Promoting Attainment of Responsible Research & Innovation in Science Education

Newsletter

2014

DEMOCRATIC CITIZENSHIP EDUCATION IN INQUIRY-BASED LEARNING AND TEACHING

WWW.PARRISE.EU

PARRISE Kicks-off!

by Christine Knippels, Frans van Dam, PARRISE Coordinators

The EU-funded PARRISE project (Promoting Attainment of Responsible Research & Innovation in Science Education) aims at introducing the concept of Responsible Research and Innovation in primary and secondary education. It does so by combining inquiry-based learning and citizenship education with socio-scientific issues in science education. The project also aims to collect and share existing best practices across Europe and develop learning tools, materials and in/pre-service training courses for science teachers.

In PARRISE, 18 partners from 11 EU- and associated countries participate. The four-year project started in January 2014, and is funded by the EC Framework 7 Science in Society Programme. PARRISE is led by the Freudenthal Institute of Science and Mathematics Education, Utrecht University, The Netherlands.

The PARRISE project is now in full swing. Starting this fall, teachers and teachers educators across Europe will improve and develop teacher professional development modules that position inquiry-based learning in a societal context. The teachers and educators involved work within science, technology, engineering and mathematics from primary to lower and upper secondary schools, as well as in informal learning environments. In January and May the partners gathered in Utrecht and London prepared the work of the years to come.

The PARRISE approach is based on a new pedagogy framework, called SSIBL, Socio-Scientific Inquiry-Based Learning. SSIBL has been developed by the PARRISE consortium in the first half of 2014. This approach will guide teacher professional development: teachers develop their own lessons, school or informal education modules. Subsequently, best practices of teacher professional development will be exchanged across European borders.

Thus, PARRISE will contribute to a curriculum and pedagogy that enhances the capacities of young people within their daily lives. This pedagogy will empower young people in their capacity of citizens who will be able to engage in debate about the social aspects of science and technology.

In the next two years, the partners will invest in testing the SSIBL framework in teacher professional development. After two rounds of testing, the result will be a robust pedagogy framework as well as numerous ready to use modules.

We will keep you informed about our results!

Kick-off meeting (January 2014)

The first meeting of the PARRISE project took place at the Freudenthal Institute for Science and Mathematics Education (FIsme) at Utrecht University, the Netherlands, between January 30 to February 1, 2014. The PARRISE project officer, Ms. Maria Karamitrou, and all 18 consortium partners attended the meeting's activities.

Teacher Professional Development

PARRISE focuses on teacher professional development using the SSIBL framework.

The origin of PARRISE

By Christine Knippels, Frans van Dam, Universiteit Utrecht

The outlines of the PARRISE project were set in Spring 2012, when Christine Knippels, Arend Jan Waarlo and Frans van Dam of Utrecht University considered an experiment; is it possible and worthwhile to combine an inquiry-based approach in the science disciplines with social issues? And in the end: how can students and teachers benefit from this?

In 2012, the European Commission´s Seventh Framework programme invited proposals on education about the idea of *Responsible Research and Innovation*. This call was an excellent opportunity for combining inquiry-based learning with teaching about the social issues of science. The Utrecht team then explored this idea and invited experts from across Europe to join. Together, they wrote a proposal and after a successful submission in early 2013, the European Commission decided to award the project with an amount of 2,5 million euro. Finally, in January 2014, PARRISE could start.

The PARRISE project is built on the shoulders of successful international projects, such as PROFILES, Establish and Primas, projects that promote inquiry-based learning or teach about socio-scientific issues. As many of our partners take part in these projects, PARRISE is a test bed for bringing the results to the next level.

SCIENCE & SOCIETY EMPHASIS

PARRISE places great emphasis on helping students make connections between scientific knowledge, decision making and the short- and long-term impact of such actions on our world.

The PARRISE Consortium

The PARRISE consortium includes 18 partners from 11 European countries and Israel. The partner universities are:

- Universiteit Utrecht (coordinators), Netherlands
- Institute of Education, University of London, UK
- University of Southampton, UK
- Weizmann Institute of Science, Israel
- Malmoe Hoegskola, Sweden
- Karlstads Universitet, Sweden
- Umea Universitet, Sweden
- ICETA –Instituto de Ciencias e Tecnologias Agrarias e Agro-Alimentares, Portugal
- Cyprus University of Technology, Cyprus
- Universitaet Wien, Austria
- Ecole Nationale de Formation Agronomique ENFA, France
- Universite Montepellier 2 Sciences et Techniques, France
- Stichting Universiteit voor Humanistiek, Netherlands
- Radboud University Nijmegen, Netherlands
- Universidad de Jaen, Spain
- Sihtasutus Tallina Tehnika –ja Teaduskeskus, Estonia
- Alpen-Adria-Universität Klagenfurt, Austria
- Eotvos Lorand Tudomanyegyetem, Hungary

FOR MORE INFORMATION

Read about each of the partner institutions by visiting the PARRISE website at www.parrise.eu.

The PARRISE project is funded by the European Commission under grant agreement 612438

The SSIBL framework

By Ralph Levinson, Institute of Education, University of London

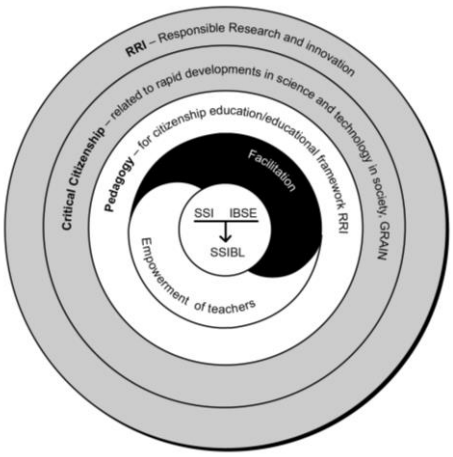
PARRISE promotes civic involvement in scientific research and innovation through activities in schools. Through teaching in schools we bring together responsible and collaborative public involvement in scientific research and innovation and an emphasis on social justice with inquiry through socio-scientific issues. We give this process the acronym **SSIBL (Socio-Scientific Inquiry Based Learning)** represented in the figure.

This is a huge challenge for a number of reasons. Inquiry through socio-scientific issues is different in nature from inquiry-based science education. The latter has some generally recognised components, e.g. using scientific procedures, making predictions, experimenting. Inquiry in SSIBL can use both social science and scientific research methods and is steeped in the reflective commitment to improve life for one's immediate community, e.g. school, or the broader community.

Examples can be inquiries into reducing fuel usage in school or information on growing vegetables in the local area. Because there is an emphasis on informal approaches to learning as well as the school curriculum this means that teachers have to find innovative methods for inter-disciplinary collaboration as well as finding ways to work beyond the school walls. It also means developing new tools for assessment which include citizenship as well as science aspects. Our framework is directed to supporting teacher education both at the pre-service and in-service levels.

In recognising the importance and innovativeness of these approaches we have incorporated a scheme for scaffolding pedagogy so that teachers can build confidence together as they acquire the relevant skills.

THE SSIBL FRAMEWORK



Responsible Research and Innovation

The SSIBL framework is an ongoing development, blending together aspects of scientific inquiry which, oftentimes, have been examined in isolation.

What's happening in PARRISE?

By Diana Radmann and Franz Rauch, Alpen-Adria-Universität Klagenfurt

The PARRISE project was shared with 400 participants at the IMST-Conference which took place between the 23th - 25th September 2014 at the Alpen-Adria-Unversität Klagenfurt.

IMST stands for "Innovations Make Schools Top". The aims of IMST are to establish a culture of IBL-based innovation and thus to strengthen the teaching of mathematics, information technology, natural sciences, technology, and related subjects (MINT) in Austrian schools.

Some information's about the IMST-Conference, which is divided in three parts:

- The first day of the Conference is dedicated to the didactics of specific subjects (biology chemistry, maths, German, etc.) and interdisciplinary exchange.
- The second day was a symposium under the motto "The school as living and as learning environment".
- During the start-up-day, school projects from the 2013-2014 school, which were supported by IMST, were presented.

ALPEN-ADRIA-UNIVERSITAT KLAGENFURT, AUSTRIA

FOR MORE INFORMATION

Visit http://www.imst.ac.at

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What's happening in PARRISE?

By Maria João Fonseca, Fernando Tavares, Susana Pereira, and Júlio Borlido-Santos, University of Porto

The II International Meeting of Casa das Ciências (the Portuguese Online Platform for Science Teachers – www.casadasciencias.org) took place at the Instituto Superior de Engenharia do Porto, from 14th to 16th July 2014, under the theme "Education and Dissemination of Science in Digital Home World of XXI Century". The event was attended by Portuguese and foreign teachers of primary, lower secondary and upper secondary education and by several Portuguese experts in various scientific domains. During the three days of the event, approximately 400 participants attended a wide range of plenary and parallel sessions, workshops and panel discussions.

The PARRISE project, its structure and main objectives were presented to about 40 teachers in an oral communication entitled "PARRISE Project - Innovation in Science Teacher Education".

In addition to the above mentioned communication, a workshop on bioinformatics – *The use of bioinformatics to promote learning about antibiotic resistance in Secondary Education*, which tackled one of the activities comprised in an exemplar considered in WP4 ("*Microbiology recipes: antibiotics à la carte*"), was also promoted. This workshop, attended by 18 participants, highlighted the educational potential of the use of bioinformatics tools in the classroom.

UNIVERSITY OF PORTO, PORTUGAL

Photos from the II International Meeting of Casa das Ciências Porto event

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What's happening in PARRISE?

By Ralph Levinson and Ruth Amos, Institute of Education, University of London

A meeting with five experienced secondary school science teachers and an educator for the Field Studies Council (FSC) was held at the Institute of Education on 3rd July to discuss the draft framework for SSIBL. After a brief presentation on the framework the group responded and developed some of their own ideas.

This is a summary of the points raised.

What they liked

- The framework makes sense!
- They liked the potential SSIBL activities and would like to create their own too.
- Students often ask 'what's the point?' when doing inquiry-based work. SSIBL provides an answer to this question.
- Students are fed up of doing 'fake' inquiries so really like the idea of a project which 'belongs' to them and results in them trying to enact change..
- The importance of linking the local to the global bigger questions can be emphasised – this is great as it's what many students can't do when they leave school.
- Has lots of potential to be used for 14 year olds before they build up to their formal GSCE exams.
- In one school, students approached the head to gain reassurance that the food used for school lunches was not factory-farmed. SSIBL would provide a helpful approach to critically underpin these types of interactions.

Some perceived challenges

- Available time for extended activity a problem.
- Important to address an issue which is 'contemporary'.
- Students need resilience to see inquiry through to action.
- Some students aren't equipped to ask questions and solve problems – where do they 'get the problem from'?
- Where will this fit in the curriculum?
- Students will 'react against' some issues – we know we should recycle but it's boring to be told it again and again and actually we already do it, but what difference does it really make?
- Colleagues in school may be reluctant to try new ideas.
- School students have very much a sense of there being a 'right answer' in science. Teachers will need support in addressing this mindset

Pre-service teacher education

Ruth Amos and Ralph Levinson have planned some trial activities for pre-service science teachers in secondary schools in the 2014-15 cohort. They will gather information on what teachers understand by inquiry and then later in the course devise and trial some small SSIBL activities in their placement schools.

PARRISE External Advisory Board

The PARRISE consortium benefits from the input of five internationally known experts on the topics of

- Professor Isabel Martins, Universidade Federal do Rio de Janeiro, Brazil (chair)
- Professor Russell Tytler, Deakin University, Australia
- Professor Doris Jorde, Director, Norwegian Center for Science Education, University of Oslo, Norway
- Professor Hannu Salmi, University of Helsinki, Finland
- Dr. Pedro Reis, Universidad de Lisboa, Instituto de Educacao, Portugal

The External Advisory Board attended the 2nd consortium meeting of PARRISE in London and provided feedback on ongoing project actions.

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Newsletter

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The next PARRISE newsletter will be out in December 2014.

PARRISE newsletter editor: Cyprus University of Technology

Visit our web page to find out more the PARRISE project and its partners @www.parrise.eu

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SEVENTH FRAMEWORK PROGRAMME

SiS-2013-2.2.1-1

Grant agreement: 612438