

Deliverable Report Template

Grant Agreement Number 612367



Including Responsible Research and innovation in cutting Edge Science and Inquiry-based Science Education to improve Teacher's Ability of Bridging Learning Environments

Deliverable reference number: 3.2

Deliverable title: Vodcasts

Short videos on IRRESISTIBLE Projet

Dissemination level: Public (PU)

Due date of deliverable: January 2016

Actual submission date: February 2016

Status: Final Version

Author(s): Portuguese Team



This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 612367. The information and views set out in this report are those of the author(s) and do not necessarily reflect the official opinion of the Commission. Neither the Commission nor any person acting on the Commission's behalf may be held responsible for the use which may be made of the information contained therein.

Executive Summary

Work package 3 implies the development of exhibitions addressing the concept of Responsible Research and Innovation by students and teachers (and supported by local scientists, science centre experts and partners). Through this process, teachers and students will understand that uncertainty and risk are inherent to scientific and technological enterprises, and that research and innovation should be driven by responsibility. Teachers will also develop their expertise on how to address Responsible Research and Innovation (related with 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.

One of the commitments of work package 3 was the production of vodcasts 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.

Deliverable 3.2 had the purpose of:

- a) Release the final version of the vodcasts;
- b) Describing the process of conceiving vodcasts;
- c) Identifying the topics selected to be disseminated and reasons for their selection;
- d) Present, and reflect on, the evaluation made by all partners regarding the vodcasts potentialities and limitations, its usefulness and, from there, suggestions for improvement.

Table of Contents

Executive	
Summary	1
Glossary	4
1. Introduction	5
2. Main Part	6
2.1 Description of vodcasts design process	6
<i>2.1.1 Vodcasts content</i>	<i>7</i>
2.2 Justification on selected topics	8
<i>2.2.1 RRI in educational context</i>	<i>9</i>
<i>2.2.2. Process of development and construction of interactive exhibits addressing the concepts of Responsible Research and Innovation</i>	<i>9</i>
2.3. Evaluation of the Vodcasts by IRRESISTIBLE partners	10
3. Conclusions	15
Bibliography	16

Glossary

Acronym/Abbreviation	Description
EC	European Commission
IRRESISTIBLE	Including Responsible Research and innovation in cutting Edge Science and Inquiry-based Science education to improve Teacher's Ability of Bridging Learning Environments
FP7	Seventh Framework Programme
DoW	Description of Work
PC	Project Coordinator
PSC	Project Steering Committee
WPL	Work Package Leader
WP	Work Package
IBSE	Inquired Based Science Education
RRI	Responsible Research and Innovation
CoL	Communities of Learners

1. Introduction

The purpose of developing vodcasts about the IRRESISTIBLE Project and exhibitions on Responsible Research and Innovation was to disseminate the project and its first results as well as developing a tool that could be used by teachers in schools as continuing professional development or as an activity to be used with students.

The vodcasts were conceived based on the Project documents, a large selection of images from all partners CoL1 and the analysis of each partner CoL1 case studies, in order to reflect the first phase of the thematic modules testing, developed by all partners. Accordingly, besides the project's objectives and its approach, we explored interactive scientific exhibitions as a strategy for activism in school context, highlighting the potential of student planned and designed exhibits about RRI. In addition, several exhibitions developed by the various partners CoL1 are presented, as well as, the first perceptions from students and teachers on the exhibits about RRI.

Finally, in order to assess the usefulness of vodcasts for each partner and also to receive feedback regarding its potentialities, limitations and suggestions for improvement, we developed a questionnaire that was sent to all partners in January 2016. The results allowed us to conclude and reflect about the usefulness of vodcasts, not only under the IRRESISTIBLE Project, but in the future.

The D3.2. – Vodcasts, is part of work package 3 “IRRESISTIBLE – Exhibition development + construction” and it is associated with D3.1.

2. MAIN PART

The vodcasts were conceived with a focus on the IRRESISTIBLE Project and on the exhibitions related with cutting edge scientific and technological issues addressing the concept of Responsible Research and Innovation. These vodcasts were conceived with the aim 1) to disseminate the project, 2) to present practical ways of introducing RRI in an educational context and 3) to highlight the potentialities of interactive scientific exhibitions as an educational strategy to promote scientific literacy and active citizenship, in order to raise the awareness of the community on Responsible Research and Innovation.

Deliverable 3.2 intends to:

- a) Release the final version of the vodcasts;
- b) Describe the vodcasts design and production process;
- c) Identifying the topics selected to be disseminated and reasons for their selection;
- d) Present, and reflect on, the evaluation made by all partners regarding vodcasts potentialities and limitations, its usefulness and, from there, suggestions for improvement.

2.1 Description of vodcasts design process

Four vodcasts were designed and produced under the IRRESISTIBLE Project, in order to disseminate the project, demonstrate the interactive exhibits development and construction process and their potential to support teacher's professional development and students competences.

Vodcasts were built from the various project dissemination documents and materials - website, brochure, presentations - images and video reporting the exhibits developed by the CoL1 of the various country partners and the case-studies developed by the IRRESISTIBLE partners (concerning the exhibitions developed within CoL1). Images and schemes are emerging in line with the audio, enabling an exemplification and clarification of what is being heard and to highlight key aspects of the topics covered in each vodcast (figure 1).

The iMovie was the video editor used for the construction of vodcasts.

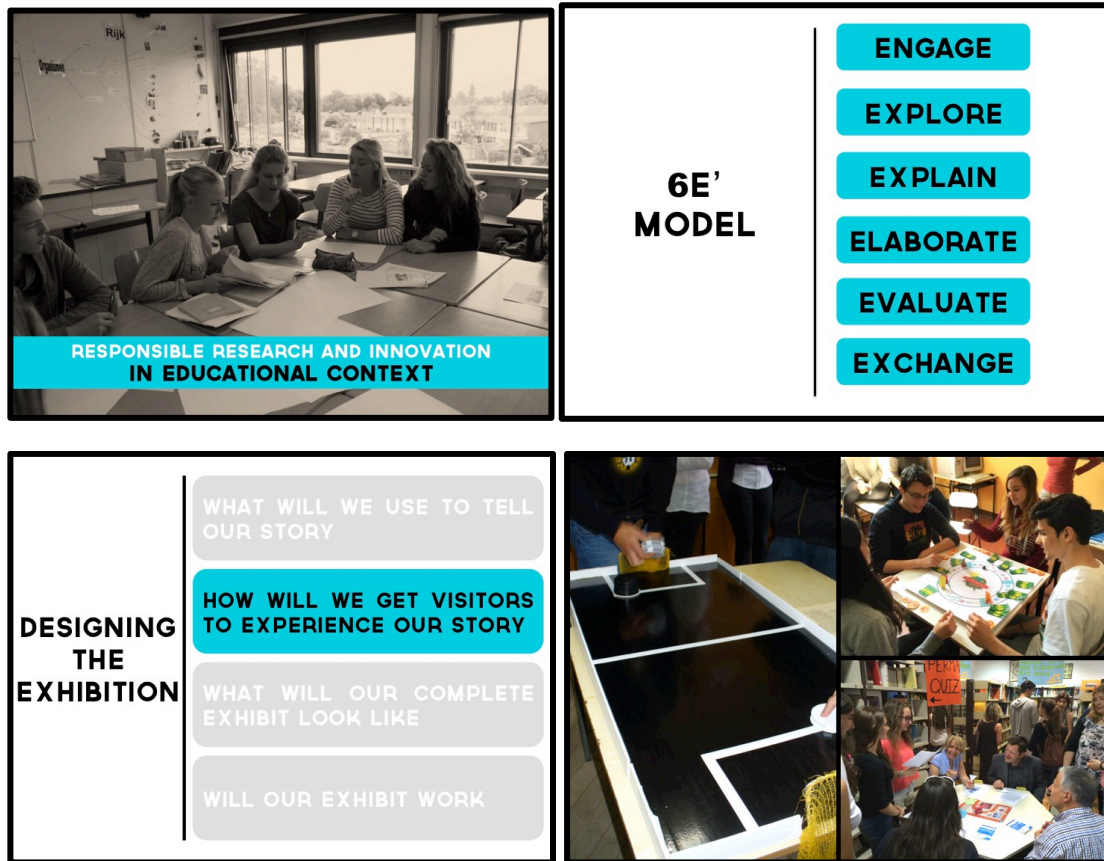


Figure 1 – Example of images and schemes presented in the vodcasts.

2.1.2. Vodcasts content

The contents to be included in vodcasts were defined taking into account that the audience could be quite diverse and constituted by different age groups, education levels, knowledge about Responsible Research and Innovation and on the process of building interactive scientific exhibits, a key process in the project implementation.

The “IRRESISTIBLE Project: Engaging the Young with Responsible Research and Innovation” vodcast aims to present the project and its context. It includes the project goals and purpose, the project partners, the definition of RRI and their dimensions, the IBSE approach adopted by the project, the project phases, as well as, the expected products and future expectations.

The “Responsible Research and Innovation in an Educational Context” vodcast intends to highlight the importance of Responsible Research and Innovation nowadays and show how RRI could be explored in an educational context. As such, the concept of RRI is presented and exploited including the six dimensions related to RRI adopted by the IRRESISTIBLE Project. It also justified the importance of RRI and demonstrated why all of us should be concerned and became aware about it. Finally, the thematic

modules created under the IRRESISTIBLE Project are presented, indicating the different scientific topics explored, introducing its structure and the final common task to all of them.

The “Interactive scientific exhibitions developed by students on Responsible Research and Innovation” vodcast has the purpose of presenting interactive scientific exhibitions as a strategy for activism in school context, in order to raise the awareness of the community on Responsible Research and Innovation. It is emphasised the potential of the design and construction of the interactive scientific exhibitions in the learning process, both for students and teachers. It also provided information about the exhibitions development process and about how to promote interactivity in exhibitions. Therefore, the different stages of the process of creating an exhibition are presented and explained, highlighting the most important aspects to take into account either in planning or in the construction of exhibitions. In addition, different interactive scenarios are presented that could be used to create interactive exhibitions, in order to exemplify what is intended.

The “IRRESISTIBLE Project: Exhibitions on cutting-edge scientific topics” vodcast give us an overview of the several exhibitions developed and constructed by the students of CoL1 from all partner countries. In this vodcast is also presented the students and teachers perceptions about the learning acquired on the scientific topics and RRI, as well as, on the process of planning and construction of interactive exhibitions.

The vodcasts can be visualised in the following links:

IRRESISTIBLE Project: Engaging the Young with Responsible Research and Innovation - <https://www.youtube.com/watch?v=HyPoJ-nlo28>

Responsible Research and Innovation in an Educational Context-
<https://www.youtube.com/watch?v=3EN9cddcs-0>

Interactive scientific exhibitions developed by students on Responsible Research and Innovation- <https://www.youtube.com/watch?v=JOtQB2qEXSc>

IRRESISTIBLE Project: Exhibitions on cutting-edge scientific topics - <https://www.youtube.com/watch?v=W5w7G5gnYoE>

2.2. Justification of selected topics

The integration of RRI in educational context and the process of development and construction of interactive exhibits as a teaching and learning strategy were the key aspects of the project highlighted in the produced vodcasts.

2.2.1. RRI in educational context

The school community - students, teachers and others involved - is one of great potential public groups on the practice and dissemination of RRI by the fact that it includes young people, adults, educators, and for linking to several components of governance. It is essential to develop an appropriate strategy of innovative school community involvement. The development of teaching modules within a cutting-edge scientific topic addressing the different aspects of RRI, such as social and environmental impact and ethical aspects, is presented as a strategy to promote positive attitudes towards RRI among students and teachers.

The presentation of the modules topics and the appointment of methodological suggestions for teachers on the implementation in the classroom and additional sources of information on the subject, allows other interested parties to apply the modules in external contexts to the project and at any time by.

The interactive exhibition is evidenced for allowing the spread of RRI and the awareness of its importance by the school community, constituting an all time high in practice, allowing the training of students about their power in participation and decision collective action in solving problems related with science-technology-society-environment.

2.2.2. Process of development and construction of interactive exhibits addressing the concepts of Responsible Research and Innovation

All IRRESISTIBLE modules foresee the development and construction of interactive exhibits on cutting-edge scientific topics addressing concept of RRI. This process is new for most teachers and students participating in the project, and probably for most other teachers and students.

Through the construction and presentation of exhibits on RRI, both teachers and students are introduced to a different type of science from the one that is usually presented in science classes. Most formal science education focuses on conventional, non-controversial, established and reliable science. On the contrary, cutting-edge scientific and technological matters highlight a “borderline science”, that is controversial, preliminary, uncertain and under debate. In producing an exhibition pupils can re-present scientific facts as speculative questions, transmissive teaching can be transformed, and the audience at the exhibit can construct their own learning.

The construction of exhibits invoke inquiry-based approaches to address the concept of RRI. In the process of creating an exhibit the emphasis is on eliciting personal reflection by those engaging in the exhibit. The discussion inherent to the preparation

of exhibits can be particularly useful both in terms of learning about the contents, the processes and the nature of science and technology, and in terms of the students' cognitive, social, political, moral and ethical development (Hammerich, 2000; Kolstø, 2001b; Millar, 1997; Sadler, 2004), as is evident by the teachers and student perceptions about the process of development and construction on exhibits that are presented in the "IRRESISTIBLE Project: Exhibitions on cutting-edge scientific topics" vodcast.

It is important and necessary to support teachers and students on the exhibitions development and construction process, highlighting the educational potential inherent to this process, not only for those that are involved in the exhibition design and construction but also for all the external project audience. Give them technical knowledge about the development and construction of the exhibits and share possible interactive scenarios is also crucial to develop expertise about how to address RRI (related with cutting edge scientific and technological issues) through the construction of exhibitions centred on such issues.

2.3. Vodcasts IRRESISTIBLE partners evaluation

The Vodcasts usefulness assessment and evaluation was carried out by the IRRESISTIBLE partners. In order to obtain the necessary data to perform a reflection about the vodcasts, we created a non-anonymous online questionnaire (figure 2) composed of five questions: two in a multiple choice-type format and three open-ended questions. All partners were asked to answer.

With the developed questionnaire we aimed at getting feedback from partners concerning:

- a) The most positive aspects of the vodcasts (open-ended);
- b) The most negative aspects of the vodcasts (open-ended);
- c) The purpose of the vodcasts (multiple choice);
- d) The means of vodcasts sharing and dissemination (multiple choice);
- e) Suggestions for improvement (open-ended)

We present the analysis of results based on the answers collected.

Feedback on the Irresistible vodcasts

As the WP3 leader we developed 4 vodcasts* focused on the Irresistible project and on the Development of Exhibitions. In these vodcasts we present the Irresistible project, discuss the importance of RRI and its exploration in an educational context, give insights on the potentialities of having students developing scientific exhibitions on RRI and present the developed exhibitions by CoL1 partner countries as well as the perceptions of some of the teachers and students involved in its planning and construction.

In order to get feedback from you regarding the evaluation and use of these vodcasts, we would like you to answer the following questions.

That information is crucial for the reflection aspect of the D3.2.

Many thanks for your cooperation!

The IE-UL partner

*The Vodcasts can be accessed via the following youtube Link:

[VODCAST 1](#)

[VODCAST 2](#)

[VODCAST 3](#)

[VODCAST 4](#)

1. Name of the person who filled this questionnaire | Partner (Country/Organisation)

2. In your opinion, what are the most positive aspects of the vodcasts?

3. In your opinion, what are the most negative aspects of the vodcasts?

4. With that purpose you could use the vodcasts?

Irresistible project dissemination

Irresistible project results dissemination

Continuing professional development of teachers

Activity development with students

Other (please, specify)

5. What kind of vodcast sharing you intend to do?

Institutional websites

Irresistible project partner countries social networks

Personal social networks

Workshops

Other (please, specify)

6. Finally, how could we improve the vodcasts? Please, give us some suggestions.

Figure 2 - Screenshots of the questionnaire (<https://pt.surveymonkey.com/r/SLCDD2J>)

a) The most positive aspects of the vodcasts

The partners indicate as most positive aspects the **quality, information, organization** and **dynamics** of the vodcasts. They considered that the vodcasts have a good design and the large selection of images showed are well connected with the audio, giving a good visualisation of the project. It is mentioned that the contents are well organised, providing a clear message and good insights into the project, thereby facilitating the understanding of the shared information and displaying a good summary of the whole Project.

The content of the vodcasts is very well-organized as they describe the whole exhibits development process in a nutshell.

In my opinion, the videos are very good and show the main ideas of our Project. I think they inspire viewers to take interest responsible research. Videos show how interactive exhibitions may help increase engagement students and of course teacher in learning new things.

The dynamic structure, mentioned by three partners, facilitates the vodcasts visualisation and helps to captivate the audience by motivating to the issue at hand.

I think they inspire viewers to take interest responsible research.

Good pace to be followed. Highly professional.

b) The most negative aspects of the vodcasts

Related to the most negative aspects, two of the partners that answered the questionnaire indicated there were no negative aspects in the vodcasts. The remaining partners pointed out the **fast switch of some images, the length of some vodcasts** and a **few technical aspects** as the cut of still images, background music and the use of computer generating voices pointing that they do not convey emotion.

Two partners also noted the formal appearance of the vodcasts, which may be an obstacle to its use among students.

c) The purpose of the vodcasts

Regarding the purpose with which the vodcasts can be used, the partners stated that they will use them to **disseminate the IRRESISTIBLE Project** (7/8 answers) and also its **results** (6/8), for **continuing professional development of teachers** (5/8) and **activity development with students** (3/8). The results demonstrate that vodcasts will be used mainly to disseminate the project and its results. Nevertheless, they could be very

useful for teachers and students, specially for those that are taking part in CoL2. The vodcasts could give them a clear notion about the purpose of the project, as well as, illustrate and clarify the process of development and construction of interactive exhibitions.

I asked my Col2 teachers to watch those vodcasts to check how much their understanding of the project differs from the view presented in those vodcasts and also to show one of them to students because they include a lot of interesting examples of exhibitions and exhibits prepared by various schools.

It was also mentioned that vodcasts could help to support teachers in the process of students' guidance through the thematic modules and contribute to their professional development. The potential for the promotion of student involvement in the project is another aspect pointed out.

The said vodcasts can be used as facilitators to increase students engagement and creativity as well as to enhance teachers professional development and their teaching methods.

Furthermore, it was indicated the possibility to compare the exhibits development and construction process between the CoL's from each partner and get an overview of the general project implementation.

Students will be able to compare ideas and conditions they have with their colleagues from all over Europe and they will realise that there aren't any significant differences between West and East , North and South.

Very interesting for me is part 4 Exhibitions on cutting-edge scientific topics. I can compare my experience with opinions other teachers. It is very important for me.

d) Sharing and dissemination of vodcasts

The means of vodcasts sharing and dissemination that partners will use are: the **Partners Institutional websites** (5/8 answers), the **IRRESISTIBLE Project partner countries social networks** (6/8), **Workshops** (7/8).

The dissemination made through institutional websites and social networks projects will achieve not only the public who know or are already taking part in the project, but also the audience unaware of the project. That will permit the dissemination of the project's objectives, the approach taken by the project, and also its results.

Dissemination through workshops will also enable the dissemination of the project and its results and also be a tool for the teachers professional development.

e) Improvement suggestions

The Vodcasts have gone through several phases and have been subjected to several improvements before being presented to partners. However, we will try to work from there and improve them taking into account the suggestions made by each partner.

Regarding this question, only one of the partners did not suggest any improvements. The remain contributed with suggestions related with the less positive aspects indicated. Some **technical adjustments** were mentioned in the technical data-sheet, in the presentation of still images, in the background music and in the use of the narration in order to show more emotion.

It was also suggested **put in all vodcasts information regarding the project** (i.e. objectives) in order to be able to show the vodcasts separately. One of the partners also suggested to add slides that allow to navigate between videos and also with links to the project website.

The **inclusion of some statements presented** in “IRRESISTIBLE Project: Exhibitions on cutting-edge scientific topics” vodcast **in the other vodcast** at appropriated places was another suggestion. However, this would extend the length of vodcasts, not allowing the decrease of the vodcasts size, as suggested by another partner.

The vodcasts will be improved taking into account the suggestions made by each partner. As soon as this process is completed the broadcasts will be widespread.

3. CONCLUSIONS

According to the results gathered from the questionnaire applied to all partners, concerning the evaluation and usefulness of the vodcasts, their opinion regarding the positive and negative aspects, as well as improvement suggestions, we can conclude that the vodcasts have great potential in the dissemination of the project and its results. We can also conclude that the vodcasts can be a great tool to support teachers and students in the process of exhibit development and construction, and they can also be used in the context of teacher professional development.

Bibliography

- Hammerich, P. (2000). Confronting students' conceptions of the nature of science with cooperative controversy. In W. McComas (Ed.), *The nature of science in science education: Rationales and strategies*, pp. 127-136. Dordrecht: Kluwer Academic Publishers.
- Kolstø, S.(2001). Scientific literacy for citizenship: Tools for dealing with the science dimension of controversial socioscientific issues. *Science Education*, 85(3), pp. 291-310.
- Millar, R. (1997). Science education for democracy: What can the school curriculum achieve? In R. Levinson & J. Thomas (Eds.), *Science today: Problem or crisis?*, pp. 87-101. London: Routledge.
- Sadler, T. D. (2004). Informal reasoning regarding socioscientific issues: A critical review of research. *Journal of Research in Science Teaching*, 41(5), pp. 513-536.