Netherlands
PARRISE work packages

WP-1
Ralph Levinson
The SSIBL educational framework

WP-2
Shu-Nu Chang Rundgren
Teacher Professional Development in SSIBL - Primary Education

WP-3
Marcus Grace
Teacher Professional Development in SSIBL - Lower Secondary Education

WP-4
Anat Yarden
Teacher Professional Development in SSIBL - Upper Secondary Education

WP-6
Elena Kyza
Dissemination

Christine Knippels, Frans van Dam
WP-5 Mutual Learning and Sharing
WP-7 Project Management
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