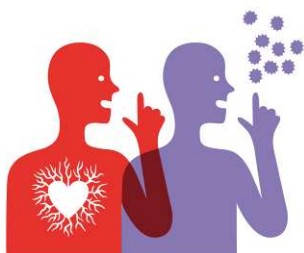




Education and Culture DG

Lifelong Learning Programme



# PILOTS

**Professionalisation for learning in technology and science**  
**141872-LLP-1-2008-1-BE-GRUNDTVIG-GMP**

## D4.2: Pedagogical materials

**Workpackage 4: Pedagogical material**

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# 1 Executive Summary

This document describes the philosophy and intents behind the production of the Pilots pedagogical materials, thus illustrating the structure of materials defined by partners during project meetings.

The last chapter lists in detail the pedagogical materials created before the date of this report, specifying for each topic the titles, aims, authors, date of publishing and types of documents produced.

## 2 What are pedagogical materials

Pedagogical materials are all types of resource that support the training of explainers during the project's training courses. Pedagogical materials are structured materials that can help explainers to carry out training activities for colleagues in their own institutions.

### 2.1 Aims

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Pedagogical materials support the training of explainers with the ultimate intention of helping them to:

- enhance the learning of adult visitors
- strengthen adult's active engagement with science and technology.

### 2.2 Objectives

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- professional development of explainers
- enhancement of the role of explainers in involving adult citizens in current science debates and participatory processes
- sharing of good practices among institutions participating in the project both as partners and as course participants
- reinforcement of a qualified peer to peer learning community
- production of a set of tools that can support explainers in the design and delivery of multiplying events in their own institutions.

## 2.3 Target user of the materials

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Not everyone is born a trainer and it is not enough to follow a two-day training course to become familiar with training methodologies. This means that it is useful to have a number of tools that will support future training for oneself and for others. Pedagogical materials offer explainers who follow the Pilots' courses and deliver Co-Pilots events (the multiplying events of WP6) and those who will engage on the Pilots' web-platform the opportunity to find, use, implement and modify a set of tested tools to conduct organised training activities.

## 2.4 Description

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Pedagogical materials can take different shapes in order to respond to different training needs. They are developed so as to develop both critical thinking and practical skills.

Some examples are:

- materials for theoretical background and reflection on the contribution of science centres and museums in science communication to non-expert citizens (articles, books, videos, websites..)
- descriptions of good practice and communication strategies adopted by participating institutions (short videos, live demonstrations)
- step-by-step instructions to carry out activities for developing specific skills and the connected supporting materials (cards or charts that help spark debate, take-home résumés of discussion, handouts, games to be played as part of a training activity)
- self-evaluation tools for explainers

## 3 Structure of pedagogical materials

Pedagogical materials produced by partners of the Pilots project are closely connected with the contents of the training courses and they are therefore shaped around the topics of the training sessions.

Yet materials are not merely the documents used during training to support activities. They are structured and detailed documents in which explainers can find all that is needed to re-propose the activities of the course to colleagues in their own institution. This ensures the effective dissemination of the training modules developed in WP5.

### 3.1 Structure for dissemination

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- Title (reflecting titles of the course sessions)
- Synthetic activity overview (outlining goals and take-home messages)
- Workshop overview (describing the time structure, space organisation, materials, audience)
- Step-by-step description of the activities (including details on the type of presentation, for example watching video, group games, small group discussion, plenary presentation)
- Downloadable materials to be used during, before or after the training activity itself (facilitation charts, discussion guidelines, game tools, articles, suggestions for preparatory reflection activities, photos, videos, power point presentations, links)
- Comments (including both comments by the activity leaders and comments by hub users)

## 3.2 Clustering by topic

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In order for pedagogical materials to be easily accessible by explainers they are structured into small “modules” (1 or 2 hour training activity that highlights a number of specified issues). This allows each explainer to choose the activity/ies that best suits the training needs of her/his institution.

Once developed and tested by partners pedagogical materials become a patrimony of all professional explainers and are left on the on-line platform to grow. Structured materials thus take the shape of thematic prompts for discussion.

Each material can be discussed, commented and enriched by other documents, videos, pictures.

Materials can be clustered around the following topics:

- Development and delivery of enquiry based activities
- Development and delivery of debate activities
- Reflections on the role of explainers
- Development of skills to deliver science shows and similar activities
- Presentations of best practices in adult education and science communication

## 4 List of pedagogical materials

The present document lists the pedagogical materials produced by partners for the first two training courses (Mechelen 1-4 April 2009 and Milano 2-3 June 2009).

The listed materials have all been published on the “training tools” section of the Pilots hub: <http://pilots-hub.ning.com/page/training-tools>

### 4.1 Materials from the first training course

First training course, 1-4 April 2009: Technopolis®, Mechelen, Belgium.

Tool to organize debates and discussions	
Developed by	Cité des Sciences et de l'Industrie : Paris National Museum of Science and Technology: Milan SISSA Medialab: Trieste
On-line since	4 April 2009
These materials can be used to: - Try different activities that can be used to engage adult visitors in debate - Reflect on the design characteristics of “debate activities” - Reflect on the ways to conduct “debate activities”	
1.Presentation of debate activity on biometry	PPT presentation
2.List of reflections on adult learning	PPT presentation
3.Link to at-Bristol on-line debate games	link
4.Presentation on how to conduct a debate session (debate continuum and taboo)	PPT presentation
5.Rules for debate activities (debate continuum on preimplantation and taboo)	PDF document
6.Printable cards for taboo game on genetics	PDF document



7.Printable cards for taboo game on paper	PDF document
8.Presentation of institutions proposing debate activities	PDF document

<b>Tips to conduct science shows</b>	
Developed by	Technopolis®: Belgium Hiša eksperimentov: Slovenia
On-line since	4 April 2009
<p>These materials can be used to:</p> <ul style="list-style-type: none"> <li>- Get tips on how to conduct science shows and other similar activities.</li> <li>- Reflect on the skills needed to perform in front of an audience.</li> <li>- Examine an example of a designed training programme from the Technopolis® science centre.</li> </ul>	
1.Presentation on how to control one's nerves	PDF document
2.Example of an explainer's assessment grid	PDF document
3.Document describing tips and tricks for a good science show presentation	PDF document
4.Outline of Technopolis training plan	PDF document

<b>Explainer's self-portrait</b>	
Developed by	Sissa Medialab: Italy
On-line since	4 April 2009
<p>These materials can be used to:</p> <ul style="list-style-type: none"> <li>- Discuss with your colleagues the role of explainers in your institution.</li> <li>- Test the use of two discussion games which can also be used in other occasions, with your visitors, on different topics.</li> <li>- Compare your point of view on the profession of explainers with data from a number of international surveys.</li> </ul>	
1.Presentation to introduce the activity on the self portrait of explainers	PDF document
2.Instructions for playing a "priority game" on the role of	PDF document

explainers	
3.Instructions for playing a “debate continuum” game on the role of explainers	PDF document

<b>Tools to design enquiry-based activities</b>	
Developed by	Pavilion of Knowledge – Ciência Viva: Portugal
On-line since	22 April 2009
<p>These materials can be used to:</p> <ul style="list-style-type: none"> <li>- Find out what is a visitor-centred, enquiry-based activity.</li> <li>- Discuss how to design and conduct an enquiry-based activity related to an object/content relevant to your institution.</li> <li>- Try out ways to disassemble complex scientific concepts to develop new enquiry-based activities related to your topics of interest.</li> </ul>	
1.Demonstration pattern for activity on enquiry based learning (first group)	PDF document
2.Cake recipe for activity on enquiry based learning (second group)	PDF document
3.Conversation script for activity on enquiry based learning (second group)	PDF document
4.Activity sheet for self-conducting the activity on enquiry based learning (third group)	PDF document
5.Worksheet to be filled during activity on enquiry based learning	PDF document
6.Slides Summarizing concepts of the activity	PDF document
7. Worksheet for discussion on disassembling scientific concepts	PDF document
8. Slides Summarizing concepts of the activity on disassembling scientific concepts	PDF document

<b>Introduction to the training course by the project leader Ecsite</b>	
Developed by	ECSITE: Belgium
On-line since	15 April 2009
Introduction to the training course by the project leader Ecsite.	
1.Presentation of the course that can be used as a template also in co-pilots events	PPT presentation

<b>Theoretical background and good lectures</b>	
Developed by	ECSITE: Belgium
On-line since	4 April 2009
What says the theory that founds the enquiry-based activities? Why an explainer should not explain? Which kind of different training's methodologies and practices you can find around the world? In that forum you can find some good materials for complete the training materials. Help us to find more!	
Open conversation thread	

<b>Answers to my boss</b>	
Developed by	Hiša eksperimentov: Slovenia
On-line since	4 April 2009
You are the manager of your Institution. Here are some problems that might bother you. Please help!	
See material from second training course	

## 4.2 Materials from the second training course

Second training course, 2-3 June 2009: National Museum of Science and Technology Leonardo da Vinci, Milan, Italy.

Tools to design enquiry-based activities	
Developed by	Pavilion of Knowledge – Ciência Viva: Portugal
On-line since	27 August 2009
These materials can be used to: <ul style="list-style-type: none"><li>- Analyse what is a visitor-centred, enquiry-based activity.</li><li>- Practice to develop an enquiry-based activity.</li><li>- Share different simple experiments used to engage visitors with exhibits.</li></ul>	
1.Reflections on enquiry based activities	PPT presentation
2.Photos of exhibits to be used in activity	PDF document
3.Grid for oriented discussion	PDF document

Help your boss!	
Developed by	Hiša eksperimentov: Slovenia
On-line since	2 June 2009
You are the manager of your Institution. Here are some problems that might bother you. Please help!	
1-18.Pictures of posters with questions and answers from the course	GIF documents
19.Question cards	PDF document

How to make adults debate?	
Developed by	Cité des Sciences et de l'Industrie: France
On-line since	21 June 2009

These materials can be used to: - train other explainers on debates - design your own debates in your institution	
1.Description of a debate activity	PPT presentation
2.Booklet on how to conduct a debate activity	DOC document

<b>The state of Art Session</b>	
Developed by	Sissa Medialab : Italy Cité des Sciences et de l'Industrie: France
On-line since	21 June 2009
This session is made of two parts: - a workshop on the way Scientific explainers see themselves - a presentation of the results of the qualitative survey that was done for the Pilots project on who are the scientific Explainers in European Museum and science centre and what are their training needs.	
1.Presentation of results of survey on explainers professional needs	PPT presentation
2.Pictures of posters produced in the course	PDF document
3.Activity sheet on how to conduct a similar session	DOC document

<b>Panorama on debates</b>	
Developed by	Sissa Medialab : Italy
On-line since	17 June 2009
The “Panorama on debates” session at the Milano course aimed to present the strategies science centres and museums follow for presenting current research on debates.	
1.Presentation of institutions proposing debate games	PPT presentation
2.Booklet on how to conduct a “discussion continuum” debate activity on genetic testing	PDF document

## 5 Conclusions

Development and use of materials up to now has shown the importance of certain features which make Pedagogical Materials useful and successful.

These characteristics should be taken into consideration when planning the development of new materials.

Summarizing the experience in the project one can say that materials should:

- State clearly the suggested uses so as to facilitate the choice through practice-oriented criteria.
- Offer a variety of activities that appeal to explainers at different levels of the career ladder of each institution (young explainers, senior explainers, managers, etc).
- Develop skills that relate to both the delivery and development of activities.
- Alternate practical activities (individual, in pairs, in groups) and presentation materials so as to appeal to different learning styles.
- Favour peer to peer learning and the sharing of experience and best practices.
- Work on examples of real-life cases from a range of different institutions.
- Develop tools for the assessment/discussion of the proposed activities and case studies making them relevant to the first-hand experience of each individual explainer.
- Have a clear modular structure that can be easily adapted to the time and ways in which each institution carries out its training.
- Be flexible so as to adapt to the content needs of each institution (according to the type of activities it offers and the consequent skills needed by its explainers).
- Encompass flexible annexes (worksheets, presentations, discussion tools, etc).
- Be written in a simple and straightforward language so as to be easy to translate in local language.
- Be open to updates and comments on their use in order to remain sustainable and relevant in the future.

## 6 Annexes

Please find in Annex the pedagogical materials produced, labeled as follows:

ME for materials produced for the Mechelen training course

MI for materials produced for the Milan training course

The listed materials have all been published on the “training tools” section of the Pilots hub: <http://pilots-hub.ning.com/page/training-tools> (access details provided in Confidential progress report).