



Public Engagement Innovations for Horizon 2020

Educating on science-society relations and public engagement



Written and reviewed by:
Luciano d'Andrea
Giovanni Caiati

27/11/2015



This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no [611826]

The PE2020 Project

Year of implementation: February 2014 – January 2017

Web: <http://www.PE2020.eu>

Project consortium:



UNIVERSITY OF HELSINKI

UH

University of Helsinki, Finland



VU IBS

Vilnius University International Business School, Lithuania



LSC

Laboratorio di Scienze della Cittadinanza, Italy



University of Lapland, Finland

Contact information: Luciano d'Andrea

Grant agreement no: 611826

Project acronym: PE2020

Project full title: Public Engagement Innovations for Horizon 2020

Project funding scheme: Seventh Framework Programme, Collaborative Project, Small or medium scale focused research project, SiS.2013.1.1.1-6: Tools and instruments for a better societal engagement in "Horizon 2020"

Project co-ordinator: Mikko Rask, Consumer Society Research Centre at the University of Helsinki

E-mail: mikko.rask@helsinki.fi

Project website: www.PE2020.eu



This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no [611826]

The PE2020 project

PE2020 will identify, analyse and refine innovative public engagement (PE) tools and instruments for dynamic governance in the field of Science in Society (SiS). PE2020 analyses the PE tools and instruments through a systemic and contextual perspective, and contributes to the potential and transferability of new governance innovations. PE2020 will create new knowledge of the status quo and trends in the field of public engagement in science, refine innovative PE tools and instruments and propose new ones.

The project will do this by (1) further developing a conceptual model that provides a systemic perspective of the dynamics of public and stakeholder engagement; (2) creating an updated inventory of current and prospective European PE innovations; (3) context-tailoring and piloting best practice PE processes related to the grand challenges of the Horizon 2020 and (4) developing an accessible net-based PE design toolkit that helps identify, evaluate and successfully transfer innovative PE practices among European countries.

New tools and instruments for public and societal engagement are necessary to boost the quality, capacity and legitimacy of European STI governance and to solve the looming problems related to the grand societal challenges of the Horizon 2020. In order to ensure practical relevance, the project will work through intensive co-operation between researchers and science policy actors. PE2020 will expand the capacity of European and national science policy actors to integrate better societal engagement by providing an easy access to new PE tools and instruments, to be included in the requirements and implementation of research in Horizon 2020 and beyond.

Acknowledgements

The authors and the whole project consortium gratefully acknowledge the financial and intellectual support of this work provided by the European Union's Seventh Framework Programme for research, technological development and demonstration. This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no [611826].

Moreover, the authors thank Agorà Scienza, with special reference to Enrico Predazzi (President), Andrea De Bortoli (Director), Isabella Susa (Scientific Coordinator) and Selena Agnella (Project Manager), for the support given to the team in designing and implementing the pilot project.

Legal Notice

The sole responsibility for the content of this publication lies with the author/s. It does not necessarily reflect the opinion of the European Union. The European Commission is not responsible for any use that may be made of the information contained therein.



Contents

1. Introduction.....	1
2. Methods	2
2.1. Objectives of the pilot “Educating on science-society relations and public engagement”	2
2.2. Method of the pilot project	2
2.3. Context of the pilot	2
2.2.1. The partner	2
2.2.2. The initiative: the Scientific Summer Academy (SSA).....	3
2.2.3. Preparation and planning	3
2.4. Realisation of the pilot.....	4
2.3.1. Sensitization activities	4
2.3.2. Context-tailoring workshop	4
2.3.3. Guidelines	4
2.3.4. Posters	5
2.3.5. Deliberative meeting	6
3. Results of the pilot	8
3.1. Impact.....	8
3.2. Feedback received.....	9
3.3. Advantages.....	9
3.4. Obstacles.....	9
4. Grand challenges addressed.....	11



1. Introduction

The pilot project "Educating on science-society relations and public engagement" was conceived for testing the possibility to use PE mechanisms to raise the awareness of and transferring knowledge to young students on the complex and changing relationships existing between science and society.

The opportunity to make such a test was given by the Scientific Summer School (SSA), an one-week long informal education initiative targeting high school students that Agorà Scienza organizes each year in Turin with the participation of researchers from different universities.

The rationale of the pilot project was that of directly involving the researchers concerned with the SSA in a common reflection on their own experiences in science communication and science engagement and their views of science-society (S&S) relationships in order to get their suggestions on how raising the awareness and increasing the knowledge of students on science-society relationships and to put such suggestions into practice, also adopting PE mechanisms, in the framework of the 2015 edition of the SSA.

2. Methods

2.1. Objectives of the pilot “Educating on science-society relations and public engagement”

The pilot project pursued the following objectives:

- To test how to put science-society relations at the centre of training and education initiatives also via PE-based initiatives;
- To open a space for dialogue for the researchers involved in the SSA on PE and S&S relationships, encouraging exchanges of ideas and good practices;
- To enable researchers involved in the Summer Science Academy to contribute through suggestions, comments and proposals in the planning of the 2015 edition;
- to stably insert PE methods and S&S-related issues as key features of the future editions of SSA;
- to allow the students participating in the SSA to live a direct PE experience.

2.2. Method of the pilot project

The pilot project included different PE mechanisms, the most relevant of which are a consultation workshop (the Context-tailoring Workshop, involving the researchers) and a public deliberation workshop (the Deliberative Meeting, involving the students), this latter similar to the Mock Trial, a technique used in various PE initiatives. Different other involvement tools have been also applied, including the development of guidelines and the organization of a poster session.

To a certain extent, the pilot pursued educational objectives applying a hermeneutical approach, characterized by the following steps:

- providing information and categories allowing the involved researchers and, through them, the students to deal with the key questions pertaining to science-society relations (main tools: lectures and laboratory experience);
- developing, through the interaction and consultation, a shared view about the questions at stake (main tools: the posters and the poster session);
- asking participants to “take a position” towards this issue, in terms of, e.g., starting or not a scientific career, supporting or not scientific research or adopting a positive/negative personal attitude towards science (main tool: final deliberative meeting).

2.3. Context of the pilot

2.2.1. The partner

The pilot project was carried out in partnership with the Interuniversity Centre “Agora Scienza” of Turin (Italy). Agora Scienza was founded in 2006 as a centre of the University of Turin and in 2009 it turned into an Interuniversity Centre managed by four universities based in the Piedmont Region. The agora (“square”) in the ancient Greek “polis” was the meeting place, a crossroads of cultures and professions. This idea inspired the activity of Agora Scienza is that of being a centre open to multidisciplinary, innovation and internationality.

The Centre aims to be a meeting point and a laboratory in different domains:

- dissemination of scientific culture;

- dialogue between science and society;
- training of researchers to communication of science;
- innovation in science education;
- research on the issues of Science in Society;
- development of the scientific citizenship.

2.2.2. The initiative: the Scientific Summer Academy (SSA)

As said above, the pilot project was embedded in the Scientific Summer Academy (SSA).

The Scientific Summer Academy (SSA) is an action of science education targeting students of the third and fourth year of high school, carried out annually by Agora Science with the support of the Fondazione Giovanni Agnelli and in collaboration with the Regional Education Office for Piedmont. The initiative gives the possibility for some of the best high school students from Piedmont to attend dedicated lessons and to participate in a short internship in one of the research centres cooperating with the initiative. The SSA has been active since 2010 and in the five previous editions involved a total of 234 students (between 40 and 50 annually).

The 2015 SSA edition involved 50 high school students, who participated for a week in laboratory activities and attended lectures on different scientific issues. Some 15 laboratories working in different research fields (like geology, chemistry, astrophysics, nanotechnology, genetics, environmental engineering and robotics) were concerned. Overall around 40 researchers, professors and PhD students were involved. The SSA programme included lectures in the morning and laboratory work in the afternoon, through which students develop their own path of research. At the end of SSA, the students (organized in small groups) have been invited to develop a poster on their research experiences and to present it in a poster session.

Because of these features, the SSA can be considered in itself a public engagement initiative, directly oriented to attract high school students to the issues of science and technology, but, indirectly, also aimed at creating a link between schools and university.

2.2.3. Preparation and planning

The choice to develop the pilot project in connection with an education initiative emerged from some preliminary contacts with Agora Scienza in February and March 2015. During a meeting held in Turin, on March 2, 2015, the key elements of the pilot projects were identified. In particular, three key points were agreed upon.

- Science-society relationships. The first point was the importance to focus the SSA 2015, not only on the contents of science but on science-society relationships, providing the young participants with information on the social context within which science is produced today.
- The involvement of researchers. The second point was the need to involve the researchers cooperating with the SSA, convening them to a common reflection on science-society relationships and on how to better include this issue in the SSA 2015. While the students participating in the previous editions had assessed its experience in SSA through a questionnaire, the researchers involved have never had the opportunity to express their own point of view on the SSA, to provide suggestions and, more generally, to collaborate, not only in the realization of lectures and laboratory activity, but also in designing the Summer School and in evaluating its results.

- The use of public engagement. The third point was the need to involve the students in a PE experience, testing its potential for educational purposes.

A formal agreement between LSC and Agora Scienza was then signed on March 20, 2015.

2.4. Realisation of the pilot

The pilot project included the following activities:

- A sensitization activity addressed to the researchers involved in the SSA on S&S relationships;
- The organization of a workshop (the Context-tailoring Workshop) aimed at understanding how to include PE and S&S-related issues in the context of SSA;
- The production of a set of recommendations aimed at favouring the inclusion of S&S-related issues in the laboratory activities and in the lectures;
- The development of posters and the organization of a poster session;
- The organization of a PE initiative (the Deliberative Meeting) focused on S&S.

2.3.1. Sensitization activities

Following the logic exposed above, the first step of the pilot project was that of attracting the attention of the researchers involved with the SSA on how to include S&S-related issues and how to develop a PE initiative in the SSA 2015.

To this aim, a note on the pilot project was developed and sent to the around 40 people involved in the SSA as lecturers, teachers or technicians, inviting them to participate in it.

2.3.2. Context-tailoring workshop

After the sensitization activities, a context-tailoring workshop has been organised with the researchers.

The workshop was prepared through a discussion outline sent to all the potential participants before the meeting. In the discussion outline, a set of questions were proposed, pertaining to the experiences made in the fields of science communication and public engagement in S&T. Moreover, in the Outline, an invitation was made to the participants to discuss about how integrating S&S-related issues and PE mechanisms in the SSA.

The workshop was held on May 6th and involved 15 researchers and SSA promoters.

2.3.3. Guidelines

On the basis of the Context-tailoring Workshop, a set of guidelines was developed for supporting the researchers concerned with the SSA to focus their contribution on S&S in the context of the lectures and the laboratory activities.

The Guidelines included 20 recommendations of which ten of substantive nature and ten of methodological nature.

The ten recommendations of substantive nature were:

- Introducing the students to the relationships between fundamental and applied research;
- Questioning the stereotypes on research, researchers and technology;
- Questioning the wrong and partial representations of scientific issues;
- Stressing the contribution given by the research to the solution of societal problems;
- Underlining the interdisciplinary nature of contemporary scientific research;
- Explaining the research process in its institutional, economic, organisational and substantive aspects;
- Highlighting the many kinds of actors involved in the research process;
- Presenting examples of public dialogue and social/institutional negotiation;
- Favouring a dialogue on the controversial issues connected to the researchers' disciplinary field;
- Introducing students to citizen science.

The ten methodological recommendations were:

- Introducing S&S-related issues leveraging on the activities already planned for the SSA, not developing specific activities;
- Involving young PhD students and young researchers in laboratory activities, who are likely abler than older researchers to interact with high school students;
- Leveraging on the students' curiosity for showing them the practical aspects of the researchers' life (salaries, careers, daily activities, etc.);
- Showing the social and economic implications of science starting from the technologies which science contributed to develop;
- Including in the posters prepared by the students a section devoted to S&S relationships;
- Using the downtime in the laboratory activities to show how laboratory is practically organised;
- Showing experiences where research programmes have been successfully integrated in the society;
- Showing laboratories not only as a place of scientific tests but also as a working environment;
- Describing the profiles of the different professionals and researchers working in the lab;
- Comparing the students' representation of science and technology before and after the SSA.

The guidelines were sent to all the researchers involved with SSA. Some of them fruitfully applied the guidelines in the laboratory work and during the lectures in different ways. However, information in this regard are fragmented and incomplete.

2.3.4. Posters

The fourth afternoon of the SSA was devoted to the development of the posters by the students, organized in different groups, in which their laboratory experience was described. As said above, a specific section of the posters was fully devoted to science-society relations. Support to students have been provided by the LSC staff to each group in order to identify the most relevant contents to be developed in this section. The poster session was held the last day of the SSA.

2.3.5. Deliberative meeting

The last day, a deliberative meeting was organized with the aim to allow the students to live a PE experience.

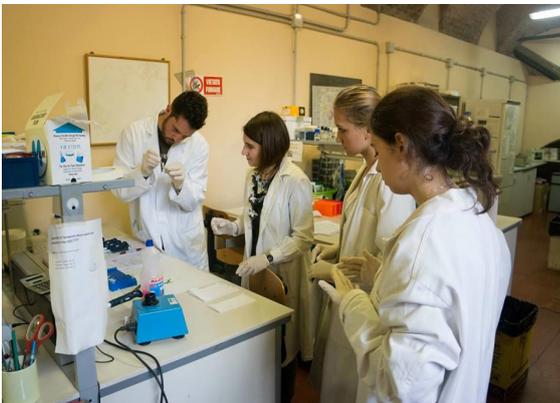
Students and researchers have been divided in four discussion groups, respectively devoted to:

- Science and Society;
- Public communication of science;
- Profile of researchers;
- Relationships between fundamental research and applied research.

Each group was coordinated by an expert (the group focused on Science and Society was coordinated by LSC).

In each group, a set of critical issues have been identified and discussed. Then, all the students have been asked to give a vote to the most relevant issues. The vote has been done inviting the students to place a given number of stickers on the list of issues emerged from each discussion group.

Finally, the most three voted issues for each discussion groups have been presented by a student of each group and discussed in a final plenary session.



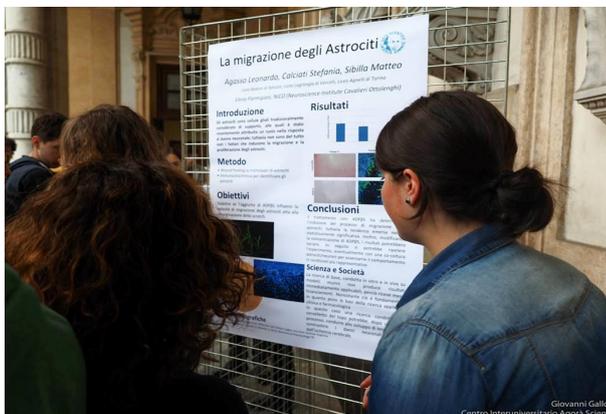
Laboratory activities



A lecture on environmental issues



Preparing the posters



The poster session



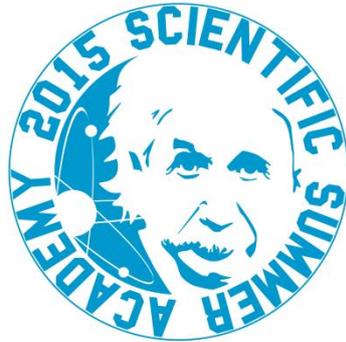
Voting the key issues of science-society relations



The debate on the most voted issues



The debate on the most voted issues



The logo of the SSA

3. Results of the pilot

3.1. Impact

In general, on the basis of the feedbacks collected during the SSA, the immediate impacts of the initiative as a whole and of the pilot project in particular have been very positive.

As far as the students are concerned, it has been observed that their representations of "what is science" and their attitudes and perception about S&S relations strongly changed during the SSA. In particular, the need for developing a section of the poster to S&S relationships was very effective to urge them to discuss this aspect in their group, with the support of LSC experts. Moreover, some students noticed that, thanks to the Deliberative Meeting, for the first time they had the opportunity to discuss among them and with researchers about the social, economic and ethical implications of science and technology.

As for the researchers, a set of impacts have been identified, also discussing with them and with the experts of Agora Scienza.

- The pilot project allowed for the first time the researchers participating in the SSA to know each other and to start an exchange of experience, in general, on S&S-related issues and public engagement, and, in particular, on how integrating such issues in education and training. Moreover, for the first time, they were also involved in the evaluation process of SSA in addition to the students.
- Some researchers highlighted the importance to exchange experiences on PE and science communication, since, in the daily activities, there are no opportunities to reflect about this issues, also because of the lack of an institutional engagement by the Departments and research organizations where they work. In this sense, an impact of the pilot project was that of giving to the researchers the opportunity to discuss on these issues even going far beyond the specific context of the SSA.
- As observed by the experts of Agora Scienza, many researchers involved in the laboratory activities and some speakers actually tried to highlight S&S-related issues, even though not in a systematic way.

Finally, the experts of Agora Scienze also noticed that, for the first time, through the pilot, they collected information on the point of views of researchers on the past editions of the SSA and their expectations about the future editions. Moreover, the experts were very satisfied about the final Deliberative Meeting and the introduction of a specific section in the poster devoted to science and society. According to them, these two elements have particularly effective in raising the awareness of students about how science works, why it is important and why people should be more involved in science and innovation processes.

3.2. Feedback received

At the end of the SSA, two different questionnaires were sent both to students and researchers, to get their opinion and suggestions. As for the pilot project, 69% of the researchers evaluated as good or very good the deliberative workshop, while over 97% of the students expressed a high level of satisfaction.

3.3. Advantages

The main advantage of the pilot project has likely been that of modifying, at least to a certain extent, the way in which both students and researchers perceive science-society relations. This is the result of two main process:

- On the one side, the explicit and systematic inclusion of S&S relations as a key theme in a type of educational process (the Summer School) which usually is exclusively focused on scientific contents;
- On the other side, the organization of the Deliberative Meeting, which allowed students and some of the researchers to directly live a real PE experience on S&T.

An advantage to highlight is that the pilot project was made up of components (involvement of the teachers/researchers in a reflection on S&S and PE, insertion of S&S-related issues in the different parts of the educational process, organization of a PE experience) which are easily replicable in different educational contexts without significant additional costs and organizational difficulties.

3.4. Obstacles

Some obstacles have been observed during the implementation of the pilot projects.

First of all, it was quite difficult to organize the Context-tailoring Workshop with the researchers, because of time constraints. Actually, only 12 out of more than 40 researchers decided to participate, even though a significantly larger group of them expressed the interest to participate. This is undoubtedly a recurrent problem, since researchers have usually to deal with heavy work overload.

Another obstacle was the difficulty to find out a common definition and understanding of PE among the researchers.

For example, many of them did not clearly distinguish public engagement and science communication, with the consequence of dealing with PE merely as a more advanced form of or a new name for public communication of science.

Moreover, researchers from different disciplinary fields showed very different perception about PE and S&S relationships. For example, the astronomers were very sensitive towards citizen science (i.e., the involvement of people in the observation of the sky) but were not really concerned on PE as a tool for enhancing S&S relationships, while researchers in genomics viewed PE as a way to manage the many ethical controversial issues connected with their own discipline. Researchers

involved in fundamental research, in turn, tended to overlook and even to deny the existence of problematic aspects in S&S relationships in their own disciplinary field.

The difficulty to establish a common ground produced some misunderstandings in the presentation and interpretation of the pilot project. It could be therefore advisable to also organize, in connection with or in preparation to the future edition of the SSA, some training and awareness-raising activities on PE and S&S-related issues exclusively targeting researchers.

A third obstacle was connected to the virtual nature of the Deliberative Meeting. Notwithstanding the meeting was organized as a real deliberative process (aimed at selecting the most significant issues to be presented and discussed in the plenary session), it was clear for everyone that such a process did not entail any real practical consequences. Students were fully aware of this fact and, at least initially, met some difficulties to take the deliberative process seriously. It could be advisable, therefore, to connect the PE experience to decisions having actual, even though limited, consequences: for example, decisions about how to organize the future SSA editions, how to organize the SSA evaluation process or how to consolidate over time the relationships established during the SSA among the students and between them and the researchers.

The fourth obstacle was connected to the lack of or the limited engagement of research institutions in the SSA. In fact, the researchers' involvement was exclusively on voluntary basis and their research institution were only formally involved. This aspect is to be seriously considered. On the one side, it impeded so far the activation of institutional learning processes within research institutions, for what concerns both educational outreach and public engagement initiatives. On the other side, it resulted in a lack of professional recognition for researchers who participates in this kind of experience, with the effect that they may be not stimulated to participate further or to devote to the initiative the necessary time and attention.

4. Grand challenges addressed

The initiative addressed different grand challenges, since the pilot dealt with many different societal issues. However, particular attention was devoted to the challenge seventh “Secure societies - protecting freedom and security of Europe and its citizens” (with special reference to environmental and geological risks) and the challenge third “Secure, clean and efficient energy”.