

## Project result 2: Professional development training for scientists

### Training materials for scientists & science communicators

#### Scientists' writing and oral skills for science communication

##### 1. General description of the module

Partner institution:	University of Groningen
Target group:	Scientists, Researchers, Early Career Researchers, Faculty members involved in science communication activities, science communicators, and science communication students.
Expertise needed per target group:	The target groups need no prior expertise.
Overview of the module:	This module consists of two activities in a workshop style (2 hours) followed by individual work (2 hours).
Duration:	4 hours
Objectives:	<ul style="list-style-type: none"> <li>- How to write about science for a non-scientific audience.</li> <li>- How to speak about science for a non-scientific audience.</li> </ul>
Assessment:	<p>Peer assessment: the participants will provide feedback on each other's work. Guideline questions:</p> <ul style="list-style-type: none"> <li>- Which parts of the written article are clear, and which parts are less clear? Why?</li> <li>- How could the article be improved (e.g. the use of jargon, the structure, etc.)?</li> <li>- Is the article simple enough for a non-scientific audience to understand?</li> <li>- Which parts of the presentation are clear, and which parts are less clear? Why?</li> <li>- How could the presentation be improved (e.g. slides, speed, amount of information, etc.)</li> <li>- Is the presentation simple enough for a non-scientific audience to understand?</li> </ul>

## 2. Description of the individual activities

Title of activity 1:	Writing about science for a non-scientific audience.	
Duration:	1 hour	
Core ideas – Content:	Science communication is often written for a broad audience, where some people in the audience have little or no scientific background. The information should thus contain no jargon and be presented clearly and concisely. An article on science communication usually starts with a hook to pique the interest of potential readers. The structure of the article should be logical and evident to readers.	
Objectives:	<ul style="list-style-type: none"> <li>- Understanding the audience for which science communication is written.</li> <li>- How to present scientific information clearly and concisely.</li> <li>- How character plays a role in science communication.</li> <li>- How to write a hook.</li> <li>- How the structure of science communication can make the whole more than the sum of its parts.</li> </ul>	
Detailed description of the activity's implementation (word limit 300 words max)	<p>The participants will start by reading the hooks of a few selected science communication articles. In small groups, they will discuss if and why these hooks make them interested in reading the rest of the article.</p> <p>The participants will read a (portion of) a small scientific research paper and a corresponding article presenting the findings of this paper to a non-scientific audience. In small groups, the participants discuss how the article managed to convey the essential information of the paper. What was left out? What was dumbed down?</p> <p>The participants watch a short video about how to structure an article. Where do you put the most important information? The participants are given an article where all the paragraphs are disconnected. In small groups, they discuss the order in which the paragraphs should be placed to achieve the clearest structure.</p>	
Type of activity (select & comment):	Reading	Read the hooks of a few selected science communication articles.
	Discussion	Discuss if and why these hooks make one interested in reading the rest of the article.
	Reading	Read a (portion of) a small scientific research paper and a corresponding article presenting the findings of this paper to a non-scientific audience.

	Discussion	In small groups the participants discuss how the article managed to convey the essential information of the paper. What was left out? What was dumbed down?
	Video	Watch a short video about how to structure an article. Where do you put the most important information?
	Discussion	Discuss the order in which the paragraphs should be placed to achieve the clearest structure.
Tools ( <i>select &amp; comment</i> ):	Printed articles	All articles the participants have to read should be printed.
	Video player	To play the video about structuring an article.
Links of the activity sheets:	<a href="#">Module 1.1 hooks.docx</a> <a href="#">Module 1.1 paper and article.docx</a> <a href="#">Video on structuring news articles</a> <a href="#">Module 1.1 unstructured article.docx</a>	
Resources ( <i>links to the toolkit &amp; infographics</i> ):	Practical resource 2: Climate Communications Training Practical resource 3: Principles for effective communications and public engagement on climate change Practical resource 11: Designing Effective Science Communication	

Title of activity 2:	Speaking about science for a non-scientific audience.
Duration:	1 hour
Core ideas – Content:	Presenting scientific work to a non-scientific audience can be challenging. It is important to keep the message simple while avoiding being simplistic. Preparation is very important, as is knowing the audience's level of understanding of the topic. Avoid boring the audience by telling them a story, one involving a mystery and a journey towards the truth. Use metaphors that your audience can understand.
Objectives:	<ul style="list-style-type: none"> <li>- How to present scientific work to a non-scientific audience.</li> <li>- How to keep the message simple without being simplistic.</li> <li>- How to prepare for a presentation.</li> <li>- How to tell a story about the research.</li> <li>- How to use metaphors that the audience can understand.</li> </ul>
Detailed description of the activity's implementation	The participants will read a (portion of) a small scientific research paper and watch a corresponding video presenting the findings of this paper to a non-scientific audience. In

(word limit 300 words max)	<p>small groups, the participants discuss how the presenter managed to convey the essential information of the paper. How did they present the story? What metaphors were used? How was the message kept simple?</p> <p>The participants will watch a short video where a bad and good example of a presentation are shown. The participants are asked to think about the worst and best presentations that they either witnessed or gave themselves. In small groups, the participants discuss what makes one presentation better than others. How can bad presentations be improved? Can they come up with a list of the most important elements of a good presentation?</p>	
Type of activity (select & comment):	Reading	Read a (portion of) a small scientific research paper.
	Video	Watch a corresponding video presenting the findings of this paper to a non-scientific audience.
	Discussion	Discuss how the presenter managed to convey the essential information of the paper. How did they present the story? What metaphors were used? How was the message kept simple?
	Video	Watch two short videos presenting a scientific concept. One of the videos will be a 'bad' example, while one will be a 'good' example.
	Discussion	Discuss what makes one presentation better than the others? How could the 'bad' presentation be improved?
Tools (select & comment):	Printed articles	All articles the participants have to read should be printed.
	Video player	To play the video about structuring an article.
Links of the activity sheets:	<a href="#">Module 1.2 paper.pdf</a> <a href="#">Video presentation about paper</a> <a href="#">Video about good and bad presentations</a>	
Resources (links to the toolkit & infographics):	<p>Practical resource 13: Science Communication Toolkit: Telling the Story of Science</p> <p>Practical resource 14: Communicating Science: GIVING TALKS</p> <p>Practical resource 15: Soph talks science</p>	

Title of activity 3:	Writing an article and preparing a presentation about a scientific subject for a non-scientific audience.	
Duration:	2 hours	
Core ideas – Content:	Scientific communicators should be able to write an article and prepare a presentation about scientific research for a non-scientific audience based on the information learned during the first two activities.	
Objectives:	<ul style="list-style-type: none"> <li>- How to write an article about scientific research for a non-scientific audience.</li> <li>- How to prepare a presentation about scientific research for a non-scientific audience.</li> </ul>	
Detailed description of the activity's implementation (word limit 300 words max)	<p>The participants will look for a (short) recent scientific research paper on Google Scholar. Each participant will choose one paper and study it carefully, if necessary by looking up references and consulting other sources.</p> <p>Each participant will write an article for a non-scientific audience based on the research paper, using the information and skills learned during the first two activities.</p> <p>Each participant will also prepare a short (PowerPoint) presentation about this research paper, again for a non-scientific audience.</p> <p>Finally, the participants will pair up in groups of two. They will present their prepared presentation, read each other's articles, and provide feedback about the work.</p>	
Type of activity (select & comment):	Reading	Read a small scientific research paper.
	Writing	Write an article about the research paper for a non-scientific audience.
	Designing	Prepare a presentation about the research paper for a non-scientific audience.
Tools (select & comment):	Printed articles	All articles the participants have to read should be printed.
	Computer	Each participant needs a private device.
Links of the activity sheets:	–	
Resources (links to the toolkit & infographics):	<p>Practical resource 42: Science Communication MOOC</p> <p>Practical resource 43: Toolkit for science communicators and trainers. QUEST project</p> <p>Best-practice 74: How to avoid death By PowerPoint</p> <p><a href="#">How To Communicate Science Stories Clearly And Creatively Using the Ladder of Abstraction to Elevate Science Stories - The Open Notebook</a></p>	

