Project objectives of the project Irresistible.

Project 'Irresistible'

Part 1. Project objectives

The main focus of the project is in line with the theme of the call in the 7th framework program under Science in Society:

'Raising youth awareness to Responsible Research and Innovation through Inquiry Based Science Education'

One of the main focal points within the call was the requirement to have a focus on teacher education. Another focal point in the call concerned the content of the project, which should be complementary to the science curriculum.

In the description of the area of the call a reference is made to combine formal and informal learning through science centres and museums.

In the project that was developed these topics played a major role.

The first topic discussed in the project concerned the definition of Responsible Research and Innovation.

Hilary Sutcliffe defines in her report on Responsible Research and Innovation (Sutcliffe, 2011) a number of aspects of RRI (table 1)

Table 1. Aspects of RRI and the use in the project modules

Aspects of RRI mentioned by Sutcliffe
The deliberate focus of research and the products of innovation to achieve a social or environmental benefit.
The consistent, on going involvement of society, from beginning to end of the innovation process,
Involvement of the public & non-governmental groups, who themselves are mindful of the public benefit.
Assessing and effectively prioritizing social, ethical and environmental impacts, risks and opportunities, both now and in the future, alongside the technical and commercial.
Where oversight mechanisms are better able to anticipate and manage problems and opportunities and which are also able to adapt and respond quickly to changing knowledge and circumstances.
Where openness and transparency are an integral component of the research and innovation process.

The project IRRESISTIBLE designs activities that foster the involvement of students and the public in the process of responsible research and innovation. We raise awareness about RRI in two ways:

- Increasing content knowledge about research by bringing topics of cutting edge research into the program
- Fostering a discussion among the students about RRI issues about the topics that are introduced.

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The chosen topics listed in table 2 are based on cutting edge science within the universities of the partners and are characterized by a high societal relevance.. The topics chosen connect and overlap with topics normally covered in secondary school curricula. For every topic, a lead partner is given; however, they will be developed and implemented in different countries throughout the project.

Table 2. Lead partners for the chosen topics

Partner country	Topic for RRI	Module Topic
1 Netherlands	Healthy ageing	Carbohydrates in milk; how specific carbohydrates in human milk are beneficial for the development of the gut microbiota of babies, and how these are produced in industry for use in milk powder
2 Israel	Renewable energy sustainability (using nanoscience)	Photovoltaic cells and Perovskite
3 Germany	Oceanography and climate change	Oceanography Sub-topics: Plastics in the Ocean, Offshore Wind Energy
4. Turkey	Nanoscience	Nanoscience
5 Portugal	Genomics and oceanography	Genomics, oceanography, polar science and climate geo-engineering
6 Italy	Nanotechnology	Nanoscience and Nanotechnology Sub-topics: nanomaterials for energy production and nano-sensors to improve our perception of the world
7 Finland	Climate change	Climate change
8 Poland	Nanotechnology (catalysis)	Nanoscience applications (size-dependent properties)
9 Romania	Solar energy and specific nanomaterial	Catalysis in environmental protection, nanotechnology
10 Greece	Nanoscience applications	Nanomaterials

Teacher training

The main focus of the project IRRESISTIBLE is on teacher training. All partners have experience in both pre- and in-service teacher training. Through teacher training we will establish a longer lasting effect than only working with different students year after year. Teachers that have used

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educational material successfully will be using this material in consecutive years.

In the teacher training process we want to connect formal and informal learning environments. Informal environments can be used in different ways in the educational process:

- Attract positive attention from students towards a subject,
- Introduce content knowledge in a different way,
- Possibility to discuss with stakeholders about RRI issues.

In the formal learning environment we want the teachers to adapt existing material into a new format in which

- Students are activated,
- Interest from both boys and girls is promoted,
- Students take responsibility for their own learning,
- New topics are introduced that demonstrate the overlap between different fields of science.

Community of Learners

For the teacher training IRRESISTIBLE will use Communities of Learners (CoL). Communities of Learners have proven to be a powerful means of training teachers(Loucks-Horsley, Stiles, Mundry, Love, & Hewson, 2010). Both in the Netherlands in the project 'Nieuwe Scheikunde' as well as in Germany in 'Chemie im Kontext' these communities have been used and are still used to improve the professional abilities of teachers. Within the Community of Learners each group has a different role: teachers have expertise with working in the classroom; science educators have a large theoretical background about education; science centres have experience in informal learning activities; researchers are experts in cutting edge science research; and people from industry are aware of the way science is used in industry.

Our Communities of Learners include experts from the field of formal and informal education, both in research and practice. The first step will be to adapt existing material on teaching and learning about Responsible Research and Innovation for school and out-of-school learning environments.

Topics will be cutting edge research taking place in the local universities, and will be supported by the researchers that will be part of the Communities of Learners. Cutting-edge scientific and technological matters highlight a "borderline science", that is controversial, preliminary, uncertain and under debate. The controversial dimension refers to "differences over the nature and content of the science such as the perception of risk, interpretation of empirical data and scientific theories, as well as the social impact of science and technology" (Levinson, 2003).

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Apart from content knowledge about the research related to the local curriculum, focus will be on the Responsible Research and Innovation aspects that will be integrated in the adapted teaching modules in an IBSE approach

Each teaching module

1. Introduces an everyday situation/ subject (in order to make the topic contextualized and relevant to students),
2. Uses an IBSE approach, advances to the observing, classifying, experimenting and explaining the phenomena and the properties that are relevant to the chosen application,
3. Addresses the broader issues related to the application in question: societal and environmental implications, ethical issues, and other RRI aspects,
4. Includes instructions for teachers on how to use the module and utilize the platform (e.g. exemplary schedule for the course, suggestions for lesson plans...),
5. Provides additional reading material on the topic in question, to be included in the textbook-like information source for teachers and students,
6. Let students design exhibit that
    a. Presents the chosen subject (the same one as in the teaching module),
    b. Highlights the phenomena and properties relevant to that application,
    c. Addresses the societal and environmental implications and related ethical issues.

Each Community of Learners will include 4 to 5 teachers, next to the researchers and experts of out-of-school learning. As indicated by Shulman, both experienced and novice teachers can participate fruitfully in these communities (Shulman & Sherin, 2004). After the professionalization in the first phase of the project, these teachers will in turn act as coach another Community of Learners with again 4 to 5 new teachers or partner schools to introduce the modules from the first round and coach these new teachers to use the modules in their own classrooms or teaching practise lessons. This phase will be designed according to the local education system and the common teacher training system in each of the partners. This way, after the first two rounds, at least 25 teachers in the region of the partners will have used the materials and become familiar with using the informal learning setting of the partners' science centre, involving on average 1000 students after the first two years of the project in each country. In total the project will reach at least 40 teachers in the first year, around 250 in the second year and will involve about 1000 students in the first round and about 10000 students in the second round of the project. (see figure 1 and table 3).

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Table 3: Number of teachers in the Irresistible project

Stage	Month	Number of teachers in each country	Number of teachers in the project
Phase 1	18	4-5 (realized 4-16)	40-50(realized 79)
Phase 2	30	20-25	200-250
Total		24-30	240-300

Each partner will use the material from at least two other partners, so that the material will be thoroughly evaluated. In the third year a compilation of the modules will be edited and will be published as a PDF file through www.scientix.eu. This material will not only contain the student's material but also a teacher guide, based on the experience of the coaches to guide users in the use of the material. On the web each partner will make lectures about the content knowledge surrounding the cutting edge research available for teachers. An example may be found on http://qtvideo.service.rug.nl/comvachem/itunes_deel_1-ryan.mov and http://qtvideo.service.rug.nl/comvachem/itunes_deel_2-ryan.mov
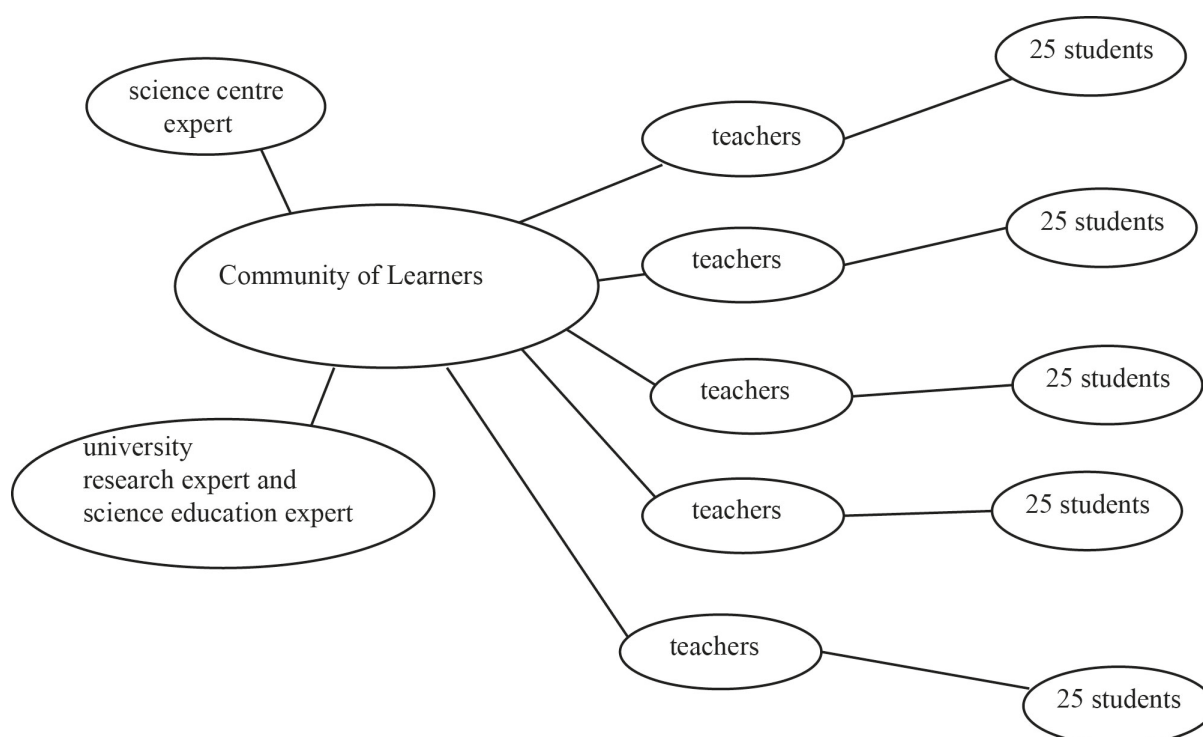

Figure 1. First round of Community of Learners

The Communities of Learners will use Inquiry Based Science Education techniques that have proven to be effective (Eisenkraft, 2003); (Martin-Hansen, 2002). The Community of Learners will work on modules to be used in the classroom. The Communities will be using the 6E template (see table 5) as a communal way to introduce content knowledge about the topic chosen (see table 1). The teachers and the other experts will learn how to use these techniques by fitting the existing material into the 6E and IBSE format. They

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will then use this material in the classroom, if necessary being coached by the local experts in formal education.

Modules will be adapted based on the experience in the classroom. These modules will then be used in the second round. As each partner will produce a module at the end of the first round, the teachers from round 2 can choose from 10 modules which module they would like to work with. The teachers from round 1 will act as coach and will introduce the teachers from round 2 into the format used for teaching (see figure 2). The science centres will use or adapt their exhibition to draw attention towards the role of the research studied for society. Such an exhibition is also meant to catch the attention of the general public, supported by different dissemination activities. For the students this may be a starting point for their enquiry RRI project. In the second part of the modules the science centres will play an important role in the RRI discussions.
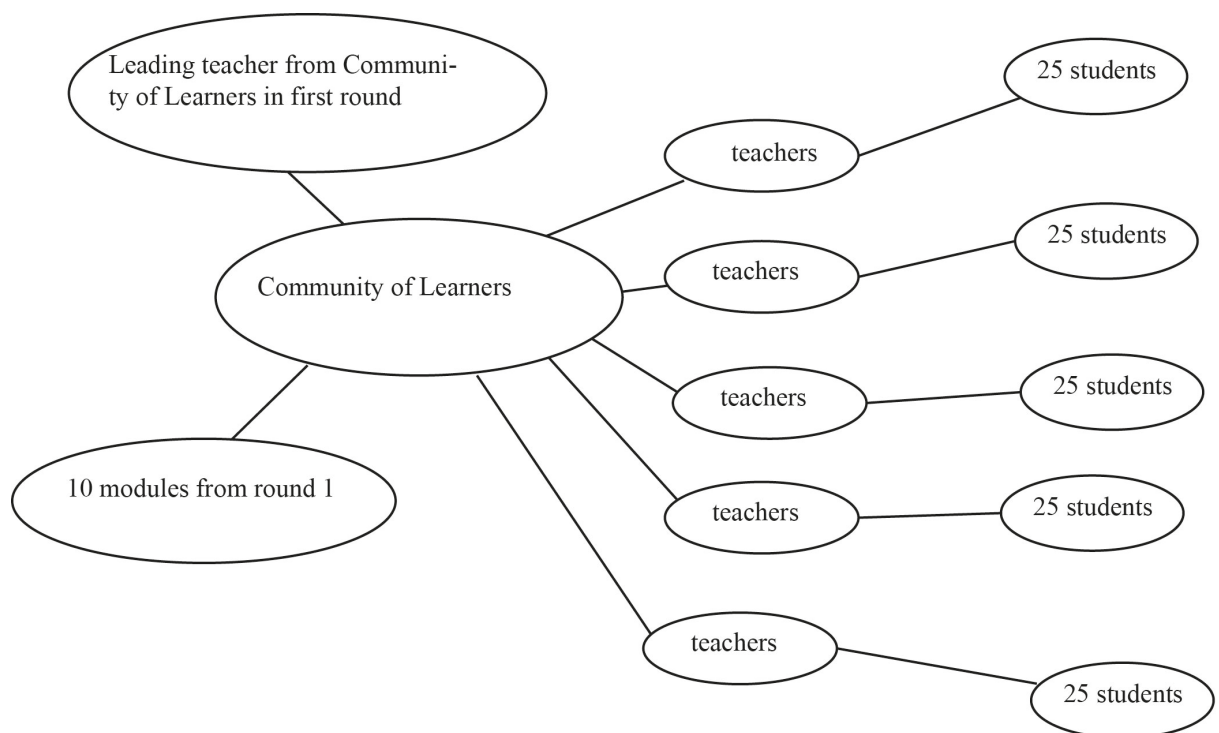

Figure 2. Community of Learners round 2

Experts in the CoL

Experts in teaching

Both experienced and novice teachers will be part of the CoL. They will be able to define the limiting conditions for the work in the classroom. Special care will be taken to allow the teachers to take part in the CoL. Most work in the CoL will be outside of normal teaching hours. Within each country measures will be taken to allow the teachers to participate. In some cases this will be done by organizing summer schools. In again other countries, existing in-service training structures will be incorporated to realize the project. The frame in which the CoL will operate will differ between the partners according

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to the educational system in the country. For example, in Poland the Col will start in a summer institution, in the Netherlands they will be arranged as activity groups organized by the university partners, in Israel they will be part of the National Centre for Chemistry Teachers, in Finland and Germany, it will be integrated in existing in-service training programs etc. This allows us to adapt the structure to existing national systems and to enable all countries to continue those activities in the future.

Experts in informal learning

Together with experts from science education, leading science teachers, and the university researchers, science centre experts will be part of the Community of Learners in the first stage of the project. They will work on the teaching modules by synergic cooperation of the experience from the formal and informal education system weaving with frontiers of research introduced by the university researcher and the science educators. The partners in the science centres will look for material within their centres that can be used directly or in an adapted form for this project. It can be physical exhibits but may also be digital material such as serious games. The material in the science centres is supposed to enhance and support the work being done in the formal education setting, by offering possibilities not available within the school. The expertise of the informal learning expert will be used to gather and reshape the material in the science centre.

In addition, the material of the science centre can be the introduction for the general public on the theme of RRI. In that case, the science centre will use the material from the module to offer more information and involvement with the discussion on RRI. A good example would be the proposed use of matching challenges posed and answers given by scientists.

If possible the science centres will also use or adapt their exhibition to draw attention towards RRI-issues. Such an exhibition is meant to catch the attention of the general public, which may include other students. In the exhibition the public has the opportunity to explore the subject and find some answers to their queries. The science centre will offer extra activities to explore and focus these queries. One of the possibilities could involve contact with the universities. The science centre will be a stable platform to raise RRI issues regarding the research topic that was chosen. Using Web 2.0 platform (e.g., Facebook, Twitter, ...) the centre will present different viewpoint regarding the scientific topic.

In the second part of the teaching module the science centres will give advice to the teachers and students about the way to set up an exhibition about the relevant RRI issues.

Experts in research

The university provides the up-to-date scientific knowledge necessary for both the school and the science centre. It provides a channel in which queries can be answered quickly and provides opportunities for students and the general public to participate in the research at several stages. In addition to the

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traditional part of the universities, they will also be the address to receive students' responses regarding different RRI issues that will emerge during students' inquiry.

Experts in education

The other contribution of the university to the RRIs projects is their input in the in- and pre-service professional training for teachers. Both experts in science education research as well as teacher trainers will be involved in the CoL, both in the first and in the second stage.

Inquiry Based Science Education

We have decided to use the format of the 5 E method (Bybee, Powell, & Towbridge, 2007), which has been extended and improved by us and includes Inquiry Based Science Education procedures..

The 5 E method has different steps. In the first three (Engage, Explore, Explain) content knowledge is studied and learned. In the last two steps (Elaborate, Evaluate) the focus is on discussing the RRI issues regarding the topic studied.

Between these last two steps we have introduced an extra step, Exchange, involving the development of an exhibition by the students. Students devising and presenting an exhibition is a means of transforming science from product to process (Hawkey 2001). During these exhibits' preparation, learners will ask questions, use logic and evidence in formulating and revising scientific explanations, recognizing and analysing alternative explanations, and communicate scientific arguments.

Through the construction and presentation of exhibits on Responsible Research and Innovation both teachers and students are introduced to a different type of science from the one that is usually presented in science classes. Most of the formal science education focuses on a conventional, non-controversial, established and reliable science.

The extended 5E method.

In 'Science education now' (Rocard et al., 2007) a number of problems are observed for the low number of young people that are attracted towards science and science education. The way science is taught is observed to be one of the problems. Inquiry Based Science Education (IBSE) is introduced as one of the ways to improve this situation and increase students' interest in science (Osborne & Dillon, 2008). In IRRESISTIBLE we employ IBSE as the pedagogical approach in the design of tools for teaching and learning. A lot of research exist in this field and the approach has been described and used successfully in other FP3 and FP7 projects such as ESTABLISH (2007), PROFILES (2011) and S-TEAM (2009). The IBSE approach employed here provides the students with an insight into the process of Responsible Research and Innovation, and specifies the important steps in that process (that are carried out often more than once and not always in a straight forward order).

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The IBSE approach used in this project addresses also several other challenges of contemporary science education pointed out in 'Science education now' (Rocard et al., 2007) and the literature on science education ((Bennett & Holman, 2002; Osborne & Dillon, 2008; Parchmann & Ralle, 1998):

Lack of cooperation between various actors in the formal and informal arenas:
the IRRESISTIBLE project will develop in each module classroom solutions and out-of-school learning environments in which will reinforce each other and provide a specific platform for bringing together learning experiences from different settings

The insufficient scale and dissemination of activities:
the IRRESISTIBLE project will pay special attention to the dissemination of the educational materials using international platforms that have proven successful in disseminating results like www.scientix.eu. Working with an integrated working platform with representatives from primary or secondary schools to higher education, science centres and if possible industry, will create different introductions to responsible research and innovation.

Teachers are key players in the renewal of science education:
The outcomes of the IRRESISTIBLE projects are incorporated in pre- and in-service teacher education programs as well as disseminated through teachers' networks both locally and internationally.

In the design of possible modules we consider the use of the 5E approach as designed by Roger Bybee (Bybee et al., 2007) in which five stages play a central role:

Engage, Explore, Explain, Elaborate and Evaluate. We have extended the 5E model, by inserting Exchange between Elaborate and Evaluate, so that the different groups involved in the project may exchange information with each other. In table 4 this has been worked in some detail. The exhibits form the summative assessment for the RRI part of the module; a normal test will be used as summative assessment of the content knowledge.

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Table 4. The extended 5E model, including IBSE

Phase	Description	Techniques used
Engage	In the engage phase students are getting interested in the subject of the module. Both formal and informal learning activities will be planned	Applications, visit to science centre, video introduction, lecture by researcher. Students may gather information using smartphones to make videos, photos or other data that can be shared in a Facebook group for example.
Explore	In the explore phase students start formulating questions,	A Web platform is used for gathering data and comparing and sharing results
Explain	In the explanation phase knowledge is gained, data collected and scaffolded	The teachers and the students will scaffold the content knowledge on the web platform.
Elaborate	In the elaboration phase the attention shifts to RRI-questions. Students will confront researchers with challenges to be answered by the scientists	Using the web platform students will match questions and answers by scientists.
Exchange	One of the assignments will be the design of an exhibit, which will be displayed in the science centre in the partners' local group. Posters or other presentation modes may also be used	Contest for best exhibits, which will participate in an exhibit on a European scale, hosted by one of the partners.
Evaluate	In the evaluation phase the students are tested on their content knowledge. The students themselves determine by an interview/ discussion with the researchers what they learned from the project	Online tests and surveys can be used for testing and for discussion with the researchers

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Science Centres

Within each country the university participants work together with a science centre. In some cases the science centre has chosen to become a registered participant. In other cases the science centres have committed themselves to working together with the university in IRRESISTIBLE as a subcontractor. In table 5 the universities and their science centre partners are indicated.

Table 5. Universities and science centre partners

Participant name and number	Science centre partner
1. University of Groningen	Science LinX is both the science centre as well as the organization that works with the teachers
2. Weizmann Institute	The Clore Garden Centre
3.IPN	Deutsches Museum
5. Bogazici University	Turkey Science Centres Foundation in Istanbul participated in the projects of TIME for NANO, Nanopinion, and Places
6. University of Lisbon	Pavilhão do Conhecimento - Lisboa
7. University of Palermo	Museum of Bali, San Martino
8. University of Jyväskylä	Natural History Museum of Central Finland
9. University of Bologna	Museum of Bali, San Martino
10. University of Crete	Eugenides Foundation, Athens
11. Jagiellonian University	Jagiellonian University Museum Collegium Maius
12. Valahia University Targoviste	Prahova Natural Science Museum and History Museum Targoviste
13. University of Helsinki	Natural History Museum of Central Finland

By cooperating with the science centres we intend to set up an exchange between people working in informal learning and in formal learning. Science centres become more aware of the methods used in formal education. By the design of exhibits in the exchange phase teachers and students become more aware of the requirements in informal education. By having an exhibition of the developed exhibits in science centres the general public will also be informed about RRI aspects of the chosen topics.

In order to achieve the aims of this project 6 Work Packages(table 6) were formed.

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Table 6. list of workpackages

	Work package title	Lead participant shortname	Person months	Start month	End month
WP1	Irresistible Project management	RUG	30	1	36
WP2	Teachers Professional development	WIS	105.5	1	36
WP3	Exhibition development and construction	IE-UL	51	1	36
WP4	Web 2.0 applications, social media and website	IPN	39	1	36
WP5	Irresistible Evaluation	UH	43	1	36
WP6	Irresistible project Dissemination	UNIBO/ BOZIC	45.5	1	36

Work Package 1

Work Package 1, project management will be discussed in a later session.

Work Package 2

The objectives of Work Package 2, Teachers professional development, led by the Weizmann Institute were:

The main goal of WP2 is to implement a two-round professional development program for science teachers focusing on IBSE-RRI of cutting edge research, by using the model of Community of Learners for teachers professional development

O 2.1. Describe a template to be used by the Community of Learners. This template is based on best practice strategies regarding the inquiry approach to science teaching and learning based responsible research and innovation on teacher identified needs.

O 2.2. Present a schedule for the work by the CoL in which both, the design, implementation and evaluation of a teaching intervention is included.

O 2.3. Each partner will establish a Community of learners consisting of an educational expert, subject research expert, science centre expert and 4 to 5 teachers

O 2.4 The CoL will design a teaching intervention for a selected cutting edge research subject using the template form O 2.1, using an IBSE approach and RRI philosophy connecting formal and informal learning.

O 2.5 Together with WP5 establish an evaluation of the intervention programme for the (lead) teachers to reflect on the implementing of the teaching modules in the second round and report on their experiences with the different structures of the CoLs in the countries.

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O 2.6 Plan a mechanism for infusing the IRRESISTIBLE training and intervention programme into pre-service and in-service teacher training programmes**.**

O 2.7 Implement the different teaching modules for professional development of science teachers in each country by leading teachers working with new groups of teachers coordinate.

O 2.8 In cooperation with WP5 evaluation of the different stages of the professional development process.

This leads to the following tasks of the Work Package Leader and the aprtners:

Task 1 Deliver a template for the 5E+ model that can be used by the CoL's

Task 2 Coordinate the planning of the two-phase professional development programme of the partners, by developing a schedule for the work in the CoL's,

Task 3 Initiate plans for infusing Irresistible into pre-service and in-service training programmes, by distributing the material from the partners.

Task 4 Develop with partners' mechanisms to evaluate the two-phase professional development model of science teacher professional development.

Tasks for all Partners

Task 1 Each partner plans a mechanism to design IBSE-RRI integrated local training of leading science teachers, and establishes a working mechanism, based on timelines suitable during the year and the expertise of the members of the Community of learners.

Task 2 Partners operationalize the training of leading teachers by constructing Community of learners through face-to-face and online mechanisms appropriate for the teacher-identified needs.

Task 3 Partners report the strengths and challenges of experiences and outcomes emergent from the first phase.

Task 4 Based on the reflection on task 3, each partner plans a mechanism to design IBSE-RRI integrated local training of pre- and in- service science teachers, and establishes a working mechanism.

Task 5 Partners report the strength and challenges of experiences and outcomes emergent from the second phase using evaluation tools.

The following deliverables are expected from Work Package 2:

D2.1 Strategies for constructing Community of Learners in the different countries (month 3).

D2.2 Programme for and record of Community of Learners for leading teachers, including teaching materials and experiences with the different CoL structures in the countries (month 18).

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D2.3 Second phase for pre- and in-service teacher training strategies based on the reports from the first phase across partners (month 21)

D2.4 Programme for and record of the professional development programme of science teachers in the second phase including modified teaching materials (month 30)

D2.5 Final Report teacher training and intervention (month 36)

The first 2 are expected in the first half of the project.

Work Package 3

Work package 3, exhibition development and construction, led by the educational department of the university of Lisbon, had the following objectives:

O3.1 To involve groups of teachers and students (with the support of the communities of learners) in the construction of exhibits addressing the concepts of Responsible Research and Innovation

O3.2 To help teachers and students to understand that uncertainty and risk are inherent to scientific and technological enterprises and so, research and innovation must be driven by responsibility

O3.3 To develop teachers' expertise about how to address Responsible Research and Innovation(related with cutting edge scientific and technological issues) through the construction of exhibitions centred on such issues

O3.4 To produce knowledge about the educational potentialities of exhibit construction regarding the concept of Responsible Research and Innovation

This leads to the following work:

As part of the teaching module to be used, groups of teachers and students will be involved (and supported by the local scientists, science centre experts and partners) in the development of exhibitions addressing the concept of Responsible Research and Innovation. Through this process, teachers and students will understand that uncertainty and risk are inherent to scientific and technological enterprises. So, research and innovation must be driven by responsibility. Teachers will also develop their expertise on how to address Responsible Research and Innovation (related to cutting edge scientific and technological issues) through the construction of exhibitions centred on such issues. These exhibits will take place in schools, universities, and science centres or museums.
This work package can be triggered, for example, by a visit to a science centre, a museum or an exploratory. Teachers and students would consider not only the content of the exhibition but also its production values. By prior arrangement the museum can include an empty space. The task for teachers and students could be to present within that space exhibits which relate to issues of Responsible Research and Innovation in relation to the focus of the rest of the exhibition.

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The construction and presentation of exhibits will function as a pretext and a context to study the impact of this process on teachers' personal and professional development and students competences.
Each partner in charge of this work package will be responsible for finding three teachers and three groups of their students willing to participate in this process. The partners, the scientists and the science centre experts will be responsible for following and supporting the work of each group and studying the impact of this process on teachers and students.
The idea is that the project team will produce a coherent set of exhibits that will combine into a travelling exhibition, which can be displayed in the different countries in appropriate places like science centres.
The different exhibitions should be interactive and should approach different aspects of Responsible Research and Innovation. An interactive exhibition incorporates social networking and urban computing (the use of technology in public environments, increasing the interaction between humans and such environments and allowing access to complementary information, educational materials (for example, quizzes) and communication tools. This sort of exhibition fosters the expansion of knowledge through a process that dilutes the boundaries between teacher and student roles.

The deliverables are due after the second year of the project:

D3.1 Different interactive exhibitions on Responsible Research and Innovation (related with cutting edge scientific and technological issues), written in each partners language (Month 24)
D3.2 Vodcasts, podcasts and films, deliverable through the internet, of exhibitions on Responsible Research and Innovation which could be used by teachers in schools as continuing professional development or as an activity to be used with students. (Month 24)
D3.3 Case studies about the impact of the process on teachers' personal and professional development and students' competences. (Month 32)
D3.4 Final report on teaching Responsible Research and Innovation in science education through the construction of exhibitions. (Month 36)

Work Package 4

Work Package 4, web 2.0 applications, social media and website is led by the IPN in Kiel, has the following objective:

The objective of WP4 is to adapt existing web 2.0 applications to use them in the different modules. Two workshops accompany the development process to show possibilities of use and to exchange the experience of the first try-out phase. An international project website will be launched and maintained.

This leads to the following tasks:

Task1 (WPL)

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Creating an overview on existing web2.0 applications that could be used in the RRI-modules

Task2 (all partners)

Workshop 1: Exchange on the possibilities to use web 2.0 applications in the modules. Based on the "Guide to existing web 2.0 applications" discussion of ways to implement it and use them in different ways for data collecting, exchange and networking.

Task3 (all partners)

Each partner adapts/develops a web 2.0 application or website or digital tool to be included in the RRI-module, that supports the interactivity and impact of the learning process. The application / tool is delivered in local and English language. The partner tries out the solution in the module and publishes the material developed.

Task4 (all partners)

Workshop 2: Exchange on the experience with the adapted / developed solutions in the different modules and learning environments.

Task5 (WPL)

Publication of the results of workshop 2 in a "Collection of best practice examples in using web 2.0 technology in formal an informal science education" (working title).

Task 6 (WPL)

Launching an international project website and constantly maintaining it throughout the project.

With the following deliverables:

D4.1 Overview Guide on existing web 2.0 applications that could be used in the RRI modules (month 3)
D4.2 Workshop "Exchange on possibilities" (month 3)
D4.3 Module-related web 2.0 application / tool / …(month 8)
D4.4 Workshop 2 "Experience with web 2.0 technology in the modules" (month 15)
D4.5 Publication "Collection of best practice examples" (month 24)
D4.6 Project website (launch month2, full operation month3, maintenance months 2-36
The first 4 deliverables are expected in the first part of the project. The last one is on going.

Work package 5

Work package5, Irresistible evaluation led by the University of Helsinki and the IPN in Kiel had the following objectives:

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O5.1 Evaluation of the teacher professional development programme
The first part of evaluation analyses the work carried out within the COL's in collaboration with WP2. The main aim is to investigate how the different participants of the perceived the programme. Also the impact of the teacher professional development programme will be evaluated, in collaboration with WP6, by analysing the dissemination of the modules among European teachers, both through pre- and in-service teacher education.

O5.2 Evaluation of the modules
The second part will focus on the modules developed in the COL's. The modules will first be evaluated in comparison with the set of criteria specifically developed for this purpose. The impact of the modules on students' and teachers' attitudes to RRI will be evaluated. Furthermore, the evaluation involves the Web 2.0 apps and the use of social media in the modules. The effectiveness and impact of different modules and approaches will be compared.

O5.3 Project evaluation
The third part of evaluation is the internal evaluation of the project. The aim is to assess the organisation of the project and the communication and collaboration between the partners during the project. Furthermore, the connections and co-operation with the external evaluator is evaluated.

These objectives led to the following description of work:

1. Evaluation of the teacher professional development programme
The evaluation of the work will primarily use a questionnaire to be answered by the participants. This quantitative data will be complemented by some qualitative studies whose methods will be chosen among the following alternatives: content analysis of the products and documents produced in the programme; content analysis of learning diaries of the leading teachers; content analysis of group discussions; interview study (pre-post) with representatives of COL's.

Tasks for Work Package Leader (UH) and co-leader (IPN):
  - Producing an analytical framework for programme evaluation;
  - Developing the questionnaire for the COL's
  - Choosing the complementary qualitative methods for programme evaluation and developing the required instruments and analytical frameworks
  - Coordinating the collection of quantitative and qualitative data
  - Collecting results of the questionnaire study and the qualitative content analyses from the partners
  - Collecting reports on the implementation and dissemination of the programme throughout Europe
  - Summing up the results, reporting the findings and the impact of the

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programme

Tasks of all partners:
- Collecting questionnaire data from the COL's
- Collecting qualitative data and carrying out content analysis by adapting the framework provided
- Reporting the results of the content analysis to the WP leader
- Reporting on the local implementation and dissemination of the programme to the WP leaders

2. Evaluation of the modules

The modules will be first evaluated with the set of criteria developed for this purpose. The impact of a module will be assessed by using a pre-post-questionnaire on students' and teachers' attitudes to RRI in at least two countries where it is implemented. This quantitative data will be complemented by qualitative content analysis of student work. The use of Web 2.0 and social media tools will be evaluated with a questionnaire.

Tasks for Work Package Leader (UH) and co-leader (IPN):
- Developing a set of criteria for the modules; assessing each module with the partner
- Developing an instrument to evaluate feasibility, use and impact of the Web 2.0 and apps used in the modules
- Developing the pre-post questionnaire on attitudes towards RRI
- Developing an analytical framework for qualitative content analysis of students' products
- Coordinating the collection and analysis of data (qualitative and quantitative)
- Summing up the results, reporting the findings and the impact of the modules

Tasks for all partners:
- Self-evaluating the module in comparison with the set of criteria
- Collecting the questionnaire data and reporting on the use of Web 2.0 and apps in the module
- Collecting the pre-post questionnaire data on attitudes towards RRI
- Collecting students' work to be analysed; adapting and using the analytical framework to analyse the products; reporting the results of the qualitative content analysis to the WP leader

3. Project evaluation

Project evaluation will be made in close collaboration with the project coordinator and WP1. The collaboration between the partners of the project will be evaluated using a questionnaire.

Tasks for Work Package Leader (UH) and co-leader (IPN):

- Development of the questionnaire for all project partners
- Analysing the questionnaire data
- Writing the project evaluation report together with project coordinator

Tasks for all partners

Project objectives of the project Irresistible.

- Filling in the partners' questionnaire

Deliverables to be expected from the Work Package 5 are:

D 5.1 Framework paper for teacher professional development programme evaluation (M6)
D 5.2 Framework paper for module evaluation (M9)
D 5.3 Questionnaire on attitudes to RRI (M12)
D 5.4 Ethics report on ethics issues before start CoL 1.
D 5.5 Evaluation report 1: teacher professional development programme (M24)
D 5.6 Evaluation report 2: modules (M30)
D 5.7 Questionnaire for project evaluation (M30)
D 5.8 Evaluation report 3: project (M36)

Work Package 6
Work Package 6, Project Dissemination, led by the University of Bologna and the Bogizic University has the following objectives:

The main goal of WP6 is to disseminate the learning, strategies, methodology, processes and the deliverables of the project to various communities. The specific objectives of this work package are:
- To plan yearly conferences for the stakeholders
- To plan a strategy in order to exploit the learning and outcomes of the project at the end of each year, through regional, national, and international levels.
- To establish a mechanism for disseminating the processes and the deliverables of the project at regional, national, and international levels.
- To establish a framework for the publication of the modules, involving a similar lay out for the modules
- To gather the in English translated modules from each participants, edit them and make them available to the other partners, using www.scientix.eu
- To disseminate and value the processes and the deliverables of the project at regional, national, and international levels.
- To evaluate the process of dissemination at the end of each year, and accordingly revise and improve the existing mechanism for optimizing the impact of the project in existing and new contexts.

This has led to the tasks formulated below:
The goal of this work package is to disseminate and promote the learning and deliverables of the project at the regional, national and international levels to enhance the credibility of the teaching training intervention model of IBSE science teaching, RRI awareness for cutting edge science research across different communities.
In the beginning of the project, during the first phase, newsletters, web site and a descriptive video of the project will be prepared by the partners and

Project objectives of the project Irresistible.

disseminated in each country at the national level. Each country will involve a Community of learners with 5 teachers in the first phase. In the second phase around 20 teachers will participate in their regional program. The project will be promoted at least one regional conference to science teachers and science centre representatives.

In the second phase, the prepared newsletters, website, and video presentation will be revised and updated for further dissemination of the processes and outcome of the project both at the national and international level. Each partner will promote Irresistible in one other country and involve at least 10 science teachers in the project.

At the end of the second phase, the results will be presented at national and international conferences, and a joint symposium will be held together at the European Conference on Research In Chemistry Education (ECRICE). Each partner will publish at least one article in a national journal widely read by teachers.

The evaluation reports will lead to articles in leading journals like IJSE and CERPE

Task for the Work Package Leader

Task 1: Coordination of work package leaders and other partners in special planned sessions within an international conference (mid project) and regional conference (end of project) to highlight project outcomes.

Task 2: Advise partners who produce an initial publicity booklet which is translated into each partner national language and develop further publicity materials at regular intervals.

Task 3: Planning of a mechanism so that each partner disseminates learning and outcomes in their countries. In this mechanism, inclusion of social and mass media, organization of exhibits and local and national meetings will be planned and evaluated.

Task 4: Develop a framework for the publication of the modules, including a teacher's manual. Coordinate the publication of the modules in English.

Task 5: Coordination of the partners during the dissemination process so that each partner disseminates the project at the local level, by regular seminars, workshops, local presentations especially involving stakeholders.

Task 6: Encouragement to partners in writing of journal articles to be published in both national and international journals throughout the duration of the project.

Task 7: Support to the dissemination of the modules and other teaching materials, initially through the national/international website and subsequently into a project publication.

Task 8: Evaluation of the dissemination process at each phase and revision of the dissemination strategies to enhance them.

Tasks for all Partners

Project objectives of the project Irresistible.

Task 1: Design of dissemination plans at local level (national/regional), by the local Community of learners: contacts with schools and teachers, and selection of 5 experienced teachers.
Task 2: Selection, by the local Community of learners, of: the topics to be addressed in the teaching module, the IBSE activities, and the actions that incorporate RRI aspects to be carried out during teacher training, and the schedule of training activities
Task 3: Implementation of the selected module by science teachers in two schools
Task 4: Organization of exhibitions about the pupils' activities on IBSE and RRI at national/ regional level with the aim of attracting other schools and teachers to collaborate to the project activities
Task 5: Try-out of the translated module in the schools involved by two other partners
Task 3: Organization of exhibitions about the pupils' activities on IBSE and RRI at national/ regional level with the aim of attracting other schools and teachers to collaborate to the project activities

The following deliverables are expected from the Work Package:

D 6.1 Dissemination manual: a document describing goals, method and strategies used in the project for various target audiences (month 3).
D 6.2 Website survey: describing the goal, the strategies, and the materials for various target audiences (month 3).
D 6.3 Through Social Media: Social media such as Facebook, twitter, and blog will be used to communicate and disseminate the goals, strategies and materials of the project (starting month 3 and will be active throughout the project)
 D 6.4. Through Mass Media: To invite mass media, new exhibitions in science museums and universities can be a platform of interest for public attention. We will promote the public awareness to the project activity by reporting on the exhibitions in the science centres in the media in each country.
D 6 5. The Information platform (IP) for the parties to share and communicate materials and ideas. This platform will have a mobile version.
D 6.6 Practical dissemination: draft articles and reports on publishing of the articles (months 12, 24 and 36).
D 6.7. IBSE-RRI Teacher Training Module: the module assembled by the LWG team for various cutting edge research such as Nanoscience, global warming etc. This module will include vodcasts, podcasts and films, deliverable through the internet of exhibitions on Responsible Research and Innovation which could be used by teachers in schools as continuing professional development or as an activity to be used with students. (months 22-33)

Project objectives of the project Irresistible.

D 6.8 Conference participation: Co-operation and participation reports (months 23, 34).
D 6.9 Feedback Overview report (month 33).
D 6.10 Newsletters describing the process at various stages of the project to be published at every 3 months (months 1-33).
D 6.11 Exhibition: An exhibition including activities of IBSE-RRI in cutting edge scientific research, prepared by the joint contribution of the partners. It will be available to general public in science centres/museums (months 24-33).
D 6.12 Final report of dissemination (month 36)
D 6.13 Proceedings of the National and International Conferences (months 24-33)
D 6.14 Journal articles in National and International Science Education Journals (months 12-33).

An overview of deliverables is given in table 7.

Table 7. Overview of Deliverables in each work package.

Deliverable number	Deliverable name	WP no	Nature	Dissemination level	Delivery date
1.1	Definitive consortium agreement and work plan as agreed with EC	1	R	PU	1
1.2	Management report 1	1	R	PP	12
1.3.	Midterm review	1	R	PU	18
1.4	Management report 2	1	R	PP	24
1.5	Final report	1	R	PP	36
2.1	Strategies for constructing Community of Learners in the different countries	2	P	PP	3
2.2.	Programme for and record of Community of learners for leading teachers, including teaching materials and experiences with the different structures of CoLs in the countries	2	P	PP	18
2.3	Second phase for pre- and in-service teacher training strategies based on the reports from the first phase across partners (month 21)	2	P	PP	21
2.4	Programme for and record of the professional	2	P	PP	30

Project objectives of the project Irresistible.

	development programme of science teachers in the second phase including modified teaching materials				
2.5	Final Report teacher training and intervention	2	R	PP	36
3.1	Different interactive exhibitions on Responsible Research and Innovation (related with cutting edge scientific and technological issues), translated in each partners language	3	O	PP	24
3.2	Vodcasts, podcasts and films, deliverable through the internet, of exhibitions on Responsible Research and Innovation which could be used by teachers in schools as continuing professional development or as an activity to be used with students.	3	O	PP	23
3.3	Case studies about the impact of the process on teachers' personal and professional development and students' competences.	3	R	PP	36
3.4.	Final report on teaching Responsible Research and Innovation in science education through the construction of exhibitions	3	R	PP	36
4.1	Overview Guide on existing web 2.0 applications that could be used in the RRI modules	4	O	PP	3
4.2	Workshop "Exchange on possibilities	4	O	PP	3
4.3	Module-related web 2.0 application / tool / …	4	O	PP	12
4.4	Workshop 2 "Experience with web 2.0 technology in the modules	4	O	PP	15
4.5	Publication "Collection of	4	R	PU	24

Project objectives of the project Irresistible.

	best practice examples				
5.1	Framework paper for teacher professional development programme evaluation	5	O	PP	6
5.2	Evaluation report 1: teacher professional development programme	5	R	PU	24
5.3	Framework paper for module evaluation	5	O	PP	9
5.4	Questionnaire on attitudes to RRI	5	O	PP	12
5.5	Evaluation report 2: modules	5	R	PU	30
5.6	Questionnaire for project evaluation	5	O	PP	30
5.7	Evaluation report 4: project	5	R	PU	36
6.1	Dissemination manual: a document describing goals, method and strategies used in the project for various target audiences	6	P	PP	3
6.2	Website survey: describing the goal, the strategies, and the materials for various target audiences.	6	O	PP	3
6.3	Practical dissemination: draft articles and reports on publishing of the articles	6	R	PU	12,24,36
6.4.	IBSE-RRI Teacher Training Module: the module assembled by the CoL team for various cutting edge research such as Nanoscience, climate change etc.	6	O	PU	33
6.5	Conference participation: Co-operation and participation reports	6	O	PU	23,36
6.6	Feedback Overview report.	6	R	PU	36
6.7	Newsletters describing the process at various stages of the project to be published at every 3 months	6	R	PU	3

Project objectives of the project Irresistible.

6.8	Exhibition: An exhibition including activities of IBSE-RRI in cutting edge scientific research, prepared by the joint contribution of the partners. It will be available to general public in science centres/museums(months	6	O	PU	20
6.9	Final report of dissemination	6	R	PU	36
6.10	Proceedings of the National and International Conferences	6	O	PU	24
6.11	Journal articles in National and International Science Education Journals	6	O	PU	12
6.12	Final report	6	R	PU	36
6.13	proceedings	6	R	PU	36
6.14	articles	6	R	PU	36

The deliverables indicated in green are expected to be delivered in the first part of the project.

Project objectives of the project Irresistible.

Milestones in the project.

In table 8 the milestones formulated for the project are given:

Table 8. Milestones in the project

Milestone number	Milestone name	WP involved	Expected date	Means of verification
1	Kick off meeting of all participants	All	1	Management report 1
2	IRRESISTIBLE project website	4	3	
3	Project website in the partners' local language	4	4	
4	Formation of first phase CoL	2	8	
5	Work in first phase CoL	2,3,4	16	
6	Second meeting of all participants with first exhibition	1,2,3,4,5	12	Management report 2
7	Formation of second phase CoL-2	2	16	
8	Work in second phase CoL-2	2	24	
9	Production of final version of teaching modules	2,3,6	24	
10	Third meeting of all participants with second exhibition	1,2,3,4,5,6	24	Management report 3
11	Regional/national international dissemination	6	36	www.scientix.eu
12	Final conference of all participants and guests from other EU countries	All	36	Management report 4

Milestones 1 through 7, indicated in green, are expected to be reached in the first part of the project.

Work progress and achievements during the period

Work progress and achievements.

General
The consortium has been able to develop a well working set of CoLs in all countries. We have developed a working relationship with the University of Limerick in Ireland in which the University has agreed to work along the same lines as the consortium and will exchange materials with the consortium.
The introduction of the six key aspects of RRI has led to intensive discussions among the partners. It is not always easy to introduce all six key issues in the modules. Focus is specifically on the relationship between society and research and innovation. We think we have found a way to introduce these issues into the classroom. In an appendix the posters presenting the modules can be found.

Milestones
The milestones we have set have been reached more or less as expected.
Milestone 1
The kick off meeting for all participants was organized at the University of Groningen on 25 and 26 November 2013. A short report of that meeting can be found in appendix x.
Milestone 2
The project website has been opened and can be found at the following URL: http://www.irresistible-project.eu/index.php/en/ (figure 3).
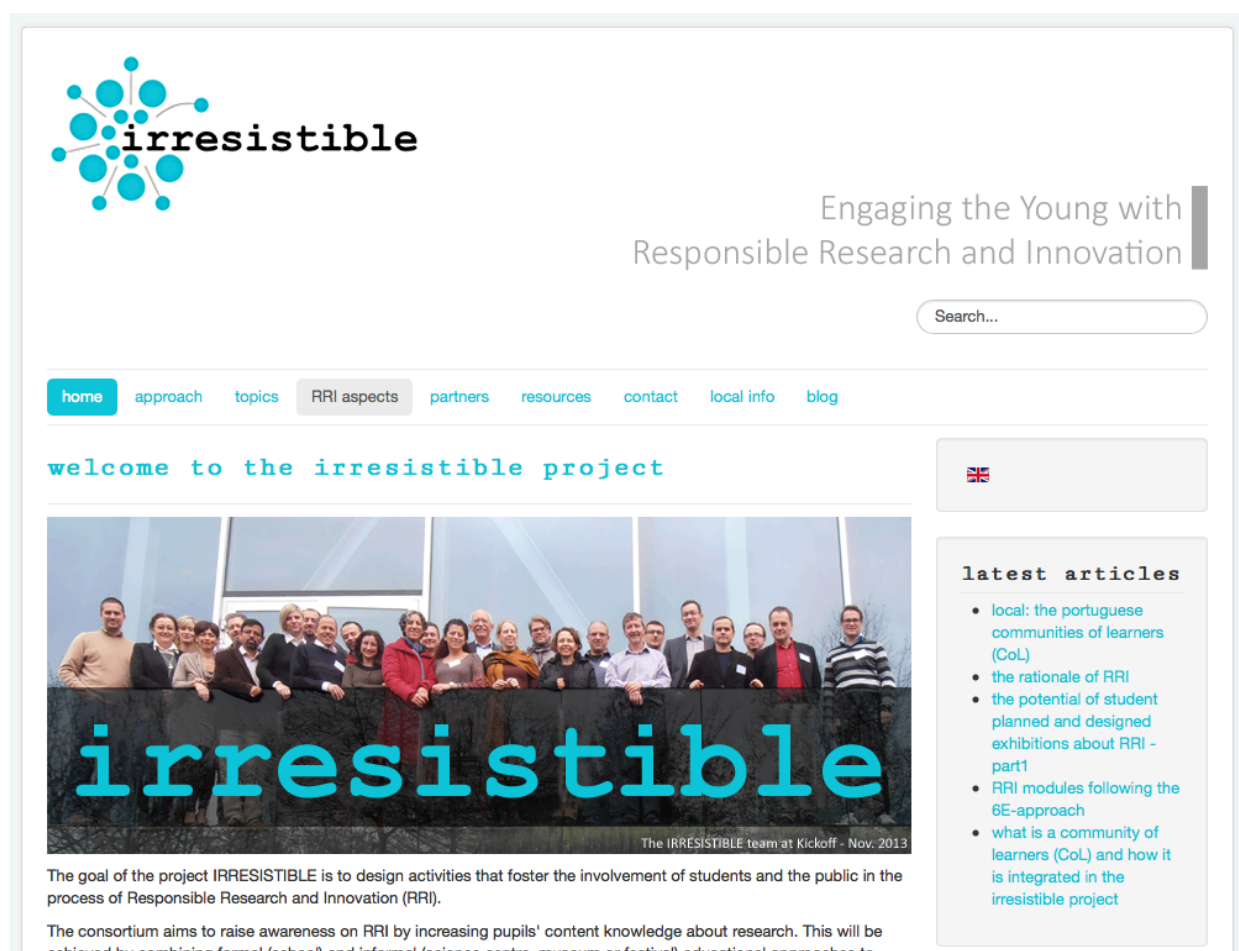
Work progress and achievements during the period

figure 3. screenshot from website of the project

Milestone 3
All partners have set up a local website with local information. Work is still in progress to include pages on the project website in the local languages. In addition most partners have started Facebook pages about the project.

Milestone 4 and 5
In all countries Communities of Learners have been formed and have started their work.
March 10 and 11 2014 the coordinator of WP4 held a workshop on the use of web 2.0 applications, social media and the use of the website. This workshop was organized at the IPN in Kiel.
October 16 and 17 2014 the coordinator of WP3 organized a workshop on the development and use of exhibits at the University of Lisbon.
In Jyväskylä on July 3 and 4 2014 the group met again. On July 5 the coordinator of WP 2 organized a workshop on RRI. A short report of the meeting is included in appendix 2.

Milestone 6
During the third meeting of the project in March 12 and 13 2015 the partners presented the results of the work in the local CoL. Posters were produced describing the educational material for each partner. These posters can be found in appendix y.

Milestone 7
All partners have started to form the second round of Community of Learners. The recruitment of new teachers is taking more time than was originally estimated. All partners will have enough teachers to participate in the second round of the project.
We have set an extra meeting of the project at the end of the ESERA conference in Helsinki, where a symposium about the project will be held. Main focus of that meeting will be the exchange of the educational material produced. It will include agreements about the way feedback will be given about the modules to each other.

Work Packages.

General remarks
In the next paragraphs the reports of the work packages 2 through 6 are included in this report.
In general the deliverables have been submitted more or less in time. The use of resources has been according to the Description of Work .
All critical objectives have been met. Some took a bit more work than expected.
Educational systems
The differences between the educational systems in each country are significant. This has led to the choice to produce materials for different levels in education, ranging from last two years of primary school, lower secondary school and higher secondary school.

Work progress and achievements during the period

Another issue is the national science curriculum. We wanted ton include the modules into the regular curriculum. In most cases this worked. In Poland the partners decided to organize a summer school, in Rumania the material was used in a yearly-organized science week.

Planning

In some countries the Community of Learners started early, in January 2014 (Israel, Portugal, Greece). This helped us in the discussion about a number of important issues. A description of a common format for the modules was one of them. The discussion about the introduction of RRI was another item. By September when most CoL's started the consortium had a clear idea on these issues.

In March 2015 we were able to exchange the set up of the educational materials for the first time. By July 1st English versions of the modules will be available. On September 4 2015, at the end of the ESERA conference we will have an extra meeting of the project to discuss the exchange of the modules and decide which countries will try out a module from another country.

At the ESERA conference a first analysis of the survey that were held will be presented by the coordinators of WP5.

Dissemination

The project has been presented at several international conferences like ICCE, HOPE and GIREP. It has been the subject of quite a few national presentations and publications. These have been reported in the EU-portal of the project.

In the near future in 2015, the project will be presented at the ESERA, IUPAC and ACRICE.

A basic paper explaining the goals and objectives of the project is in preparation and will be presented in September at the ESERA conference.

Deviations of the planning

No deviations of the planning on critical issues have taken place. In some cases it took a bit longer to finish the deliverables on time.

The formatting of the newsletter was slow. The goal of the newsletter was to communicate amongst each other. As we held monthly video meetings a newsletter was not really necessary. On the website a blog was started to inform the outside world about our progress.

WP2

During the first year of the project the focus in WP2 has been on developing strategies for constructing a CoL and on the production of the educational material. During the kick off meeting time was allocated to this strategy. We discussed in depth the way a community of learners functions. During the monthly video meetings using 'Scopia', these strategies were part of the discussion.

In the first year we had a number of discussion about the educational modules. Main goal was to formulate a common ground for the material, so that it could be exchanged between the countries. One focus was on the use of the 6 E framework.

Another important issue was the development of a framework for the introduction of RRI in the project. During the second consortium meeting in Jyväskylä time was allocated to discuss how RRI might be

Work progress and achievements during the period

introduced in the project(figure 4). We decided to use six key issues that have been formulated by the EU as the guideline for the introduction of RRI. These key issues are: engagement, gender issues, science education, open access, ethics and governance.
The introduction of the six key aspects of RRI has led to intensive discussions among the partners. It is not always easy to introduce all six key issues in the modules. The general focus is specifically on the relationship between society and research and innovation. By introducing research into the classroom we think we have found a way to introduce these issues into the classroom. After learning about the research and innovation, students are then introduced to the six key issues and are asked to apply them to the science and innovation that was introduced.

An RRI- questionnaire to be used to indicate the impact of the modules was set up and discussed as well.

Figure 4. Photo from workshop organized by WP2. Jyväskylä

WP3
WP 3 has worked on a part of the questionnaire for the CoL members. In the project meeting in Jyväskylä a first presentation was given about the use of exhibits (figure 5). In October 2014 a workshop was organized in Lisbon to discuss the way a CoL can introduce the making and development of exhibits into the educational material.

Work progress and achievements during the period

WP4

The coordinator of WP 4 decided to organize a workshop about the use of web 2.0 applications. The workshop organized by WP 4 helped in demonstrating the possible applications that can be used in the project.

Figure 5. Example of exhibition presented by Lorenz Kampschulte

WP5

The coordinators of WP5 have developed both a questionnaire for teachers at the beginning of participation in the CoL in order to measure the professional development of the teachers during the project. They have also developed a framework for the evaluation of the modules. These have been discussed with the partners in the second project meeting.

WP6

In WP6 dissemination manual was developed. From the activities it becomes clear that both at the national level as well as in international scale the project was presented. Internationally the project had a symposium at the ECRICE conference in Jyväskylä. At the ICCE conference in Toronto the project was introduced as well. During a meeting of the national representatives of OPCW the project was introduced as an example of introducing RRI in secondary education.

Work progress and achievements during the period

WP-2 Interim Report

The goal of WP-2 is to coordinate the establishment of the teacher training effort for the Irresistible Project, using the Community of Learners (CoL) approach.

At the kickoff meeting Work Package Leader (Weizmann) delivered a workshop in which template for the 5E+ model for IBSE that can be used by the CoL was presented and delivered. In this workshop Work Package Leader (Weizmann) coordinated the planning of the two-phase professional development programme of the partners, by developing a schedule and a plan for the work in the CoLs in the different countries. This stage was reported in the first WP-2 report that was delivered on month 3.

Data from the First CoL Round

All the partners established a CoL in their county and started to work on their Irresistible modules. All CoLs include science educators, an informal expert from a science museum, scientists and teachers. The number of the teachers in the CoLs varies from 4 to 15. The total number of teachers that are involved in the first cycle of the Irresistible CoL is 79. It is interesting to note that in the project proposal we planned to recruit over 50 teachers in this stage of the project. The high number of teachers shows that the project is very relevant and attractive for them. In the following 3 tables we will present data regarding the different CoLs. Later we will describe the changes that were made from the primary program and the challenges for the future in WP-2.

Table 1: Meetings of the Different CoLs

Country	Date of 1st CoL Meeting	Number of CoL Meetings
1 The Netherlands	Sep. 2014	10
2 Israel	Dec. 2013	14
3 Germany	Oct. 2014	10
4 Turkey	Jan. 2014	30
5 Portugal	March 2014	20
6 Italy Bologna Palermo	April 2014 April 2014	9 8
7 Finland	Sep. 2014	12
8 Greece	April 2014	15
9 Poland	April 2014	12
10 Romania	Feb. 2014	10

Work progress and achievements during the period

Table 2: Irresistible Modules in the Different Countries

Country	Module Topic	Module Length (student contact hours)	Module Initiation with students
1 The Netherlands	Carbohydrates in milk; how specific carbohydrates in human milk are beneficial for the development of the gut microbiota of babies, and how these are produced in industry for use in milk powder	About 12	March 2015
2 Israel	Photovoltaic cells and Perovskite	About 16	Jan. 2015
3 Germany	Oceanography Sub-topics: Plastics in our ocean, ocean acidification, resources of the ocean (for example manganese nodules), the problem of overfishing, offshore windparcs	Every sub module: 5 to 15 hours, depending on the topic	Oct. 2014
4 Turkey	Nanoscience	13	Feb. 2015
5 Portugal	Genomics, oceanography, polar science and climate geo-engineering	7-8	Nov. 2014
6 Italy; Bologna Palermo	Nanoscience and Nanotechnology Sub-topics: nanomaterials for energy production and nano-sensors to improve our perception of the world	12-19	Oct. 2014 Oct. 2014
7 Finland	Climate change	8	Oct. 2014
8 Greece	Nanoscience applications (size-dependent properties)	8-12	Nov. 2014
9 Poland	Catalysis in environmental protection, nanotechnology	10	Feb. 2015
10 Romania	Nanomaterials	20-40	Dec. 2014

Work progress and achievements during the period

Table 3: Gender Distribution of Irresistible Teachers and Students

Country	Total No. of teachers	Gender distribution among the teachers		Total No. of students	Gender distribution among the students	
		M	F		M	F
1 The Netherlands	8	3	5	162	81	81
2 Israel	5	0	5	147	62	85
3 Germany	10	6	4	101	57	44
4 Turkey	8	2	6	109	64	45
5 Portugal	8	0	8	216	105	111
6 Italy (Bologna)	4	1	3	139	101	38
7 Finland	16	2	14	95	16	14
8 Greece	5	3	2	95	50	45
9 Poland	9	3	6	146	55	91
10 Romania	6	1	5	159	66	93
All project	79	21	58	1361	689	672

Several changes have been made since the Month 3, in which we delivered the first WP-2 report. The changes included changes in the length of the module (contact hours), building the students' exhibition in a different manner from their primary plans, delays in the date of having the ready module and changes that were done to adapt the module to the school curriculum.

These changes occurred when the partners adapted the proposals to their local educational contexts. The changes also reflect the dynamic nature of the CoLs. The authentic process of joint knowledge-building that takes place in the CoL meetings leads to the building of novel modules that differ from the ones that were suggested at the beginning of the process (Month 3).

The partners also describe challenges they still have to face. The challenges deal with the integration of RRI into the module, the adaptation of the module to different age groups, the use of the exhibition in the project, the integration of the module in the formal curriculum, and the next step of the project, namely the construction of the CoL in the second phase of the project.

In the project meeting held in Bologna on March 2015, two hours were devoted to discuss the difficulties in the first CoL. The following challenges were raised:

Different countries will have different strategies to tackle the recruitment of teachers. Some countries see this as a challenge; in Germany it was already difficult to recruit the first CoL, in Turkey it was difficult to make the teachers show up at all meetings. On the other hand, in Finland they work with teacher students who have to do the CoL as part of their educational training.

Well-prepared instructional meetings are needed to inform new CoL teachers of the RRI-aspects. These aspects are most likely new to those teachers and

Work progress and achievements during the period

need to be explained correctly, in order for the teachers to be able to use these aspects in their teaching. Also, the content of the modules have to be communicated correctly.

To ensure appropriate instruction for the second CoL, all partners agree that at least three meetings are needed to do so.

Based on these challenges and on the needs of the project in the second round of the CoL (including the need to adapt two other modules by each partner), each partner has planned the second CoL (CoL2). These strategies for the CoL2 will be presented in the report of WP-2 in Month 23.

Work progress and achievements during the period

REPORT – ACTIVITIES IMPLEMENTED WITHIN WP3 (Exhibitions)

Instituto de Educação da Universidade de Lisboa

During the first 18 months of the IRRESISTIBLE Project, within Work Package 3 (WP3), several activities were implemented in order to prepare future deliverables:

1. A literature review on: (a) the educational potential of building exhibitions by students; and (b) the concepts of interactivity and interactive exhibition. Part of this review was integrated in the "Development Guide for an IRRESISTIBLE Exhibition" prototype and submitted to the partners' analysis and feedback.

2. The definition of a strategy for the implementation of the exhibitions by each partner's Community of Learners (CoL) during the project implementation. This strategy was defined during two workshops realized at Groningen and Jyvaskyla meetings.

3. The construction of a "Development Guide for an IRRESISTIBLE Exhibition" aimed at supporting each partner's Community of Learning (CoL) during the process of planning, implementing and evaluating exhibitions addressing the concept of Responsible Research and Innovation. This guide prototype addresses the following themes: a) the potential of student planned and designed exhibits about responsible research and innovation; b) different phases for creating and implementing an exhibition; c) how to develop interactive exhibitions; d) different possible scenarios for exhibits; e) general guidelines for all scenarios; f) how to use text in exhibitions; g) how to evaluate exhibitions. This guide was improved with partners' analysis and feedback.

4. The realization of an extra workshop in Lisbon, on the 17th and the 18th of October, with the aim of developing CoL members' expertise on how to address different aspects of Responsible Research and Innovation (related to cutting edge scientific and technological issues) through the construction of interactive exhibitions centred on these issues. During this workshop, science educators, school teachers and science centre specialists from different countries discussed: a) ways of involving students and teachers in planning and developing exhibitions addressing the concept of Responsible Research and Innovation; b) several examples of Responsible Research and Innovation exhibits developed specially for the workshop; c) instruments and methodologies for evaluating the impact of this process on teachers' and students' competences. The workshop was also used to discuss and validate the content of the "Development Guide for an IRRESISTIBLE Exhibition" prototype.

5. The construction and validation of items to be included in the students' questionnaire to evaluate the impact of exhibitions' planning and development on students' perceptions regarding their competences;

6. The elaboration of several articles (for the project's newsletter and blog) on:

   a. The potential of student planned and designed exhibits about responsible research and innovation:

      i. Introducing teachers and students to a borderline science;

      ii. Students: becoming learners with visitors;

      iii. Empowering students.

   b. Interactive exhibitions:

      i. Social interaction as a crucial factor for visitors' engagement and learning

      ii. Interactive artefacts – what characteristics?

7. The construction of guidelines for the development of the case-studies (one the WP3 deliverables), which included: a) the methods to be used for the data collection; b) the case-study general structure; c) teachers' items guide; d) students' items guide; e) experts' items guide. The case studies will allow us to know the impact of exhibitions' development and construction, addressing the concept of Responsible Research and Innovation, on teachers' personal and professional development and to understand how students experience these exhibitions and their effects on students' competences.

8. The elaboration of two proposals of communications regarding (a) the results from the case studies developed within the Portuguese CoL teachers (for ENEC 2015), and (b) the potential of students planned and designed exhibits about responsible research and innovation – Teachers' perspective (for ESERA 2015).

Work progress and achievements during the period

IRRESISTIBLE WP4 (Web 2.0 applications, social media and website)

Report on Progress 11/2013 – 04/2015

The objective of WP4 is to support the IRRESISTIBLE project in terms of web and app tools. This includes for the reporting period the development and maintenance of the project web page, as well as the development of a Web2.0/App guide and the dissemination and training on these tools in a workshop for all partners. In March 2015, an overview on the tools used in the different modules was compiled.

Logo competition
To develop a logo for the project, a logo competition was started. In total, 24 logo suggestions were submitted. The selection procedure was two-stage, leading to the final version of the IRRESISTIBLE project logo.

Project website
For the project website, a content management system was set up to present the page at www.irresistible-project.eu. A design template was created to frame the content consistent with the project logo and leaflet design. Major focus was laid on a responsive design of the template, i.e. the website scaling nicely from smartphones to large screens. The content and coverage of the website were discussed with all partners during the Kick-off meeting and subsequent in more detail questioned with the website survey (Deliverable 6.2).

The website blog offers new facets of all partners of the irresistible project roughly bi-weekly and thus gives a nice overview on the current state of the project.

For information exchange, a mailing list was set up in form of a google group (irresistible-all@googlegroups.com).

Web2.0/App Guide
The aim of the Web2.0 / App Guide is to support the Community of Learners in each country to include Web2.0 / App tools in the module. Following the idea to use these technologies all way along the IBSE path, the guide offers various tools for different requirements in the respective phases. The threefold structure of the guide offers:

- A brief introduction on smartphone usage in general, on how many smartphones are in use in the relevant age group, and on the marked shares of the different operating systems
- A list of 30 relevant, tried-and-tested Web2.0 / App tools that could be appropriate for use in the modules, covering eight fields of application: Project Tools, Image Work, Measuring, Mobile Office, Collaborative work, Knowledge, Tools, Exhibition
- A quick start guide to the open-source ePortfolio system Mahara.

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The most relevant tools of the guide were presented at the Web2.0/App Workshop in Kiel early March 2014. The guide is available for download on the irresistible homepage. It will be updated and expanded during the project, including new tools used in the partner modules.

Workshop

The main goal of the workshop was to share knowledge on Web2.0/App tools with the partners. The workshop took place in March 2014, at the IPN Leibniz Institute for Science and Mathematics education in Kiel, Germany. In the first part of the workshop various tools and possibilities to use Web2.0/App technologies were presented. In the second part participants worked in small groups and used different technologies on a fictitious module. The workshop gave room to share the media knowledge of all participants.

Survey: Use of Web2.0 applications and tools in the modules

Each module developed in the IRRESISTIBLE project should integrate Web 2.0 technology, Apps or other ICT. The idea is to use these new technologies not only to support learning, but also to increase engagement, to use different media for presenting in exhibitions, and to connect formal and informal learning sites. The goal of the survey is to give an overview of the Web 2.0 / App tools used in the different modules developed by the partners.

Since the module development was still in progress in month 8, when the survey was planned, and thus no detailed information on the use was available for most partners, the survey (Deliverable 4.3) was postponed to March 2015.

The study shows, that all groups use Web2.0 / App and ICT tools in their modules. Most often such tools are used for sharing data and for publishing and presenting results (tools from both categories are included in all modules). ICT is as well used to research information and access knowledge, but usually this is not done by special tools (e.g. apps like Wikipedia Mobile, Merck PSE, …), but more often in a 'classic' way using a web browser. The work inside the CoL followed the established way of today's digital cooperation, mostly using communication tools like Email and Facebook, as well as Cloud-Storage for sharing data (Dropbox, Google Drive, OneDrive).

Deliverable 4.4 Publication: "Collection of best practice examples"

Prior to the Publication, a workshop is planned to exchange the knowledge gained using ICT in the modules. This workshop was planned to be held in Kiel in summer 2015. To use time and travelling budget effectively, the steering committee decided to integrate the workshop into the project meeting in Tragoviste / Romania in March 2016. Thus the Deadline for the deliverable will be postponed to June 2016 (M32).

Work progress and achievements during the period

IRRESISTIBLE WP5 (Evaluation)

Report on Progress 11/2013 – 4/2015

April 26th, 2015

Overview of the progress in WP5 during the first half of IRRESISTIBLE

As outlined in the IRRESISTIBLE Description of Work (DoW), evaluation in the project consists of three components: 1) Evaluation of the teacher professional development programme, 2) evaluation of the modules, and 3) final project evaluation (including also an evaluation of exhibitions). During the first half of the project (11/2013 – 4/2015), the evaluation components were planned further to form a coherent whole, and the specific instruments for components 1 and 2 were designed, constructed and put into operation to collect first sets of data. Tentative results have already been presented in two science education conferences as well as in the IRRESISTIBLE project meeting held in Bologna, March 12th-13th, 2015.

The co-leaders of WP5, UH and IPN, have collaborated closely through email, video meetings and also three personal meetings (in Germany, in Finland and in Italy). Communication has also been active with the project coordinator, who participated in all meetings and many email discussions. Furthermore, as planned in the DoW, evaluation has been designed and implemented in collaboration with all IRRESISTIBLE partners, especially with the leaders of WP2 and WP3. The WP2 leader (Weizmann) took responsibility of the development of a questionnaire measuring conceptions and attitudes to Responsible Research and Innovation (see below) for CoL members and for students. The WP3 leader (IE-UL) provided questionnaire items addressing social aspects of science education and student-curated exhibitions as a working method. The development and implementation of the evaluation instruments has been discussed with all IRRESISTIBLE partners via e-mail, monthly video meetings and during the evaluation sessions at the annual project meetings in Jyväskylä, 2014, and in Bologna, 2015.

Using the ideas and feedback gained through these communications, the WP5 leaders developed the detailed evaluation plan that was published in two framework papers (deliverables D5.1 and D5.2). Overview of evaluation instruments, including their target group and when they are implemented, is presented in Appendix A. The progress in evaluation components 1 and 2 during the first year is described in the following sections.

In sum, WP5 has progressed according to the DoW (IRRESISTIBLE Description of Work, 2014) and all the deliverables have been delivered on schedule. During the second half of IRRESISTIBLE, the instruments will be

developed further on the basis of the results and feedback, and implemented again to collect data from the second round for the final evaluation reports.

Evaluation of the teacher professional development programme

In the first phase of the project, existing instruments for evaluations of educational innovations were analysed. The standardized questionnaire "Stages of Concern, SoC", based on the Concern-Based Adoption Model (Shoulders & Myers, 2011) and employed in many comparable projects during last 30 years, was chosen for the evaluation of teacher professional development in IRRESISTIBLE. The use of the SoC questionnaire will allow us to compare results of the IRRESISTIBLE project with other projects and to ensure the scientific quality of the instruments. The WP5 leaders adapted the original SoC questionnaire to measure RRI innovation concerns of all CoL members. Additional items asking for the expectations towards inquiry-based teaching and learning (the 6E-phases) were developed and added to the questionnaire as a separate block. Furthermore, the WP3 leader designed items on social aspects of science education and on student-curated exhibitions as a working method. For detailed description and background information on the evaluation instruments, see IRRESISTIBLE Deliverable D5.1 (2014).

In May 2014, all these blocks of questions were set up as a single on-line questionnaire, administered by the UH, with different versions for the different CoL members. After that, partners have translated the questionnaire into their own languages (except for Italy and Germany who use the English version) and the UH has implemented them as online versions. Currently (May 2015) there are 8 language versions online and one language version translated on paper. Altogether ca. 130 CoL members, from all project countries except for Germany, have completed the questionnaire as a pre-test, i.e. during the early phase of the CoL work. Post-test (at the end of CoL work) results have been received from 19 CoL members from Finland and Greece. Tentative results have been presented in one international conference (ECRICE 2014) and in one Finnish science education conference. During the summer of 2015 the results will be presented in two international conferences.

Another instrument used in evaluating the teacher professional development programme, a questionnaire on conceptions and attitudes to Responsible Research and Innovation (RRI), was developed by the WP2 leaders. The questionnaire addresses views on all the six dimensions of RRI (IRRESISTIBLE Description of Work, 2014). The first version of the questionnaire was sent to all partners for expert validation in April 2014, and the WP2 leaders developed the questionnaire further according to the feedback. In October 2014, the final first-round version of the RRI questionnaire was translated into different languages and then implemented. From the first round, total number of 135 CoL members have responded to the RRI questionnaire.

Evaluation of the modules

In February 2014, WP5 leaders developed and sent all partners the first version of Criteria of the Modules (see IRRESISTIBLE Deliverable D5.2, 2014). This document was then iteratively revised according to the feedback. As described in the DoW, this document is a major instrument in the evaluation of the modules: All partners are supposed to self-evaluate their module by writing short answers to all questions in the Criteria for Modules document. In addition, a table combing the 6E-steps with the chosen RRI-aspects was discussed during the project meeting in Jyväskylä and developed as a tool of orientation for the CoL-members.

The answers will be used to evaluate *if* and *how* specific elements were incorporated in the modules. Hence, these criteria are used as a checklist during the module development and adaptation in every CoL: it is presented and discussed in early CoL meetings and then repeatedly returned to, in order to have the objectives in mind throughout the process. Furthermore, when the module is implemented in another country during round 2, the partners in that country will assess the module again against the same set of criteria.

Impact on students

As described in the DoW, the main instrument of assessing the modules' impact on students will be a pre-post-questionnaire on students' attitudes to RRI. This instrument, developed by the WP2 leaders, is an adapted questionnaire that has been developed for teachers' and other CoL members' use (see above). Yet, some changes are needed to adapt the questionnaire for students' level. In addition to questions on RRI, the student questionnaire includes questions on exhibit development and social aspects of science education (e.g. questions that investigate how much teachers encourage the students to take an active role in society later in their lives). These items have been developed by the WP3 leader and are related to similar questions in the CoL online questionnaire (see above). All IRRESISTIBLE partners are translating and adapting the student questionnaire, after which the instrument will be iteratively developed according to the feedback from the first try-outs. The instrument will be finalized until the second round of IRRESISTIBLE, and the main data for module evaluation will be collected during the second round.

Finally, in order to evaluate the impact of exhibitions' development and construction, addressing the concept of Responsible Research and Innovation, on teachers' personal and professional development and to understand how students experience these exhibitions and their effects on students' competences, the WP3 leader has given instructions ("Case Study Guidelines") for each partner to carry out at least two case studies (at least one in each phase of the project) and the process has been discussed in a video project

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meeting in April 2015. A new version of the Guidelines was shared with all partners.

For more details on module evaluation, see IRRESISTIBLE Deliverable D5.2 (2014).

References

IRRESISTIBLE Deliverable D5.1 (2014)**.** Framework paper for teacher professional development programme evaluation.

IRRESISTIBLE Deliverable D5.2 (2014)**.** Framework paper for module evaluation.

IRRESISTIBLE Description of Work (2014). Including responsible research and innovation in cutting edge science and inquiry-based science education to improve teacher's ability of bridging learning environments.

Shoulders, C. W., & Myers, B. E. (2011). An analysis of national agriscience teacher ambassadors' stages of concern regarding Inquiry–Based instruction. *Journal of Agricultural Education, 52*(2), 58-70.

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Appendix A:

Overview of evaluation instruments, their

target group and when they are implemented

(updated July 11th 2014)

During the first round of IRRESISTIBLE, the evaluation instruments are developed and validated. During the second round these validated instruments are employed to conduct the project's main research.

Instrument	**For whom?**	**When?**	**Analysis**
Online questionnaire, incl. • States of Concern • IBSE • Exhibit Design • Social aspects of science education	All CoL members: • teachers • scientists • science education experts • museum staff	2 (optionally 3) times during both rounds of CoLs: * pre: during early CoL meetings * (intermediate: after the initial design of the module) * post: after testing with students	Descriptive results (means) for the first round; statistical analyses (SPSS) for the second rund
RRI questionnaire for CoL members	All CoL members: • teachers • scientists • science education experts • museum staff (+ 10 teachers outside the CoL in the first round)	Once during round 1 Twice during round 2 (pre: during early CoL meetings; post: during the last meeting)	Descriptive results (means) for the first round; statistical analyses (SPSS) for the second round
Criteria for modules checklist	One representative of each partner (country)	At the end of the module development (round 1) and during module implementation (round 2)	Qualitative content analysis
Student questionnaires • **RRI** • Exhibit design • Social aspects of science education	School students participating in the module (separate questionnaires for primary/secondary school)	Twice (pre-post) during module implementation in both rounds	Statistical analyses (SPSS)

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Case study on exhibition development, incl. • interview with 1 teacher • focus group interview with students	A teacher and a group of students	At the end of exhibition development in both rounds (and possibly using observations and interviews during the exhibit development phase, for those who are interested in the systematic analysis option)	Simple analysis & formative report Optionally: Systematic analysis leading to a research report
Project evaluation questionnaire	One representative of each partner (country)	In 2016	Simple statistical analysis

WP6 - Dissemination Report – 18 Months

Period: 01.11.2013 - 30.04.2015

During the first year of the project, various dissemination activities were conducted by the partners of the project. The newsletters published once every 6 months described how the project has proceeded.

In the beginning of the project, a *Dissemination Manual* (Deliverable D6.1) was prepared by the dissemination workpackage (WP6) leaders, and the dissemination activities were guided accordingly throughout the project. The main channel of dissemination has been planned to be the project website. Before launching the website, a website survey (Deliverable D6.2) was conducted. Based on the results of the website survey, the website was designed and published at the URL of www.irresistible-project.eu.

When the partners started to have meetings with their Community of Learners, they started to use different types of Social Media as described in Deliverable D6.3. The partners of the project also used different (both electronic and mass) media tools to announce and publicize the project nationally and internationally as described in Mass Media Report Deliverable D6.4. As the partners proceed in the project, they have started to use many different information platforms not only to communicate but also dissemination materials and information. These information platforms were described in detail in Deliverable D6.5. Through the course of the project, design and develop their module, implement and collect data, and publish their results. The publications which have been completed or planned were described in Deliverable D6.6. All in all, all the activities taking place in the project have been reported through project's blog at http://www.irresistible-project.eu/index.php/en/blog and summarized by the newsletters published once every six months for the first 6 months and then published once every three months. The newsletters were reported in Deliverable D6.10 in detail.

During the first year of the project, partners performed a total of 128 different activities to disseminate the project. These activities include 22 conference presentations (both oral and poster) at national level and 31 presentations at international levels, 27 ways of use of digital media and 10 channels of using mass media, 14 publications, 13 workshop presentations, 7 organizations to present flyers, and 1 plenary talk. Figure 1 represents the distribution of dissemination activities, and Table 1 summarizes the type of dissemination activities performed by each country and the total number of them. Table 2 gives the detailed explanation of these activities.

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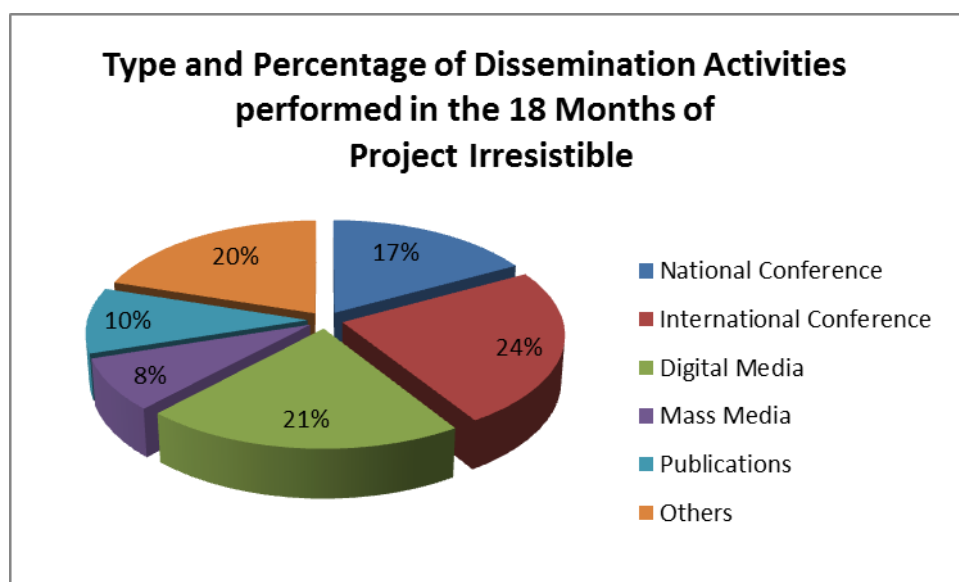
Figure 1. Type and Percentage of Dissemination Activities performed in the 18 Months of   Project Irresistible

Table 1. Type of dissemination activities performed by each partner country

TYPE OF ACTIVITIES	NUMBER	COUNTRIES
NATIONAL CONFERENCE PRESENTATIONS	22	Greece UoC (3), Italy (2), Israel (2), Netherlands (3), Poland (7), Turkey (2), Finland (1), Romania (2)
INTERNATIONAL CONFERENCE PRESENTATIONS	31	Finland (3), Greece (4), Germany (1), Israel (1), Italy (3), Poland (3), Portugal (2), Romania (10), Turkey (3), Netherlands (1)
DIGITAL MEDIA	27	Germany IPN (1), Greece UoC (3), Greece EF (2), Israel (2), Italy (2), Netherland (2), Portugal (2), Romania (11), Turkey (2)
MASS MEDIA	10	Romania (2), Greece UoC (3), Greece EF (1), Italy (2), Israel (1), Netherlands (1), Turkey (1)
PUBLICATIONS	13	Finland (2), Greece UoC (1), Netherlands (1), Poland (3), Italy (1), Romania (5)
OTHERS WORKSHOPS FLYERS MEETINGS PLENARY TALKS	25 14 7 3 1	Germany (1), Italy (1), Netherlands (1), Poland (1), Romania (10) Greece-UoC (2), Poland (4), Turkey (1) Israel (3) Greece-UoC (1)

Country-Partner	Conference Presentations		Media		Publications	Others
	National Level	International Level	Digital Media	Mass Media		
Netherlands –RUG	**Oral Presentation:** *"Introducing RRI in secondary education" at* KNCV Voorjaarsbijeenkomst, (May 8, 2014, Bussum) **Oral Presentation:** *"Project Irressistible" at* Meeting 'vaksteunpunten chemistry', (September 10, 2014) **Oral Presentation:** *"The Magic of Mother's Milk* - de magie van moedermelk, at 9-maanden-beurs - baby-fair, (February 26, 2015)	**Oral Presentation:** *"Raising awareness about RRI in secondary education"* at OPCW Education and Outreach Conference, (September 22-23, 2014, The Hague, Netherlands)	**Science LinX Website and newsletter**: http://www.rug.nl/sciencelinx/nieuws/20140925_irresistible and http://www.rug.nl/sciencelinx/nieuws/20141028_lissabon	**Interview:** TV item at Omroep MAX: http://www.omroepmax.nl/hallonederland/uitzending/tv/hallo-nederland-donderdag-26-februari-2015/ from 5:01	**Article:** *"Project IRRESISTIBLE in Nederland van start / Project IRRESISTIBLE kicks off in the Netherlands"* (October 2, 2014, Groningen)	**Workshop:** Teacher Training Day at University of Groningen, (December 17, 2104) **Workshop/Presentation:** Teacher Training Day at University of Groningen, December 17, 2014
Israel –Weizmann	**Oral Presentation:**	**Oral presentation:** *"Presenting the use*	**Local webpage of the project:**	**Article:** Chemistry of		**Meeting with the Inspector of**

	*"Solar cells: Should we replace the school's windows with a new development of solar cells that is based on Perovskite?", a*t National meeting of Israeli chemistry teachers (December 23, 2014, 250teachers) **Poster Presentation:** *"The Irresistible project: RRI in science education", at* National science teachers meeting (March 29, 2015, 500 teachers)*	*of the Facebook group in the Israeli Irresistible CoL"* at ECRICE, University of Jyväskyla, Finland (July 9, 2014)	http://stwww.weizmann.ac.il/g-chem/irresistible/ **A Facebook group in Hebrew** was created for the local audience (December 2013). Various text chunks have been drafted for the page. The Facebook group is used for discussion of the CoL members: https://www.facebook.com/#!/groups/482734615173219/	tomorrow" should be part of the school chemistry of today, at http://www.ec2e2n.info/news/2015/1601_201502		**Chemistry Education in the of the Israeli Ministry of Education**. Receiving official recognition to teach the Irresistible module in chemistry lessons **Meeting with the coordinator of "Nahshon" program for excellent students.** Receiving official recognition to teach the Irresistible in the program **Meeting with the Israeli PI of other EU projects** dealing with RRI (engage and Parris). Sharing articles and establishing a common language.
Germany – IPN & DM		**Oral presentation:** *"The Student Curated Exhibition –*	**Announcement:** Newsletter of IPN: IPN-Blätter, page 2		**Workshop:** At the chamber of industry and

		a New Approach to Getting in Touch with Science" at ECRICE, University of Jyväskyla, Finland (July 9, 2014)	(January 1, 2014): *"Am IPN startet ein neues EU-Projekt"* Newsletter link: ftp://ftp.rz.uni-kiel.de/pub/ipn/ipn-blaetter/IPN_Blaetter_1_2014.pdf			commerce: "IRRESISTIBLE as a best practice example of SiS-EU-projects" (March 10, 2015)
Turkey – BU	**Oral Presentation:** *"Öğrenci, öğretmen, uzman ve toplumu birleştiren köprü: Sorumlu araştirma ve inovasyonun fen eğitimine entegrasyonu"* at National Science and Mathematics Education Conference, Çukurova University, Adana, Turkey (September 13, 2014): **Oral Presentation:** *"Project Irresistible: A project on teacher training, combining formal and informal learning focused on*	**Oral Presentation:** *"Integrating Responsible Research and Innovation in Science Education through International Collaboration"* at İstanbul University Congress Center, Istanbul, Turkey (April 26, 2014): **Oral Presentation:** *"Teachers' Perceptions of the Community of Learners: The Case of Turkey"* at ECRICE, University of Jyväskyla, Finland (July 9, 2014) **Oral Presentation:**	**Webpage:** The project is announced in the web page of Bogazici University: http://www.boun.edu.tr/tr-TR/Content/Duyurular/Duyurular?LoadModule=News&NewsID=1119&Filter=true **Local webpage of the project:** http://www.irresistible-turkiye.com/ **A Facebook group in Turkish** was created for the local audience (February 2014). Various text, pictures and video have been shared with this page. The	**Article:** News about announcing Project Irresistible on the newsletter of Turkish Association of Research in Science Education. *'Bogazici University became partner of Project Irresistible' – 'Bogazici Universitesi Irresistible Projesine partner oldu'.* (December 1, 2014)		**Flyers:** Project flyers distributed at National Science and Mathematics Education Conference, Çukurova University, Adana, Turkey (September 11, 2014).

	Responsible Research and Innovation", Seminar for the faculty members at Bogazici University (December 12, 2014)	*"Raising Awareness of the Importance of Responsible Research and Innovation among Young People and Science Teachers - The IRRESISTIBLE Project"* (Jan Apotheker, Sevil Akaygün, Gabriel Gorghiu), at The International Organization for Science and Technology Education (IOSTE), (April 24-26, 2015)	Facebook group is used for discussion of the CoL members: https://www.facebook.com/groups/580300538713742/		
Portugal		**Oral presentation:** *"IRRESISTIBLE project -Portuguese community of learners: teachers' perceptions",* at Eleventh annual conference on Hands-on Science, HSCI'2014, (July21-25, 2014 Aveiro, Portugal) **Oral presentation:**	**Webpage:** The project is highlighted in the following web page of the Education Institute of Lisbon University: http://www.ie.ulisboa.pt/portal/page?_pageid=406,1812940&_dad=portal&_schema=PORTAL **Blog:** The project is		

		"*The empowerment of children for research and collective action about environmental problems: results from the projects 'We Act' and 'Irresistible.'*" – at Plenary Conference in International Congress (March 18, 2015, Murcia, Spain)	highlighted in the blog of the Polar Science Module: http:\\cienciapolar.wordpress.com			
Finland – UH & JYU	**Oral presentation:** "*Teachers' interests and concerns about teaching of 'Responsible Research and Innovation'*" at Symposium of the Finnish Mathematics and Science Education Research Association (FMSERA), (September 1, 2014, Oulu, Finland).	**Oral presentation:** "*Research-based development of out-of-school learning environments on contemporary research*", at Nordic Research Symposium on Science Education (NFSUN), (June 5, 2014 Helsinki, Finland). **Poster presentation:** "*IRRESISTIBLE – Engaging the Young with Responsible Research and*			**Article** in LUMA Sanomat (LUMA.fi) (September 23, 2014): Article title: *IRRESISTIBLE-"hanke: huippututkimuksen yhteiskunnallisuutta tiedeopetukseen"* **Article** in LUMA News (LUMA.fi/news) (September 24, 2014):	

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		Innovation" at HOPE Annual Forum 2014 – Inspiring young people to study physics (August 29, 2014) **Oral presentation:** *"Teachers' interests and concerns about teaching of Responsible Research and Innovation",* at ECRICE, University of Jyväskyla, Finland (July 9, 2014).			Article title: *"STEM education with a focus on responsible research"*	
Italy – UNIPA & UNIBO	**Oral presentation:** *"Congegni e macchine a livello molecolare" (Molecular devices and machines)* at SPAIS Training School for Teachers of Experimental Sciences, (July 21 – 25, 2014, Palermo). **Oral presentation:**	**Poster Presentation:** *"Responsible Research and Innovation in Science Education: The IRRESISTIBLE Project"* at GIREP - MPTL 2014 Teaching/Learning Physics: integrating research into practise (July 7 – 12, 2014, University of Palermo).	**Webpage:** The project is announced in the web page of the University of Bologna: http://www.unibo.it/en/research/projects-and-initiatives/Unibo-Projects-under-7th-Framework-Programme/capacities/science-in-society	**Article:** *"Responsible Research and innovation in Science Education: The IRRESISTIBLE Project"* Available (Venturri, Akaygun, Apotheker, 2014) available at; http://www.ec2e2n.info/news/2015/1601_201502	**Proceedings:** "Responsible Research and Innovation in Science Education: The IRRESISTIBLE Project" (E. Bertozzi, C. Fazio, A. Floriano, O. Levrini, R. Maniaci, B. Pecori, M. Venturi, J. Apotheker) Paper accepted for	**Workshop:** "The environment of the university research - The IRRESISTIBLE project" (M. Venturi). Conference within the course "Out of the Box" - innovation competences between school, research and entrepreneurship. Organized by

	"I limiti estremi della miniaturizzazione: congegni e macchine a livello molecolare" *(Extreme miniturization: molecular devices and machines)* at Teacher Training Course at the Museo of Balì, (September 3, 2014, Saltara, PU)	**Poster presentation:** *"Responsible Research and Innovation in Science Education: The IRRESISTIBLE Project"* (E. Bertozzi, M. Venturi) at *SIS-RRI Conference, (November 19-21, 2014,* Rome, Italy) **Poster presentation:** *"The IRRESISTIBLE project in Science Education: How can RRI become a permanent aspect of science teaching?".* (E. Bertozzi, M. Venturi, B. Pecori) at IOSTE Eurasia Regional Symposium & Brokerage Event (April 24-26, 2015, Istanbul).	**Webpage** on the IRRESISTIBLE-project published in the website of the ISS Institute "Nobili" - Reggio Emilia http://www.iisnobili.gov.it/index.php?option=com_content&view=article&id=656:progetto-ricerca-e-innovazione-responsabili-nanotecnologie-e-nanosensori-luminescenti&catid=25:altri-progetti	**Article:** "Nanotechnology and ethics - the students' contribution to the IRRESISTIBLE-project", published on 20 March 2015 in the local newspaper "Prima Pagina Reggio".	Proceedings of **GIREP-MPTL 2014 International Conference,** *Teaching/Learning Physics: Integrating Research into practise,* **University of Palermo (22-26 July, 2014).**	Regional school-office of Emilia-Romagna and addressed to teachers and principals of the secondary school. (April 27, 2015, Lyceum "Galvani", Bologna).
Greece - UoC	**Oral presentation:** *"Χρήση Εργαλείων web 2.0 για την επιμόρφωση εκπαιδευτικών σε*	**Poster Presentation:** *"Responsible Research and Innovation in Science Education:*	**Local Webpage of the project:** The project is announced in the web page of the	**Newspaper article:** *"Το ταξίδι των μαθητών του Πειραματικού*	**Proceedings (in Greek):** Kalogiannakis, M. & Stavrou, D. (2014). *"Χρήση*	**Plenary Lecture:** *"Διδασκαλία των Φυσικών Επιστημών με Διερεύνηση "*

θέματα Νανοτεχνολογίας. Το πρόγραμμα IRRESISTIBLE" ("Using Web 2.0 tools in teachers' training activities about Nanotechnology. The Irresistible-project") At 9th National Conference on ICT in Education, University of Crete, Greece, (October 4, 2014). **Oral presentation:** *"Irresistible: Νανοτεχνολογία & Νανοϋλικά (Irresistible: Nanotechnology & Nanomaterials)"* at 2nd Conference Chain Reaction (Fp7- Eu-Project), Chemistry Department, University of Crete, Greece, (March 21, 2015).	*The IRRESISTIBLE Project"* Corfu, Greece (May 30, 2014) **Oral presentation:** *"Irresistible-Project: The Community of Learners in Greece"* at ECRICE, University of Jyväskyla, Finland (July 9, 2014). **Plenary Lecture:** ESERA 2014 Summerschool, Kapadokya Turkey (August 24, 2014) *"The Model of Educational Reconstruction as a Research Framework for Teaching and Learning Modern Science Topics"*	University of Crete: http://irresistible-greece.edc.uoc.gr **News of the Experimental Lyceum Heraklion** Ένα ταξίδι στον κόσμο των νανοϋλικών και νανοτεχνολογίας (A trip in the world of nanomaterials and nanoscience), (December 1, 2014) **News University of Crete** Announcement about demonstration of student exhibits in Eugenides Foundation (Athens) & Natural History Museum of Crete (Crete), (April 29, 2015)	*στον κόσμο των νανοϋλικών και της νανοτεχνολογίας ξεκίνησε! (Students' journey in the world of nanomaterial and nanotechnology started!)"* at Cretalive, Crete. (http://www.cretalive.gr/culture/view/to-tajidi-twn-mathhtwn-tou-peiramatikou-ston-kosmo-twn-nanolikwn-kai-ths-na/207828) **Newspaper article:** *Ένα ταξίδι στη σύγχρονη επιστήμη (A journey to modern science)"* at Patris, Crete. (http://www.patris.gr/articles/272	*Εργαλείων web 2.0 για την επιμόρφωση εκπαιδευτικών σε θέματα Νανοτεχνολογίας. Το πρόγραμμα IRRESISTIBLE" ("Using Web 2.0 tools in teachers' training activities about Nanotechnology. The Irresistible-project").* In: P. Anastasiadis, N. Zaranis, V. Ikonomidis & M. Kalogiannakis. Proceedings of the 9th National Conference "ICT in Education", (pp. 263 – 270), Rethymno, University of Crete, Greece, (October, 3-5, 2014)	*(Teaching Science with Inquiry) at* 1st National Conference of the EU-Project Chain Reaction Heraklion, Crete (March 29, 2014). **Flyer:** "Responsible Research and Innovation in Science Education: The IRRESISTIBLE Project", distributed during the CoL Meeting: Heraklion – Rethymno, Crete, Greece (June 26-28, 2014). **Flyer:** "Responsible Research and Innovation in Science Education: The IRRESISTIBLE Project" distributed during the CoL

	Oral Presentation *"Το Ευρωπαϊκό Πρόγραμμα IRRESISTIBLE και η εφαρμογή του σε μαθητές Β΄Λυκείου (The European Project IRRESISTIBLE and its application to upper secondary students)"* at 2nd Conference Chain Reaction (Fp7- Eu-Project), Chemistry Department, University of Crete, Greece, (March 21, 2015).	**Oral Presentation:** *" Teachers' Training in Developing Nanoscience and Nanotechnology Teaching Modules"* at ESERA 2014 Summerschool, Kapadokya, Turkey (August 27, 2014).		892#.VIHS78nzmFh) **Article:** *"Το ταξίδι στον κόσμο των νανοϋλικών και της νανοτεχνολογίας ξεκίνησε! (The journey in the world of nanomaterials and nanotechnology started!"* In CHEMICA CHRONICA, Volume 76, Isssue 7, p. 7-8 General Edition, Association of Greek Chemists, Athens (http://www.eex.gr/DocLib1/Chem_Chro%20NOE-DEC_WEB.pdf).		Meeting: Eugenides Foundation, Athens, Greece (October11-12, 2014).
Greece - EF			**Webpage:** 1st announcement on the project was produced and uploaded on the EF			

			portal (July 2014): http://www.eugenfound.edu.gr/frontoffice/portal.asp?cpage=RESOURCE&cresrc=4003&cnode=89 **A Facebook page** in Greek was created for the local audience (September 2014). Various text chunks have been drafted for the page: facebook.com:irresistible- project-Greece			
Poland	**Oral presentation** *"Co nowego w projektach skierowanych do nauczycieli przedmiotów przyrodniczych w ramach 7. Programu Ramowego ESTABLISH, SAILS oraz IRRESISTIBLE?" At* Conference for Science teachers, Krakow FCh JU,	**Oral Presentation:** *"Raising youth awareness to responsible Research and Innovation through Inquiry Based Science Education" at* 3rd International Seminar Science-Society-Didactics "New Society-New Professions" Kraków, Poland (April 8, 2014).	**Webpage:** CoL members websites (private and professional) http://www2.chemia.uj.edu.pl/~makowski/ http://www2.chemia.uj.edu.pl/kotarba/teaching.php http://www2.chemia.uj.edu.pl/kotarba/teaching.php?lang=en **Webpage:** School and		**Article:** *"Pomiedzy Nauka, Technologia iEdukacja" at* Orbital, Magazine of Polish Chemical Society (June 2, 2014). **Article:** *"Raising Youth Awareness to Responsible Research and Innovation*	**Flyers:** Annual meeting of Polish Chemical Society, Czestochowa (September 17, 2014): **Workshop:** Congress of the Polish Association of Teachers of Science Education, Toruń (September 13, 2014): *"Odpowiedzialne*

	(November 22, 2013). **Oral Presentation:** "Interaction-Integration", Science Center Experiment, Gdynia, Poland, at 6th Conference (March 14, 2014). *"Exhibition 2.0. Project IRRESISTIBLE in the Jagiellonian University Museum".* **Oral Presentation:** *"Project IRRESISTIBLE. The interactive exhibition as a sum of the student projects"* At XIV Meeting of the Club of Physics Demonstrators, Rzeszów University of Technology (June 24, 2014).	**Poster Presentation:** *"Community Of Learners And Its Role In The FP7 Irresistible Project – Jagiellonian University Example"* at 6th International Conference on Research in Didactics of the Sciences, DidSci 2014, Krakow (June 25, 2014). **Oral Presentation:** *"Museum education as a part of science teaching and learning"* 2nd International Congress of Science Education, Foz do Iguacu (August 27-30, 2014.	foundation websites http://czernichow.edu.pl http://szkolyreja.pl/static/show/szkola/id=78 http://www.broniewski.ostrowiec.pl/ www.xvlo.pl http://www.dziecipodbeskidzia.pl **Museum websites** http://www.maius.uj.edu.pl/muzeum/wydarzenia/ http://www.maius.uj.edu.pl/edukacja-i-nauka/projekty-badawcze **Public websites** http://www.gmina.czernichow.pl http://edukacja.powiat.krakow.pl		*through Inquiry Based Science Education"* , Iwona Maciejowska, Jan Apotheker*, at Annales Universitatis Paedagogicae Cracoviensis, Studia ad Didacticam Biologiae Pertinentia IV*, 2014, 119-126 **Article:** *"Dobrze wykorzystać czas przeznaczony na przedmiot uzupełniający przyroda? - propozycje projektu IRRESISTIBLE"* , Iwona Maciejowska, **Jak *Niedzialki*, 4/2014, 78-83.**	*badania i innowacje – moda czy konieczność?"* **Flyers:** Congress of the Polish Association of Teachers of Science Education, Toruń (September 13, 2014). **Flyers:** Distributed at School of Didactics of Chemistry, Janów Lubelski (June 20, 2014). **Flyers:** Distributed during 2nd International Congress of Science Education, (August 27-30, 2014).

	Poster Presentation: *"Zastosowanie WEB2.0 w kształceniu nauczycieli elementem projektu 7PR IRRESISTIBLE"* at Annual meeting of Polish Chemical Society, Czestochowa (September 17, 2014). **Oral Presentation:** *" I.Maciejowska, Stosowanie metod IBSE w kontekście odpowiedzialnych badań i innowacji. IRRESISTIBLE - nowy projekt realizowany na WCh UJ."* At Conference for science teachers, FCh JU Krakow (April 11, 2014). **Poster**					

	Presentation: *"Projekt IRRESISTIBLE"* at Science picnic, Warszawa (May 31, 2014). **Poster Presentation:** *"Projekt IRRESISTIBLE"* at Science picnic, Rzeszów (June 7, 2014).					
Romania	**Oral Presentation:** *"Stimularea interesului elevilor pentru învăţarea Ştiinţelor prin activităţi desfăşurate în contexte non-formale"* *English translation: "Stimulating the students' interest for learning Science, through activities developed in non-formal contexts",* at Valahia University Targoviste, Romania	**Poster Presentation:** *"Related Applications of Nanotechnology and Nanomaterials in Medicine Presented in Formal and Non-Formal Learning Contexts"* at ECRICE, University of Jyväskyla, Finland, (July 8, 2014). **Poster Presentation:** *"Promoting Responsible Research and Innovation through*	**Media article:** (in Romanian) - published in an electronic journal (Gazeta Dâmboviţei): - http://www.gazetadambovitei.ro/educatie/irresistible-un-nou-proiect-international-de-cercetare-la-universitatea-valahia-din-targoviste (in "Gazeta Dâmboviţei" (February 6, 2014) **Article:**	**TV Videoclip:** *"Nanoştiinţele şi cercetarea responsabilă" / English translation:* "Nanoscience and Responsible Research", during News-time (in Romanian) - broadcast at Columna TV: - http://www.columnatv.ro/tv/nanostiintele-si-cercetarea-responsabila		**Workshop:** *"Nanoştiinţele şi cercetarea responsabilă" / English translation:* "Nanoscience and Responsible Research", Workshop organized at History Museum Targoviste, Targoviste, Romania (April 9, 2014). **Workshop:** *"Instrumente*

	(June 15, 2014).	*a Specific Teaching Module on Nanomaterials"* at University of Jyväskyla, Finland, (July 8, 2014). **Oral Presentation:** *"Enhancing the Young Students Competences in Science and Technology in Formal and Non-formal Educational Contexts",* at Doga School, Atasehir Campus, Istanbul, Turkey (October 17, 2014).	*"IRRESISTIBLE - un nou proiect internaţional de cercetare la Universitatea Valahia din Târgovişte") / English translation: "IRRESISTIBLE - A New International Research Project in Valahia University Targoviste".* Media article (in Romanian) - published in an electronic journal (Dâmboviţa) and in the printed edition of "Dâmboviţa" journal: http://ziardambovita.ro/uvt-a-lansat-un-nou-proiect-cu-finantare-europeana (in "Dâmboviţa" (February 7, 2014) journal - title: *"UVT a lansat un nou proiect cu finanţare europeană") / English translation: "UVT Has Launched A New Research*	/ http://www.youtube.com/watch?v=uBYoPrMUdtw (April 9, 2014).		*multimedia pentru promovarea conceptului de Cercetare şi Inovare Responsabilă în cercetarea muzeală" / English translation: "Multimedia Instruments for Promoting the Concept of Responsible Research and Innovation in Museum Practices"* Workshop organized at Prahova Natural Science Museum, Ploieşti, Romania (May 14, 2014). **Workshop:** *"Cercetare şi inovare responsabilă în domeniul Nanotehnologiilor" / English translation: "Responsible*

			Project Having European Funding" **Media article:** *"Elevii au învăţat ce înseamnă Nanoştiinţele, în cadrul proiectului IRRESISTIBLE" /* *English translation:* *"The students learnt about Nanoscience in the frame of IRRESISTIBLE Project",* (in Romanian) - published in an electronic journal (Gazeta Dâmboviţei): - http://www.gazetadambovitei.ro/educatie/elevii-au-invatat-ce-inseamna-nanostiintele-in-cadrul-proiectului-irresistible (in "Gazeta Dâmboviţei" (April 10, 2014). **Blog article:** *"Nanoştiinţele şi cercetarea responsabilă" /*			*Research and Innovation in the Area of Nanotechnology",* Workshop organized at Dambovita County "Ion Heliade Rădulescu" Library, Targoviste, Romania (June 4, 2014). **Workshop:** *"Nanobiomimetica şi cercetarea responsabilă" /* *English translation:* *"Nanobiomimetics and Responsible Research",* Workshop organized at National College "Constantin Cantacuzino", Targoviste, Romania (October 9, 2014).

			English translation: "Nanoscience and Responsible Research" (in Romanian) - published by National College "Constantin Cantacuzino" Targoviste, in the school blog: - http://cncc-tgv.blogspot.ro/2014/04/nanostiintele-si-cercetarea-responsabila.html (April 9, 2014). **Media article** *"Cele mai avansate tehnologii utilizate în muzee vor fi prezentate la Ploieşti" / English translation: "The Most Advanced Technologies Used in Museums will be presented in Ploieşti",* (in Romanian) - published in an electronic and printed journal (Prahova): - http://www.ziarulprahova.ro/stiri/cultura/			

			174977/cele-mai-avansate-tehnologii-utilizate-in-muzee-vor-fi-prezentate-la-ploiesti (in "Prahova" daily journal), (May 12, 2014). **Media article:** *"Educaţie pentru cercetare şi inovare" / English translation: "Education for Research and Innovation"* (in Romanian) - published in an electronic journal (Telegrama): - http://www.telegrama.ro/cultura/item/25332-educatie-pentru-cercetare-si-inovare (in "Telegrama" daily journal) (May 16, 2014).			

Project management during the period

Tasks and achievements

Coordinator
The coordinator is supported by the organization of the faculty of mathematics and natural sciences of the University of Groningen. Secretarial support is given by Science LinX. The financial administration group of the faculty carries out the financial administration of the project.

Steering committee
As indicated in the description of work a steering committee was formed chaired by Jan Apotheker, in which Lorenz Kampschulte, Ron Blonder and Antti Laherto participate at the kick off meeting of the project in Groningen.
The steering committee has discussed issues and proposals using e-mail, whenever one of the steering committee members including the chair felt this was necessary.

The participants board
The participants board consisting of the representatives of each partner has met monthly, normally at 11:00 am CET, using a video platform, 'Scopia' which was available through the 'Weizmann Institute' (see figure 6).

Figure 6. Screenshot from video meeting December 1 2014.

Project management during the period

Scopia meetings were held on: 16/12/13; 13/1/14;3/2/14/
3/3/14;14/4/14;28/4/14;19/5/14;9/6/14;1/9/14;7/10/14;4/11/14;1/12
/14;13/1/15;3/2/15;15/4/15;4/5/15.

Face to face project meetings have been held in
* Groningen, kick off, November 25, 26 2013
* Jyväskylä, 3,4, 5 July 2014
* Bologna March 12 and 13 2015

The external evaluator has been present at all these meetings. He has
participated and commented on both meetings, as well as the strategies
for developing a CoL.
Short reports of these meetings can be found in appendix z.
Further meetings have been planned for September 4 2015 in Helsinki,
March 2016 in Targoviste and October (final meeting) in Istanbul.

Extra workshops have been organized in March 2014 in Kiel and in
October 16, 17, 18 2014 in Lisbon. In Kiel to discuss web 2.0
applications. In Lisbon to discuss the implementation of exhibits in the
educational material.

Consortium Agreement
The consortium agreement was signed in March 2014 by all participants.

External liaisons
The project has been presented at a meeting in Paris in September 2014,
organized by the 'Engage' project, and at the conference "Science,
Innovation and Society: achieving Responsible Research and
Innovation Conference", scheduled from 19-21 November 2014 in
Rome, Italy. (see figure 7 next page).
April 15 and 16 2015 the project was presented at a meeting in
Barcelona, organized by the EU-project 'Scientix'.
Within the Committee of Chemistry Education the concept of RRI was
discussed. RRI will be part of a discussion during the World chemistry
Leadership Meeting, part of the General Assembly of IUPAC in August
2015 in Busan, Korea. The project will also be presented there.

Information has been shared with representatives of several other EU-
projects like 'Places' and 'Parrise'. This has not yet led to concrete
actions.

Contact with the chair of the federation of African Societies of
Chemistry has led to a keynote presentation at the upcoming Afrcian
Conference of Research in Chemical Education in November 2015 in
South Africa.

Project management during the period

Figure 7 . poster presented by the project in Rome

Project management during the period

Discussions within the OPCW have shown that within OPCW similar concerns are raised. Within OPCW the discussion focuses on the awareness of double use of chemicals. OPCW is developing a plan for educational and outreach activities, in which participants of the project have played a role. See http://multiple.kcvs.ca/site/index.html of which a screenshot is shown below.(figure 8)
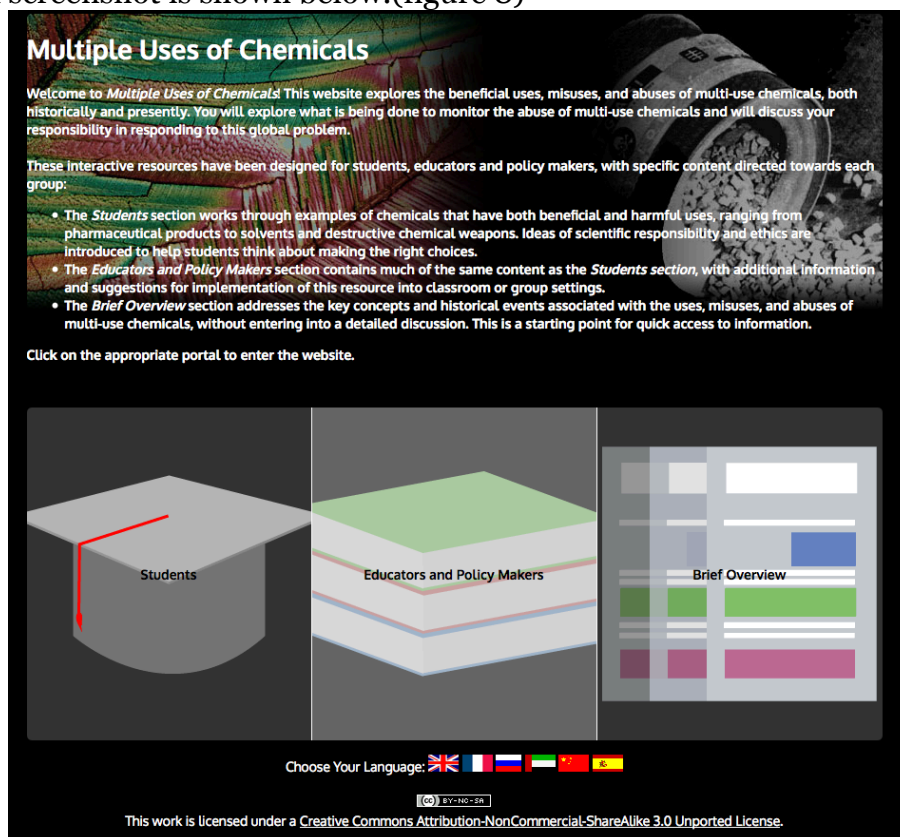

Figure 8. screenshot OPCW activity

Ethics
On March 10 2014 we received word from the ethical committee Pedagogical and educational Sciences indicating they see no fundamental objection to the proposal. (see appendix 4). All members have used the forms that were shown in the DOW for the members of the CoL and the participating schools.

Changes in the consortium
June 6 2014 an amendment was agreed upon between the consortium and the EU, in which some slight changes in the budget were made. Included in the change were the persons included in the project.
In the time between the proposal and the start of the project there have been some personnel changes within the beneficiaries. These needed to be implemented in the Grant Agreement.
In the content of the Description of Work no changes were made.

Problems
No real problems have occurred within the project. We have had quite some discussions about the modelling of the modules. This has not led to major problems within the project.

Project management during the period

Project planning and status
The project is well underway in achieving its goals. The first round of CoL has been successful in developing new modules. The second round will show how well the modules can be exchanged and used by new teachers. The Community of Learners seems to be a valuable tool in the professionalization of in service teachers.
As indicated before most milestones and deliverables have been met more or less in time. The dissemination process is well under way.

Possible deviations from the planned milestones and deliverables.

Deliverables 3.1, 4.5 , 5.5 6.4, 6.11 are all deliverables for which we set a fairly early date as a deadline. It is well conceivable we will ask the EU to change the deadline on these deliverables. That will have no impact on the quality or the outcome of the project, but will give us a little more time to complete the deliverables.

Project website
The project website has been opened and can be found at the following URL: http://www.irresistible-project.eu/index.php/en/

Partners are regularly reminded to keep up the blog in the website. Most partners also have a local website.