SciShops

ENHANCING THE RESPONSIBLE AND SUSTAINABLE EXPANSION OF THE SCIENCE SHOPS ECOSYSTEM IN EUROPE

D4.3

Modules for training Science Shops' staff

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Authors: **Ingrida Gečienė, SII**
Laima Nevinskaitė, SII
Marta Núñez, ESIB
Francesca Barisani, UNIBS
Sandra Kanopkaitė, SII

Contributors: **Helen Garrison, VA**
Ralph Schroeder, OXF
Giovanna Grossi, UNIBS

Review: **Rodica Stanescu, UPB**
Cristina Sorana Ionescu, UPB

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Executive summary

The development of new Science Shops greatly depends on the motivation and competencies of people who will be working at the new establishments. One of the ways to support the creation of new Science Shops is to provide training for the staff of future or newly established Science Shops. This deliverable aims to assist in this task by providing training modules for Science Shop staff. The modules present materials and pedagogy on the most essential topics needed to understand how to establish and run a Science Shop: Basics of Science Shops, Operational models, CBPR project management, Stakeholder involvement, Communication and public awareness, Project evaluation and impact assessment.

The intended users of the modules are trainers who provide training for Science Shop staff. The main target audience for the training are people who are new to Science Shops and CBPR, and who are interested in the idea of the Science Shop and thinking about establishing one. The modules could also be useful for people who already work at an existing Science Shop, to broaden their approach and provide them with new ideas, particularly in more specialised topics.

The modules rest on knowledge about running Science Shops, best practices, and challenges accumulated in previous deliverables of the SciShops project, as well as literature and other sources of information about various aspects of Science Shops. The modules also draw inspiration from insights and exercises from training courses and other events run by the Living Knowledge network and SPARKS project, as well as the first summer school of the SciShops project itself.

The description of each individual module consists of several parts: a statement of the module's objectives, an overview of the session outline, a description of methodologies, and a list of additional resources. The sessions themselves are designed to provide a balance between the presentation of information and interaction and self-reflection. Each session consists of an introduction, initial evaluation of participants' knowledge on the topic and/or an ice-breaking activity, presentation, and interactive exercises that enable and encourage participants to approach the aspect of the Science Shop being explored in a practical way. The modules include prepared PowerPoint presentations for each session.

The modules can be used separately depending on the needs of participants, or they can be combined into an extensive training programme as a summer school or held as a series of trainings. In addition, separate modules can be modified by a trainer and be adapted to the needs and prior knowledge of the audience, specific training programme, as well as the experience and approaches of the trainer him/herself.

Acronyms

BA	Bachelor of Arts
BSc	Bachelor of Science
CBPR	Community-Based Participatory Research
CBR	Community Based Research
CESI	Community Engaged Scholarship Institute (University of Guelph, Canada)
CSO	Civil Society Organisation
ESSRG	Environmental Social Science Research Group (Hungary)
EUC	European University Cyprus (Cyprus)
FBI	Institut für gesellschaftswissenschaftliche Forschung, Bildung & Information (Germany)
IT	Information Technology
LE	Large Enterprises
MA	Master of Arts
MSc	Master of Science
NGO	Non-Governmental Organisation
NPO	Non-Profit Organisation
PERARES (project)	Public Engagement with Research and Research Engagement with Society
PR	Public Relations
RRI	Responsible Research and Innovation
SII	The Institute of Social Innovations (Lithuania)
SME	Small and Medium Enterprises
UOC	Universitat Oberta de Catalunya (Spain)
UTS	University of Technology Sydney (Australia)
WUR	Wageningen University & Research (the Netherlands)

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1 Introduction

1.1. Goals

SciShops.eu (Enhancing the Responsible and Sustainable Expansion of the Science Shops Ecosystem in Europe) is a Horizon 2020 project involving 18 partners in 12 European countries aimed at promoting the growth of socially responsible community-based research in Europe. The project explores how different types of research organisations, such as research institutes, large enterprises, SMEs, NPOs and universities can develop sustainable Science Shops with the ambition of establishing ten new Science Shops during the course of the 30-month project. The project runs from September 2017 until February 2020.

The aim of the modules is to assist trainers who provide training for Science Shop staff. The modules present materials and pedagogy on the most essential topics needed to understand how to establish and run a Science Shop: Basics of Science Shops, Operational models, CBPR management, Stakeholder involvement, Communication and public awareness, Project evaluation and impact assessment.

The modules are part of WP4 of the SciShops project, which aims to develop a strategy for community-based participatory research and knowledge transfer from Science Shops to civil society. This document, which forms the deliverable of task 4.3, is intended to show how to contribute to capacity building of newly established or existing Science Shops in terms of human resource development, by providing Science Shops staff with the knowledge, skills and attitudes needed to successfully run a Science Shop.

The main intended target audience for the training are people who are new to Science Shops and community-based participatory research (CBPR), and who are interested in the idea of the Science Shop and thinking about establishing one. However, the training could also be useful for people who already work at an existing Science Shop, to broaden their approach and provide them with new ideas, particularly on more specialised topics such as Communication or Project evaluation.

1.2. Methodology and trainer's profile

The training is designed to provide a balance between the presentation of information and interaction and self-reflection. Each module consists of an introduction to the module, initial evaluation of participants' knowledge on the topic and/or an ice-breaking activity, presentation, and interactive exercises that enable and encourage participants to approach the aspect of the Science Shop being explored in a practical way. The presentations also include real-life examples of Science Shops.

The modules rest on knowledge about running Science Shops, best practices, and challenges accumulated in previous deliverables of the SciShops project, particularly 4.1, 4.2, 2.2, 2.5, as well as literature and other sources of information about various aspects of Science Shops. The modules also draw inspiration from insights and exercises from training courses and other events, run by the Living Knowledge network and SPARKS project, as well as the first summer school of the SciShops project itself.

The projected ideal profile of a trainer is someone with some experience in running a Science Shop or of undertaking CBPR. A probable best-case scenario is a group of different trainers (or a different trainer for each of the modules). Some modules require more experience with Science Shops or CBPR,

such as Science Shops: The Basics, Operational models, CBPR project management, and Stakeholder involvement. Other modules could be successfully provided by professionals from the respective field with more extensive preparation to adapt their knowledge to the specifics of Science Shops – we see this as a possibility for the topics of Communication and public awareness, as well as Project evaluation and impact assessment.

1.3. How to use the modules

As mentioned, the deliverable is a collection of six modules that includes:

1. Science Shops: The Basics
2. Operational models
3. CBPR project management
4. Stakeholder involvement
5. Communication and public awareness
6. Project evaluation and impact assessment.

The modules can be used separately depending on the needs of participants, or they can be combined into an extensive training programme as a summer school or held as a series of trainings, or anything in between – it is up to the organisers to decide the duration and structure of the training. However, the sequence of the modules has a logic that leads the participants from the more general to the more specific aspects of running Science Shops. Thus, if the training is to be given to participants with no experience with Science Shops, it is advisable to start from the beginning and proceed logically through the various steps.

In addition, separate modules can be modified by a trainer and be adapted to the needs and prior knowledge of the audience, specific training programme (e.g. if each session needs the participants to be introduced to each other), as well as the experience and approaches of the trainer him/herself. It is important that the trainer feels confident with the material and the exercises, therefore modification is encouraged if it allows the goals of the training to be achieved.

The description of each individual module consists of several parts: a statement of the module's objectives, an overview of the session outline with indicative duration, a description of methodologies, and a list of additional resources. The "Description of methodologies" part is structured according to the type of activity (introductory activities, presentation, interactive exercises), although concrete sessions might consist of different combinations of these activities – the suggested flow is presented in the session outline. The presentation part is divided into two types of material: PowerPoint presentation and Key messages corresponding to the different slides. PowerPoint presentations are included at the end of the deliverable (they will be made available in ppt format when the modules are published online). The key messages are a description of the main points that should be stressed during the presentation, but do not constitute a text to be read out during the presentation; each trainer should deliver the messages in his/her own words and style, based on the information presented in the key messages and the additional sources of information. The handouts and other material that will be used in the sessions are included in the Appendixes of the respective modules.

2 Science Shops: The Basics

This is an introductory training about Science Shops. It can be used as a stand-alone training session if only an overview into Science Shops is needed, or as a first module in the series of modules.

2.1. Objectives

In the area of expanding knowledge, after this module, participants will:

- Become familiar with the Science Shop concept, its benefits and relationship with public engagement and RRI
- Understand the principles of running a Science Shop and related challenges
- Have gained an overview of the steps to establish a Science Shop

In the area of skills and attitudes they will:

- Strengthen their interest in furthering their knowledge and skills with regard to Science Shops
- Be interested in establishing a Science Shop at their institution
- Be able to plan the first steps to establish a Science Shop

2.2. Session outline

Methodology	**Material required**	**Duration** Total: 2 hr 30 min
1. Welcome	Training agenda (printed)	5 min.
2. Personal introductions and initial evaluation	"Post-it" notes (different colours)	15 min.
2. Sharing experiences	Invited speakers or videos	60 min. (including Q&A and discussion)
3. Presentation	- Projector & large screen - Key messages - PowerPoint presentation	90 min. (including Q&A and discussion)
4. Interactive exercise		30–40 min.

2.3. Description of methodologies

Welcome

The trainer welcomes participants, presents the session's aims, distributes and comments briefly on the training agenda.

Personal introductions

Prepare pieces of paper with the first part of sentences, one per participant. Ask participants to take one of the pieces of paper when entering the room. At the beginning of the session, ask participants to present themselves to the group, by saying their names and organisations and completing the sentence.

The sentences could be:

- Doing research with the community can be seen as a valuable research approach to…
- I would be happy to represent my community in a project which…
- I would not agree to take part in a project which…
- When I think about community-based research, I feel…

Initial evaluation

Attach 2-3 sheets of paper with questions for the participants on the wall. Questions could be:

- What questions do you have when thinking about the concept of Science Shops? (Please use red sticky notes)
- Why are you attending this training and what are your expected outcomes? (Please use green sticky notes)

Give sticky notes to the participants, ask them to write answers to every question (on a separate sticky note) and put them on the wall. At the end of this training invite all participants to the wall and together go through all questions and comments and see if they were answered during the day.

Sharing experiences

Here, three different cases of Science Shops are presented. It is up to the trainer to choose one or two cases and present them to the participants, or to find other cases or invited presenters.

Case 1

The Science Shop Language, Culture and Communication, University of Groningen, the Netherlands (Science Shop for the humanities)

The **Science Shop Language, Culture and Communication** is part of the Faculty of Arts, University of Groningen, Netherlands (the Science Shop is fully integrated into the structure of the university). It was set up in 1986, so it is well-established and reflects a long-lasting tradition of CBPR in the Netherlands.

The Science Shop works with a wide range of stakeholders:

- public libraries;
- museums;
- local governments;
- foundations;
- welfare organisations;
- schools and other educational organisations;
- communities (such as neighbourhood groups or groups of parents).

Usually the Science Shop receives around 25–30 questions a year, but it can only manage a maximum of ten projects a year because of its size. Although the Science Shop receives sufficient research requests, sometimes the coordinators themselves identify organisations with interesting problems to investigate.

The Science Shop is fully integrated into the structure of the university. Most staff and other direct costs are funded by the university itself. The university covers the salary of two part-time (2 days a week) coordinators and provides the Science Shop with an office and resources, such as computers. Depending on the type of organisation they conduct research for, occasionally the Science Shop asks for a small financial contribution to ensure the students do not have to cover any costs themselves. Fees charged by the Science Shop's coordinator for giving external lectures provides a small amount of additional funding too.

The Science Shop recognises the importance of communicating its work on issues of societal relevance to the broader public via its website, social media, traditional media as well as public lectures, workshops, open access reports and sometimes popular science articles. They have some media partners and news is spread nationally, regionally or locally, depending on the subject.

Questions for the discussion:

- What are the success factors of the Science Shop Language, Culture and Communication?
- Why it is important to spread news about the Science Shop projects?

More information: SciShops deliverable 2.2. "Existing RRI tools and successful participatory community-based research case studies report" (Garrison et al. 2018).

Case 2

Beta Science Shop at the University of Groningen, the Netherlands (Science Shop for natural sciences)

A YouTube video presenting Beta Science Shop, covering natural and health sciences, at the University of Groningen (the Netherlands). Explains the Science Shop concept, includes comments from representatives of the Science Shop, faculty and former 'client' organisations, talking about different benefits of the Science Shop and giving examples of concrete projects.

https://youtu.be/2-I_2zXT3Qk

Questions for the discussion:

- What are challenges for science nowadays?
- What are benefits of Science Shop projects for scientists?
- What are benefits for Science Shop clients?

Case 3

Heart and Lung Shop at Imperial College London (pop-up Science Shop)

Temporary Science Shops, also known as pop-up Science Shops, can be a useful model for those that wish to pilot the concept of a Science Shop at their organisation. Pop-up Science Shops can take a variety of formats. One example is the pop-up Science Shop run at Malmö University (Sweden), which was piloted twice during 2017 as part of a regional social innovation project involving a number of partners. The idea was to prototype a science shop that was less connected to a physical space or one institution. Four staff at Malmö University have been involved in driving the project forward; however, they do not have formal roles but function more as an informal network of people facilitating the initiative. The model involves inviting CSOs to series of meetings to turn challenge into research questions, which are subsequently narrowed down and formed into concrete collaborations.

This example, the Heart and Lung Shop at Imperial College London, was primarily used as a vehicle for public engagement with science. Activities like this help to initiate dialogue between researchers and the general public, see if researchers' work is of interest to members of civil society, and gauge if more questions are raised. This approach of using a temporary retail space to engage directly with members of the public could also be of use to Science Shops in terms of soliciting research requests directly from citizens.

https://youtu.be/oA3Vczu2TmU

Researchers at Imperial College London used empty retail space in Hammersmith's Kings Mall to set up The Heart and Lung Repair Shop. Scientists and clinicians from the National Heart and Lung Institute (a part of Imperial College London) collaborated with artists to develop visually captivating spaces and interactive experiences that stimulated discussion about cardiovascular and respiratory research topics, and their social, ethical and cultural implications. Activities included visual exhibits and displays, participatory installations, demonstrations, games, workshops, talks and debates, all of which were delivered and facilitated by researchers.

The pop-up shop was designed to allow scientists to share their research and work with public. In return, members of the public were encouraged to share their views on what they had seen and what they knew about how these two vital organs function.

As the Imperial College London example illustrates, pop-up Science Shops can be used when aiming to encourage citizens to actively participate in science by formulating research requests, and mobilise them to feed science and research with their real needs, expectations and ideas.

Questions for the discussion:

- What benefits for researchers were generated while running a pop-up shop?
- What benefits did the participants get?
- Pop-up Science Shop – pros and cons

More information: Dowell, E. (2017). *Pop-up Science: Transforming empty shops into creative spaces for science engagement*. Available at: http://www.imperial.ac.uk/media/imperial-college/medicine/nhli/public-engagement/Pop_Up_Science_eBook.pdf

PowerPoint presentation

The aim of this presentation is to provide a general introduction to the idea of Science Shops, their benefits to various stakeholders, and their impact on society. This presentation also provides an overview of the steps needed to run a Science Shop. As more detailed training on these steps is provided in other modules, this overview serves as an introduction to subsequent sessions and can be run through quickly. However, it can also be used on its own as the basis for a longer discussion on the establishment of Science Shops in the event that the other modules are not being undertaken by the participants.

Key messages corresponding to the different slides

1. What is a Science Shop?

When using a term "Science Shop" we are talking not about a "shop" in the traditional sense of the word, but about small organisations that carry out scientific research in a wide range of disciplines. Science Shops can be established as independent organisations in the form of non-governmental or community-based organisations or embedded within other organisations (universities or research institutions). Students (sometimes young researchers), guided by experienced researchers, work there on behalf of citizens and civil society.

A key element that distinguishes Science Shops from other knowledge transfer mechanisms is the fact that Science Shops respond to civil society's needs for expertise and knowledge. This way Science Shops combine research with service to society.

Representatives of NGOs or local communities or other types of civil society organisations (CSOs) can approach a Science Shop with a problem in which they feel some research would be helpful. The Science Shop staff together with the "client" organisation (CSO) will then translate the request into one or more research questions and find students or young researchers to work on the projects. Close contact with the "client" is very important throughout the implementation of the project.

Usually Science Shops work on research questions free of charge. The most important aim is to create fair and supportive partnerships with civil society organisations and work on a participatory basis.

The Living Knowledge Network explains that, as a mission statement, Science Shops seek to:

- provide civil society with knowledge and skills through research and education;
- provide their services on an affordable basis;
- promote and support public access to, and public influence on, science and technology;

- create equitable and supportive partnerships with civil society organisations;
- enhance understanding among policymakers and education and research institutions of the research and education needs of civil society;
- enhance the transferable skills and knowledge of students, community representatives and researchers.

More information: Living Knowledge Network website, About Science Shops. Available at: https://www.livingknowledge.org/science-shops/about-science-shops/

2. General overview of Science Shops

Worldwide we can find many Science Shops that differ in size and work under different names and in different ways. But there are many things that they have in common: research projects are done based on concerns of civil society and these projects are implemented in close cooperation with civil society organisations and research institutes.

Although many of the first Science Shops were based at universities, they are now run by other types of organisations, e.g. NGOs and potentially even companies.

In Europe, Science Shops were established in four "waves" (based on History of Science Shops at www.livingknowledge.org; Mulder et al. 2001; Fischer, Leydesdorff, and Schophaus 2004)

First wave
The first Science Shop was established in the Netherlands in the 1970s. Its establishment coincided with the emergence of project-based education in universities and an emerging environmental awareness in society. By the early 80s, all Dutch universities had one or more Science Shops, serving many scientific disciplines.

Second wave
Since the founding of the first Science Shop in the Netherlands, the concept spread throughout Western Europe and Science Shops evolved in Germany, France, Denmark and Belgium. In the 1980s there were as many as 15 Science Shops in France. They were initiated by scientists who had learned about the Dutch Science Shops (however, none of the French ones are in existence now). In Germany and Austria Science Shops were also established based on the Dutch example, both as independent (NGO) Science Shops and as university-based Science Shops.

Third wave
During the 1990s the concept of Science Shops received renewed interest by policy makers, especially by the European Commission. Several projects on Science Shops were funded by the EU and new Science Shops were established in Spain and the UK.

Fourth wave
From 1995 new Science Shops begin to be established in the Middle and East-Europe, mostly modelled after the Dutch example.

Nowadays we can find active Science Shops or organisations with similar missions throughout the world in, for example, Israel, Romania, Lithuania, Latvia, Poland, Belgium, Denmark, Spain, United Kingdom, South Africa, USA, Canada, South Korea.

However, the European wide survey conducted by the SciShops project in December of 2017 revealed that most of the 642 respondents were not familiar with the Science Shop concept, as only a third (32 percent) had heard about Science Shops before the survey. Awareness was slightly higher among

researchers than community organisations and policy makers. Among researchers, awareness of the Science Shop concept was higher in social sciences and humanities than in natural sciences and technology disciplines. There were also geographical differences, with awareness of the Science Shop concept higher in Western Europe compared to Eastern, Southern and Northern Europe.

Nevertheless, when asked if community members, who have no experience of working on Science Shop projects, would be interested in using the service of a Science Shop, 71 percent responded positively. No one answered that they would not be interested. However, 29 percent were not quite sure. Similarly, 66 percent of the surveyed researchers who had not been previously involved in Science Shops projects said that they would be interested in getting involved in this type of research. 28 percent did not know and only 6 percent said they would not be interested. Therefore, a lot of work needs to be done to popularize Science Shops, to use the potential interest of researchers and community members to work in Science Shop projects, and to strengthen ecosystem of Science Shops in EU.

More information:

- SciShops deliverable D2.3 "Stakeholder survey summary report" (Bergman et al. 2018)
- Mulder, H. A. J., Auf der Heyde, T., Goffer R., and C. Teodosiu (2001) Success and Failure in Starting Science Shops: Scipas Report No. 2, available at: https://www.livingknowledge.org/fileadmin/Dateien-Living-Knowledge/Library/Project_reports/SCIPAS_report_nr._2_2001.pdf
- Fischer, C., Leydesdorff, L. and M. Schophaus (2004) Science Shops in Europe: The Public as Stakeholder. *Science and Public Policy* 31(3), pp. 199-211.
- Living Knowledge Website, History, available at: https://www.livingknowledge.org/science-shops/about-science-shops/history-of-science-shops/

3. Science Shops and public engagement in science

The idea behind establishing Science Shops lies in the understanding that there is a huge **gap between traditional scientific research and the needs of communities**. Thus, Science Shops represent an approach to public engagement in science. The importance of scientists engaging with the public about scientific issues has been recognised for a long time and public engagement is now strongly encouraged in the research community. Its importance is acknowledged by scientists, funders and local government. However, many people still view public engagement as "outreach" i.e. science communication (more one way, or with limited interaction) rather than true mutual partnerships, which is what a Science Shop should be.

There are many different definitions and types of public engagement. When talking about public engagement in science, there are numerous ways in which the findings of researchers and students can be shared with the public. When describing public engagement with research, people use lots of different terms, such as outreach, collaborative research, open access, citizen science, participatory research, lifelong learning, social responsibility, community engagement etc. This shows us that public engagement is multi-faceted and can take many forms. **Ideally engagement should be a two-way process, involving interaction and listening**, with the goal of generating mutual benefit and meaningful incorporation of public input into the research process.

Why does public engagement matter? Engaging with the general public is of increasing strategic importance for research centres and universities, to strengthen relevance, responsiveness and

accountability – and to build trust. Engagement with the public can enrich the work of research institutions with new ideas and challenges. Here are some arguments which show us the importance of public engagement:

Answerability. Research institutions need to be more open and transparent about what they are spending public money on – and why. Open dialogues with the general public about what researchers do and why they do it can help to build understanding and appreciation. Furthermore, it helps researchers to better understand society's needs and fit their work to the expectations of wider society.

Trust. Public engagement, openness and being part of the debate on the social and ethical implications of research helps to build trust between researchers and society. Public engagement can be seen as a mind-set that acknowledges that the public have a genuine stake in the work of researchers.

Relevance. In times of media and open access it is extremely important to understand the necessity of sharing expertise. Without engagement, researchers risk appearing out of touch and increasingly irrelevant.

Responsiveness. Public engagement helps researchers respond to societal needs. This way relationships are built based on partnership and co-production.

For members of general society, engagement in science allows concerns to be raised that might otherwise be overlooked. Participation in public engagement also means the ability to contribute to shaping one's environment, which might be related to political engagement or a need for self-expression.

More information:

- SciShops deliverable 4.2. "Practitioner roadmap and methodology toolkits" (Russo et al. 2018)
- The National Co-ordinating Centre for Public Engagement, why does public engagement matter? Available at: http://www.publicengagement.ac.uk/about-engagement/why-does-public-engagement-matter

4. Science Shops and RRI

Responsible Research and Innovation (RRI) is a relatively new term that is used to describe a set of ideas and initiatives addressing socially responsible research that considers effects and potential impacts on society. RRI wants to mobilise actors from society, research, industry, policy and education to work together throughout the whole research process in order to better align both the process and its outcomes with the values, needs and expectations of society. It builds capacities in citizens as active agents for shaping the future of society and developing solutions for grand societal challenges. Society's participation in developing research issues, in the research process itself, and in the debate about, and implementation of, its findings – these are important factors determining the success of the transformation towards a sustainable future.

In this context **Science Shops** can be seen as valuable actors that help to bridge the gap between research and society. Public participation in research through a Science Shop is based on transferring requests from community groups to research organisations. So we can say that Science Shops are a "best practice" example of RRI. Engaging different groups of stakeholders in dialogue and development processes reflects the idea of engagement and responsiveness. Research question development is based on anticipation with meaningful openness, reflection, adaptation and reflexivity. Free access to results and transparency help to build trust.

More information:

- Community-Based Research Process, https://www.livingknowledge.org/fileadmin/Dateien-Living-Knowledge/Dokumente_Dateien/Toolbox/Campus_Engage_Infographic_of_CARL_Process_Map.pdf
- Public engagement in science: what it means, http://www.fromthelabbench.com/from-the-lab-bench-science-blog/public-engagement-with-science-what-it-means
- RRI tools for Science Shops, https://www.scishops.eu/resources/rri-tools-for-science-shops/
- RRI tools, https://www.rri-tools.eu/research-community

5. How does a Science Shop work?

Science Shops take the role of mediator between civil society organisations (and other stakeholders) and research institutions (university or independent research centre). Questions raised by members of civil society organisations are rephrased into scientific research topics to be addressed by a researcher or students under supervision of an experienced researcher. The research project leads to a report, designed to be of use to the client and wider society. Some Science Shops may also deal with other types of projects where research is only one part or includes only desktop research that informs the development of a product or a service, e.g. when students create a visual identity for a NPO or create a design for a public space. The Science Shop may also participate in further activities such as dissemination, communication and exploitation of project results.

6. Benefits of Science Shops for various stakeholders

When running a Science Shop, mutual benefit is a very important part. Science Shops should have a positive impact on the mother organisation, civil society and other stakeholders. Benefits might include learning, developing new skills, gaining new insights or ideas, developing better research, raising aspirations, or gaining inspiration.

Science Shops meet the needs of:

Universities

- Problem-based learning
- Contribution to the development of university curricula and research
- PR and social responsibility (improved image)
- "Third mission"

Students

- Enhanced learning
- New skills (e.g. joint problem definition, project-based working, communicating, planning) and employability
- Credits for courses

Researchers

- Case materials for either future publications or further theoretical analysis
- Networking
- PR and social responsibility
- Science communication

Society

- New product, service, organisation
- Informed and engaged public
- Empowerment
- Media/public attention

Policy makers

- Better informed decisions
- Adequate funding for scientific research
- Appropriate regulations

7. Steps to establish a Science Shop – an overview

Establishing a Science Shop:

1. Survey the territory (get to know the policy context, identify relevant funding streams, etc.).
2. Build alliances (analyse your networks, identify relevant professional organisations and networking opportunities, develop relationships).
3. Inform (ensure that people understand the work and methods of a Science Shop, initiate dialogue with civil society, develop relationships with policy makers)

Generate research requests:

1. Introduce the Science Shop to your local community groups (e.g. NGOs, local/regional authorities, associations, patient groups and researchers).
2. Develop tools for collecting questions.
3. Promote the Science Shop through your local communication channels. Announce that there is an opportunity to submit questions and explain how to do it.

The staff of a Science Shop usually has to perform the following tasks:

1. Organise a first meeting with clients to understand the problem and collect relevant questions/problems. Some general criteria for accepting a request: there must be a scientific element to it; it needs to be of wider relevance to part of the general public; the client must be able to use the results (but there should be no commercial interest driving the request in order that the process is not seen as being skewed by a special interest); and the results have to be published with open access.
2. Do some preliminary research to see if the question has already been answered and if there is any societal relevance. Then reformulate the client's question into a research question.
3. Organise a second meeting with the client together with relevant experts and local stakeholders to discuss existing research results, to agree on the research question, to explore limitations and expectations of all stakeholders.
4. Find a suitable supervisor for the research project. The supervisor can be from a local university or research organisation. It is important not only to define the research questions but also find a suitable researcher willing to lead the research project.
5. Find students or researchers to work on the research project.
6. Maintain communication between the client and research group (organise follow up meetings to update on process, to plan for reporting and dissemination).
7. Prepare a presentation of the results both for stakeholders and to the wider public. It could be a presentation, interview, report, brochure, website, article, etc.
8. Make an inventory of follow-up research or research-themes. See if there is a possibility for scientific publication, interesting themes for further research.

9. Undertake a project evaluation with the student, supervisor and client.
10. Support the client in implementing results and recommendations.

More information: The Sparks Handbook. Available at: http://sparksproject.eu/sites/default/files/Sparks%20Handbook.pdf

8. Life cycle of Science Shops

Regarding the life cycle of Science Shops, a crucial finding of Science Shop case studies and a scenario analysis undertaken by the SciShops project (Garrison et al. 2018; Schroyens et al. 2018) is that their development is rarely a linear process. Science Shops that have existed for a long time have had their moments of growth and decline, which can lead to discontinuity or renewal of the Science Shop. These critical moments require an adequate reaction to the changing environments and conditions by rethinking the key aspects of a Science Shop's operation. During the different stages of its life cycle, a Science Shop's organisational model might change, different kinds of staff could be involved, the thematic scope may widen or narrow, different project types might be undertaken, and funding options might be expanded, secured or, alternatively, lost.

Example

The Science Shop Languages at the University of Groningen, Netherlands (as it was called in the beginning) was set up in 1986 by the board of the Faculty of Arts at the University of Groningen. There were already a number of other Science Shops at this university at the time and the board felt a need to have an open and democratic service for research in art disciplines as well. Due to the support of the Faculty Board, setting up the Science Shop was a straightforward process. The new Science Shop worked closely with another focusing on History & Languages on a variety of societal issues.

At the end of the 90s, the Science Shop Languages went through a difficult period and was not operational for a few years. These difficulties were partly due to the success of the Science Shop History that split from the Faculty and moved to a business-like model. This departure resulted in a lack of funding and human resources for the Science Shop Languages.

Nevertheless, in 1998 the Science Shop Languages started up again in a different environment. A new centre of expertise with staff employed to work on paid contract research was established and the Science Shop was restarted within the centre to work on connecting non-profit organisations to student research. Once again, the Science Shop became part of a bigger organisation and started flourishing.

In 2004, the Science Shop was renamed to Language, Culture and Communication to attract a greater breadth of work and to avoid confusion with the university's Language Centre. Today, the Science Shop is embedded in a new organisational unit, the Department of Communication, Career and Society, as the Centre of Expertise didn't survive the economic crisis in 2008.

More information: SciShops deliverable 2.2. "Existing RRI tools and successful participatory community-based research case studies report" (Garrison et al. 2018).

9. Key challenges and recommendations for the sustainability of Science Shops

Once established, Science Shops face some key challenges in their work:

- **Funding** is the greatest challenge facing Science Shops. Therefore, it is recommended to use diversification of funding sources not to become reliant on one source of funding as well as having some other types of activities generating resources that can be used between paid projects. It is also important to be proactive in searching for additional funding e.g. through participation in public engagement in science projects, initiating joint projects with local communities based on communities' requests for funding, offering paid consultancy services, lectures, etc. in order to increase the Science Shop budget.
- **Difficulties to get requests from civil society organisations**, especially in countries that have no tradition of engaging civil society in research activities. Thus, there is a lot of initial work needed to make community organisations aware of the Science Shop and to demonstrate the value of its services. Actively spreading the message about unpaid research possibilities through meetings, forums, mass media and intensive personal work may help to overcome this challenge.
- **Matching research requests with resources**. Some Science Shops struggle to find enough students or volunteers with the right knowledge and motivation to fulfil certain research requests. Also, it can be difficult to balance the civil society organisations' timescales for when they need the research with constraints such as academic terms (semesters). Balancing the expectations of the community organisations, who rely on the project results, with course work requirements can also be a challenge. In such case skills such as project management and communication with clients, and flexibility are needed.
- **Working with a diverse range of stakeholders,** e.g. funders, policy makers, and grassroots communities also brings challenges due to their different requirements, approaches and ways of communicating. The main recommendation would be to strengthen the public engagement skills of Science Shop staff through training and practice.
- **Loss of key Science Shop staff.** Many Science Shops are driven by highly committed and enthusiastic individuals. The sustainability of small Science Shops can suffer if these key people leave or retire from the organisations. Therefore, it is important to develop expertise and experience within the science shop by motivating, training, and involving other staff in the management and implementation of Science Shop projects.

Interactive exercise

"Possibilities of establishing a Science Shop at your institution"

Aim: The exercise encourages participants to think about establishing a Science Shop at their institution.

Number of participants: not limited; participants are asked to form groups.

Duration*:* 30 min. (10 min. of work in groups + 20 min. of presentations and discussion)

Process: Participants work in groups; group sizes can vary. Participants are encouraged to form groups representing similar institutional profile, e.g. university (if there are many participants from universities, they can further form groups according to the size or profile of the universities), NPO, company. If it is an international group, participants are encouraged to form groups based on the represented country. If there are participants from the same institution, they are encouraged to stay in the same group. For the first 10 minutes, participants are asked to discuss in their groups the

possibilities of establishing a Science Shop at their institution: how likely it is, what challenges they would face, etc. After that, groups are asked to present their insights to other participants and have a broader discussion.

Wrapping up: The exercise is finished with a short summary given by the trainer emphasizing the diversity of possibilities and approaches to establishing a Science Shop. If needed, this can be an occasion to ask participants about what further information or training they would need to support them with their efforts to establish a Science Shop.

2.4. References and further reading

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3 Operational Models of Science Shops

3.1. Objectives

In the area of expanding knowledge, after this module, participants will:

- Gain awareness about the diversity of operational choices and models for Science Shops
- Recognise the key aspects that define different operational models of Science Shops and challenges related to them

In the area of skills and attitudes, they will:

- Be able to design their own model of Science Shop at their institutions
- Realise the importance of a flexible approach to run a Science Shop, considering the context and available resources
- Be able to anticipate challenges facing Science Shops

3.2. Session outline

Methodology	**Material required**	**Duration** Total: 3hr 45min
1. Welcome	Training agenda (printed)	5 min.
2. Ice breaking activity "10 things in common"		15 min.
2. Presentation Parts 1-9	- PowerPoint projector & large screen - Key messages - PowerPoint presentation - Handouts	90 min. (including Q&A and discussion sessions)
3. Interactive exercise "Develop the operational model of the Science Shop at your institution"	- Template for model description	60 min.
4. Presentation Parts 10-11	- PowerPoint projector & large screen - Key messages - PowerPoint presentation	25 min. (including Q&A)
5. Interactive exercise "R.I.P. Science Shop"		30 min.

3.3. Description of methodologies

Welcome

The trainer welcomes participants, presents the session's aims, distributes and comments briefly on the training agenda.

Personal introductions and ice breaking activity

If there is a need (depending on the training programme), the trainer can ask participants to present themselves.

For the ice breaker, divide the training participants into groups of four or five people by giving them numbers such that you can avoid people sitting next to each other ending up in the same group. Ask the newly formed groups to find out ten things that they have in common with every other person in the group. It can be both related to their work and the institutions they represent (as the topic is Science Shops, this will likely be the first ideas that come to mind), as well as personal things. One person from each group should take notes. Then ask one person from the group to read their group's list of things in common. The point is to let the participants know the composition of the whole group (in the interactive exercise, they will be asked to form groups of representatives from similar institutions), as well as to foster communication throughout the whole session.

PowerPoint presentation

Introduction

The aim of this presentation is to give the participants an overview of different operational options when running a Science Shop, as well as to start them thinking about the model of the Science Shop at their institution.

The presentation is centred on a brief introduction to a range of options and real-life examples of less common models. It is advisable to also provide a handout with an overview of the options according to the type of mother organisation, together with advantages and disadvantages of all options (provided in the Appendix). It is recommended to combine the presentations with discussion sessions; suggestions for the focus and questions of discussions will be presented later in the description of methodologies.

This presentation is based on the "Science Shops Scenarios Collection", prepared by the SciShops project partners (Schroyens et al., 2018), which should be consulted for background information and more extensive description of examples.

Key messages corresponding to the different slides

1. How to run a Science Shop?

Any type of organisation can have a Science Shop. Real life examples show that a Science Shop can work successfully at universities, at NGOs, they can be run as independent entities, and even by companies (as being investigated by the SciShops project).

Consequently, there is no single or dominant way to run a Science Shops and the Science Shop model is extremely flexible. How Science Shops operate and develop depends on their context, both institutional and the wider social, cultural, economic and political environment of the country, as well as the resources it has access to.

The next question is how to find the best way to model the Science Shop for your organisation. This entails understanding the options for different aspects that are important for the structure of a Science Shop and selecting the options that best suit the organisation. To do this, in turn, it is necessary to identify the "key aspects" of a Science Shop.

2. Key aspects

Key aspects are the essential organisational characteristics of a Science Shop. Options related to these characteristics reveal the possible operational choices for Science Shops. Different Science Shops choose different options according to their particular institutional and external context. Also, the operational choices may change throughout the life cycle of the Science Shop in response to certain institutional or societal developments.

3. Organisational models

Pop-up Science Shop. Pop-up Science Shops are non-permanent entities that may operate for a short period of time. They can be run by any type of organisation. Activity is limited to a small number of one-off events or interactions with civil society organisations, often run within a framework of a larger project. Pop-up Science Shops provide flexibility, allowing the Science Shop to pilot activities, or react to changes in demand from CSOs. They require less resources than a permanent Science Shop. However, it can be more difficult to establish a reputation and branding. One example is the pop-up Science Shop run at Malmö University (Sweden). In contrast to pop-up Science Shops, all other types of Science Shops discussed further can be regarded as "permanent" Science Shops.

Permanent Science Shops established within a university/NPO/business company. University-based Science Shops are referred to as the Dutch model, in reference to the very first Science Shops established in the Netherlands in the 1970s. Science Shops based at universities and research institutes are often branded and marketed as an entity, but in fact the legal entity is their mother organisation, i.e. the university through which staff are employed and finances are handled. NPOs often carry out a wide range of activities, of which the Science Shop is just one. An example of a NPO-based Science Shop is the Science Shop at the Social Innovation Institute (Lithuania). Science Shops can also be run by a company – this model is investigated within the SciShops project.

Independent legal entity. Alternatively, a Science Shop may be an independent legal entity itself. There is a wide range of legal forms that a Science Shop could take, such as a non-profit association, charity, or foundation. The choice of the type of legal entity will partly depend on how legal entities are defined in the legal systems of the country in which the Science Shop is based and the country-specific options and rules. Examples are the Bonn Science Shop, or Interchange in Liverpool.

Another option for a Science Shop may be to operate as a for-profit entity, such as a limited company or as a social enterprise. Social enterprises are run on a for-profit basis, but have social objectives, and profits are primarily reinvested back into the business or community.

University-based Science Shop options

Centralised Science Shops. Centralised Science Shops mediate research across the whole of the university. They provide a contact point for civil society organisations, regardless of the subject or the issue to be investigated.

Faculty specific Science Shops. Some university-based Science Shops may be based within a faculty or department and therefore have a specific expertise that is the focus of the Science Shop projects which are undertaken; e.g. environmental sciences or social studies. An example is Groningen University, which has six Science Shops attached to different faculties of the university.

A Science Shop may start out as faculty-specific because it is where the initiator of the Science Shop is based. Once established, however, a faculty-specific Science Shop may expand to encompass other faculties or become a centralised Science Shop.

Region specific Science Shop. Regional Science Shops are less common. They operate as a collaboration between a number of partner organisations. The Science Shop acts as a central contact point for civil society organisations in a specific region and involves a number of universities, who carry out the research. The Science Shop will have a contact person at all of the participating universities and research projects are carried out by students at the participating universities. In this case, the Science Shop may be branded as an individual entity, but staff and funding are managed separately by each of the universities (mother organisations). One example of this model is the Flemish network of Science Shops.

4. Funding

When setting up a Science Shop, one of the first and foremost aspects to consider are the potential sources of funding for the Science Shop's daily operations. In order to set up a long-term sustainable organisation, the Science Shop needs a reliable and continuous source of funding. This is often the main challenge, both for early and more established Science Shops. The two main funding sources for Science Shops are dedicated funding from a mother organisation and project funding, but other options should also be discussed.

Mother organisation funding. This can be the primary source of funding for the Science Shop's activities in Science Shops based at any type of organisation. This type of funding is relatively common. Crucial in this regard is convincing the board of the mother organisation to allocate funding to the Science Shop (possible arguments were reviewed in Module 1). This funding does not need to be big, as small Science Shops require relatively little financial funds for their everyday activities if a lot of the work is done as a part of regular tasks undertaken by involved participants, e.g. students undertaking Science Shop projects as a part of their studies for credits, and teachers supervising thesis or projects as a part of their teaching obligations. In addition, NPOs often rely on volunteers for part of the work.

Project grants. Grants might be available at the EU, national or local levels. Project grants may be used to fund the operation of the Science Shop or individual research projects. In the past, numerous Science Shops have been established as part of European FP5, FP7 and Horizon 2020 projects, and there are examples of similar funding opportunities at a national level. These project grants are extremely useful for setting up a new Science Shop, as they give financial security for a set time and provide the opportunity to explore the possibility of a Science Shop in a particular environment, as well as learn from more experienced Science Shops.

Science Shops can also approach potential public or private partners for specific research projects. However, looking for funding for each project can also be very time-consuming. An important limitation, particularly for business-based Science Shops, is that they are not eligible for all financing schemes.

Social entrepreneurship and paid services. Science Shops generally try to offer their services free of charge, or at least at the lowest cost possible. However, offering paid services to clients who can afford this can provide an additional source of income. Consequently, these funds can be allocated to research projects for clients who have limited resources. The most notable example is Bonn Science Shop, which finances its activities from the revenue it generates through magazine subscription sales (magazines include career guidance and job vacancies for academics within the humanities and environmental sectors), paid services, funded research and communication projects. Other examples are the Ibercivis Foundation (Spain), which is partly funded by providing citizen science consultancy services, or Groningen University Science Shops, which give paid external lectures. A common practice is to ask clients of Science Shops that can afford it to contribute partly to costs associated with Science Shop projects.

Other funding sources. Aside from the more common funding options, Science Shops have been creative in finding new sources of funding:

- Donations and membership fees. Wissenschaftsladen Potsdam is one example of an independent Science Shop that is, to a certain degree, funded by donations from the local community and membership fees.
- Private sponsorships. Some individuals or organisations might choose to support the Science Shop. However, in case of private sponsorship, the Science Shop should be careful not to compromise its independence.
- Some Science Shops in the UK have registered as charities. This makes them eligible for charitable grants, thereby opening new potential channels of funding. The challenge with this type of funding is that there are several requirements an organisation has to meet in order to be able to register as a charity. Interchange Liverpool is an example of a Science Shop that is registered as a charity.
- Similarly, some countries allow individuals and businesses to give a certain percentage of their taxes to an NPO or charity. In these instances, Science Shops have the option to supplement their funds by approaching individuals and companies for this type of donation. However, given that these mostly consist of very small amounts, finding sufficient sponsors to generate a sustainable source of funding is extremely time-consuming. This system applies in Lithuania for instance, where any Science Shop that is registered as an NPO is eligible for this type of funding.
- Some Science Shops have also managed to survive without any dedicated funding. They rely mainly on the commitment of volunteers. For instance, the European University Cyprus Science Shop receives no official funding. The Science Shop is fully integrated in the structure and everyday operations of the university, based on voluntary commitments of faculty members.
- Future Science Shops can also draw on innovative models such as crowdfunding or online collaborations that include the public (citizen science) and require no dedicated funding.

5. Infrastructure

The infrastructure aspect pertains to the physical location of the Science Shop and the availability of infrastructure and supplies.

Using infrastructure of the mother organisation. For Science Shops that are based at a university or other type of mother organisation, the obvious option is to locate the Science Shop there. In many cases, mother organisations can afford to share not only office space, but also other infrastructure and supplies with the Science Shop.

Renting or acquiring office space. Science Shops that function independently from a mother organisation might need to rent or acquire office space, although often it can be too expensive given the financial constraints that most Science Shops currently face.

Sharing with other organisations. One quite common and less expensive option than renting office space is to share office and supplies with other organisations. Independent Science Shops sometimes share a building with NPOs or charities, either in government owned buildings or buildings owned by one of the organisations. As an example, Wissenschaftsladen Potsdam (Germany) is located at the Freiland cultural centre, a publicly funded building that grants them free use of (some) materials and conference rooms.

Working from home offices. When sharing is not an option and the resources are limited, (small) Science Shops might also opt to operate from the private premises of one of the members of staff. Moreover, Science Shops can even choose not to operate from any centralised location. In this case, staff members can manage the Science Shop working from home offices. In both instances, these options boil down to a type of personal sponsorship and commitment of individual members. However, they can provide a viable (at least temporary) solution when resources are scarce. An example of this is the Institut für gesellschaftswissenschaftliche Forschung, Bildung & Information (FBI) in Austria, whose staff members work from home, using personal equipment.

Online platforms. Recently there are emerging examples of virtual "e-Science Shops" without any physical office space. One example is the Universitat Oberta de Catalunya (UOC) in Spain, a completely online university that is experimenting with the incorporation of an e-Science Shop (UOC Science Shop) in the general operations of the e-university.

6. Coordination staff

Science Shops can be organised in different ways, but all of them need some coordination and administration efforts: managing the overall operation of the Science Shop (finances etc.), coordination of projects and research staff, implementing communication and promotion tasks. Depending on the organisational model and the size of the Science Shop, the coordination team might consist of a single coordinator or a team.

Part-time mother organisation staff. One of the options for Science Shops is to assign the task of coordinating Science Shop activities to staff already employed at the mother organisation in other positions. This is particularly common at universities, but it is also an option for other organisations. At universities, coordination roles at Science Shops are often performed by lecturers/researchers, who often do it as a part-time job alongside everyday lecturing and research work. For example, the coordinator of Science Shop Language, Culture and Communication at the University of Groningen (Netherlands) is a lecturer and researcher at the Faculty of Arts and does the coordination work of the Science Shop part-time.

Dedicated hired staff. Depending on the size of the Science Shop and the available financial resources, a Science Shop can also hire employees to coordinate Science Shop activities and perform other administrative tasks. They can be employed full-time or part-time, but the difference from the option above is that they do not have other positions at the mother organisation.

Students. Due to a lack of experience, students are not likely to be responsible for the main coordination and project management tasks at Science Shops. However, they might be engaged in communication and promotion activities or as assistants. They might work at Science Shops in paid assistant positions, in paid or unpaid internships, or might be rewarded with study credits. NPO and business-based Science Shops could also involve student interns in administrative or technical work. One example of a Science Shop that is run by students is Green Office Living Lab at KU Leuven (Belgium), which is managed by students with the help of more experienced staff at the university.

Volunteers. There are Science Shops that are entirely or partly run by volunteers, including management tasks. This is a more common option at newly established Science Shops, but older Science Shops can also involve volunteer work. For example, Wissenschaftsladen Potsdam e.V. (Germany) is a Science Shop run by volunteers.

7. Implementation staff

Project implementation staff is one of the key aspects relating to the establishment, running and expansion of Science Shops as the availability of staff affects how many and what types of projects the Science Shop will be able to undertake. An important message for those who are thinking of establishing a Science Shop is that the people who implement the projects do not have to be hired and paid staff – there are numerous other possibilities. Precisely because of the availability of 'free' staff, many Science Shops can offer free services to community organisations.

Students. At all types of Science Shops, research projects most typically are implemented by students. Their work with projects on behalf of community organisations may take several forms: (1) final BA/BSc or MA/MSc thesis; (2) coursework integrated into a course on research methods or a subject-related course; (3) an internship. The first two options are most typical at university-based Science Shops, while internships are a more common option for NPO-based Science Shops (potentially, also for SMEs) since they do not have their 'own' students and have to invite them from outside. For example, the Social Innovation Institute Science Shop in Vilnius (Lithuania) relies on an informal collaboration with Vilnius University and other universities, whereby social science students undertake internships at SII. The Science Shop gets human resources for project implementation, while students get the possibility to acquire practical research skills and complete a credit-bearing internship.

When students are involved, they get credits for work undertaken on a Science Shop project, which is a strong motivational factor. At universities, students can also be employed in paid research assistant positions. Finally, Science Shops could involve students on a voluntary basis, although this is not common practice. Being able to engage students in projects is a general advantage for many Science Shops – without this 'free' and abundant resource, the operation of many Science Shops would be impossible.

Lecturers/researchers. University lecturers or researchers typically act as supervisors of Science Shop projects that are carried out by students. In many cases, university lecturers do this without extra payment as student supervision is a part of their job. However, such projects may involve extra work, time for meetings etc. Hence some universities might opt to allocate extra remuneration for lecturers

taking part in Science Shop projects. Some Science Shop projects can be entirely implemented by researchers with experience instead of students, particularly in the case of more demanding projects, although this is less common.

NPO/business company's employees. At NPO or business-based Science Shops, it is employees that not only coordinate the projects, but also supervise the research projects if they are implemented by intern students, or implement the projects themselves. This is the case at Bonn Science Shop (Germany), where all of the work (except in cooperation projects, where joint work is undertaken with other project partners) is carried out by its members of staff. Many of them have expertise in research relating to a range of fields focused around environmental, education and social sciences.

Volunteers. It is not uncommon for Science Shops to be established by volunteers or rely heavily on volunteering work at the beginning of their existence. However, a small number of Science Shops continue to be run by volunteers. All Science Shops, at all stages of maturity, may rely on volunteer researchers and students from universities and other research institutions. An example is the Ibercivis Foundation in Spain, where many of the researchers that are involved in the projects work as volunteers or are employed at the organisations they collaborate with. The Foundation also has a number of other volunteers, including teachers, and other active supporters, who are heavily engaged in their work.

Other options. There are several other, but less frequently used, options for the implementation of Science Shop projects. In some projects, a community organisation's (client's) staff may take part in the project implementation, e.g. by taking part in the research design and helping to collect data. Another example is projects that are based (partly or entirely) on citizen science, when lay people from the wider society are invited to contribute to the project with data collection or analysis, thus becoming involved in the project implementation. Also, some Science Shop projects, particularly larger ones, may rely on an advisory committee that supplements the project supervision role. Such a committee might include representatives of clients, local authorities, relevant citizen or professional associations, and other stakeholders.

8. Project types

In serving communities and civil society organisations, Science Shops can perform a wide variety of project activities. While research is the most common type of Science Shop project, particularly at university-based Science Shops, other types are possible too. Which of them dominates depends on the organisational model of the Science Shop and on the particular focus of each individual Science Shop.

All types of project activities are usually very interrelated. The only activity that can be seen as being a separate self-sufficient activity is research, in the case where projects are entirely research-based. However, the very nature of community-based research requires consultation and engagement with local communities, so even research-based Science Shops are not separable from broader activities. Concrete projects run by Science Shops therefore inevitably involve a combination of different activities.

Research projects. Research is the most common type of activity undertaken by Science Shops. With research projects, Science Shops respond to the research needs of community organisations. Research projects involve formulating the research question, research design, data collection, data analysis, interpretation and potential recommendations.

Research is the main activity of Science Shops at universities because the aim of university-based Science Shops is related to the needs of student learning and the requirements of coursework and theses. In NPO and business-based Science Shops, research also can be an important part of activity, but it depends on the expertise they have. If an organisation does not work in research, its Science Shop projects might be dominated by other types of activities, such as generating community involvement or practical engagement.

Services/products. Science Shop activities can be focused on providing other types of contribution in terms of services, consultations, products etc. If research projects end with a research report and perhaps recommendations, projects based around the development of services/products end with a more tangible or practical result like technical products, feasibility studies, development of a website, promotional materials and campaigns, videos and visual identities for community organisations. One example is the project implemented by the Bonn Science Shop, "Green instead of Gray – Industrial Parks in Transition", whose aim was the greening and long-term sustainable development of industrial parks. Areas investigated included the design of parking spaces, the use of building materials and planting of vegetation.

These types of projects might be very much applicable to NPOs and business-based Science Shops that do not have research expertise, since they could provide free services to community organisations in their main area of work, e.g. IT services (creating a website, a database) or consultations (in law, marketing, communication, etc.).

Stakeholder debates. Science Shops projects can involve other civil society engagement activities such as round table discussions, focus groups, world cafés, which are aimed at finding solutions to societal, environmental or other problems. These public engagement activities can involve different kinds of stakeholders: NPOs, communities, higher education institutions, decision makers, etc. As an example, the Science Shop Environmental Social Science Research Group (Hungary) ran a project on "Forgotten citizens of Europe: Participatory Action Research for Local Human Rights" where the aim was to explore local human rights problems and experiences of Roma communities in Southern Hungary. Besides research activities, researchers and students organised discussion groups with Roma communities and local experts, and built a network among local stakeholders, professionals, activists, schools, and the municipality. As a result, the main problems for Roma people were identified and one key solution to the complex problem was generated.

Educational activities. Education is another type of project activity conducted by Science Shops. Some Science Shops focus on educational programmes combined with public engagement activities. These are carried out with and for the community with the aim of transformative change. Educational activities can be provided as classroom activities (experimental workshops, courses and seminars) and/or educational resources available online (e.g. videos, virtual experiments, online serious games, games to engage young people in a dialogue, experiment protocols, teaching guides). For example, the Living Lab for Health (Spain) carries out projects for health promotion and transformative change of the R&I system that are co-developed with different stakeholders, including the scientific and education communities, policy makers, business and industry, civil society organisations and citizens in general. These projects include educational programmes and participatory programmes related to research and innovation (R&I) and governance, and are carried out with and for the community.

9. Thematic scope

Science Shops can cover a variety of scientific disciplines. It is important to note that a Science Shop does not have to cover the whole range of disciplines – there are plenty examples of Science Shops that operate in one particular field, e.g. social research, environmental issues, health issues, etc. The focus of a Science Shop should be based on access to expertise in a particular discipline as well as potential demand. These options can be applicable to all types of Science Shops. However, because NPO and business-based Science Shops tend to be smaller than university-based Science Shops, it is more likely that the former have specialised Science Shops. The decision to choose a narrow or wide thematic scope depends on the supply of knowledge and expertise that is available within the organisation and/or whether it has access to external human resources and expertise.

Specialised Science Shops. There are many specialised Science Shops which do research in one particular thematic area. In the case of universities, this is typical for faculty-specific Science Shops. In the case of NPO and business-based Science Shops, it is usually related to the particular expertise of the NPO or SME. Examples of specialised university-based Science Shops include Science Shop Language, Culture and Communication, which is part of the Faculty of Arts, University of Groningen, Netherlands; or InterMEDIU Bucharest at the University Politehnica of Bucharest (Romania), which has a focus on environmental issues. Examples of NPO-based specialised Science Shops include Living Lab for Health in Spain that carries out project and programmes for health promotion and transformative change of the R&I system or Wissenschaftsladen Potsdam e.V. (Germany), which is active in applied research in natural sciences, engineering, and science with and for society.

Multidisciplinary Science Shops. There are also Science Shops that have a wide thematic focus. It is more typical to find such Science Shops at universities that have centralised Science Shops, although there are also examples of more broadly focused NPO-based Science Shops. Examples of multidisciplinary university-based Science Shops are the European University Cyprus (EUC) Science Shop (Cyprus) or UTS Shopfront Community Program at the University of Technology Sydney (Australia). An example of a multidisciplinary NPO-based Science Shop is Bonn Science Shop, which works on a broader number of topics.

10. Interdependencies of aspects

These different key aspects of Science Shops are interrelated and the choice of, or change to, one aspect often affects a number of other aspects. For example, funding affects many of the discussed aspects, like staff, infrastructure, and other. The organisation model (type of mother organisation) affects the availability of infrastructure options and staff for coordination and project implementation. The availability of expertise (staff) will affect the thematic scope and types of projects, and so on.

11. Key aspects as opportunities and challenges

The key aspects discussed earlier can work as opportunities and challenges in the course of a Science Shop's lifetime. First, they can be regarded as the main internal factors that define the sustainability of a Science Shop. For example, a challenge might be securing funding, finding (enough) people to implement the projects, finding the right infrastructure, etc. Second, the key aspects might influence changes in the operation of a Science Shop, both related to the growth or decline of a Science Shop. For example, receiving project funding provides an opportunity for growth, while the end of project funding presents a challenge; a new person joining may bring in new competencies and opportunities for new projects, while the loss of a key person presents a challenge; similar examples can be provided

for all of the aspects that have been discussed. Thus, Science Shops have to reflect on the possible challenges as well as opportunities that they might face in the future, and the list of key aspects presents a useful framework to analyse or plan future developments.

Discussion on the operational models of Science Shops

There should be a full discussion of the operational options for Science Shops. The point is to make the participants reflect on what could work in their institutions, but also to think beyond the options listed in the presentation. The discussion can be initiated after presenting each of the key aspects, or after short sessions of presentation, encompassing several of the interrelated key aspects: (1) Organisational model, funding and infrastructure; (2) Coordination and implementation staff; (3) Project types and thematic scope. Some of the key aspects might be related to greater challenges and need longer discussion, e.g. funding, while some others can be less problematic.

To initiate the discussion, participants are asked first to think for a few moments about the key aspects that have been presented and options for the potential Science Shop at their institutions. Then, a discussion can start. Some suggested questions for discussion:

- What options are not clear and perhaps need clarifying or examples?
- What other options do you see for these aspects, when thinking about a Science Shop at your institution?
- Are there options that you are already exploring?
- Which of the presented aspects and/or options do you see as particularly challenging?
- What are the possible solutions (perhaps other participants could suggest ideas)?

Interactive exercises

Interactive exercise 1. "Develop the operational model of the Science Shop at your institution"

Aim: The exercise helps to envision the model of a Science Shop at the participant's institution.

Number of participants: not limited; participants are asked to form groups.

Duration*:* 60 min. (30 min. of work in groups + 30 min. of presentations and discussion)

Process: Participants work in groups. Participants are encouraged to form groups representing similar institutional profiles, e.g. university (if there are many participants from universities, they can further form groups according to the size or profile of the universities), NPO, business company. If there are participants from the same institution, they are encouraged to stay in the same group. For the first 10 min., participants are asked to imagine the operational model of a Science Shop at their institution, by indicating options they would choose (or come up with other options) under each of the aspects (they can use the provided template, presented in the Appendix). Then they have to discuss the similarities and differences between the models that they have built and the reasons (context conditions) that affect the similarities and differences. After the group work, groups are asked to present their findings (a summary of discussion and most interesting insights) to other participants.

Wrapping up: The exercise is finished by a short summary by the instructor emphasizing the diversity of options and models, and the need to adapt to the individual context when running a Science Shop.

Interactive exercise 2. "R.I.P. Science Shop"[1]

Aim: The exercise helps to see different reasons why Science Shops fail.

Number of participants: not limited; participants are asked to form smaller groups.

Duration: 30 min. (15 minutes of work in groups + 15 minutes discussion)

Process: Participants work in groups. Each group gets a big sheet of paper, pens and have to draw a gravestone with inscription "R.I.P. Here lies a Science Shop which…". Then they have to think of as many as possible reasons why a Science Shop project can fail and write these reasons on the gravestone.

Wrapping up: Groups are asked to present their drawings and discuss why Science Shops fail.

3.4. References and further reading

Literature

Garrison, H., Gečienė, I., Nevinskaitė, L. and J. Kleibrink (2018) ENHANCING THE RESPONSIBLE AND SUSTAINABLE EXPANSION OF THE SCIENCE SHOPS ECOSYSTEM IN EUROPE. D2.2 *Existing RRI tools and successful participatory community-based research case studies report*. Available at: https://project.scishops.eu/wp-content/uploads/2018/03/SciShops.eu_D2.2-Existing-RRI-Tools-and-Successful-Participatory-Community-Based-Research-Case-Studies-Report.pdf

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[1] The format of the exercise was used in the final SPARKS project's forum hold in Brussels, May 3–4, 2018.

Appendixes

Template for the interactive exercise "Develop the operational model of the Science Shop at your institution"

Key aspect	Options (mark the option/s that are best suitable to the Science Shop at your institution)	Comments
Organisational model	● Pop-up Science Shop ● Permanent Science Shop established within a university/research institute/NPO/business company ● Independent legal entity	
Funding	● Mother organisation ● Project grants ● Social entrepreneurship and paid services ● Charitable grants ● Tax system ● Other options	
Infrastructure	● Mother organisation ● Renting or acquiring office space ● Sharing with other organisations ● Home offices ● Online platforms	
Coordination staff	● Part-time mother organisation staff ● Dedicated hired staff ● Students ● Volunteers	
Implementation staff	● Students ● Lecturers/researchers ● NPO/business company's employees ● Volunteers ● Other options	
Project types	● Research projects ● Services/products	

	● Stakeholder debates ● Educational activities	
Thematic scope	● Specialised Science Shops ● Multidisciplinary Science Shops	

Handouts

Handout 1. Overview of the options for operational models of Science Shops

Key aspect	University	NPO	Business
Organisational Model	● Pop-up Science Shop / pilot project ● Science Shop established within a university ● Centralised Science Shop ● Faculty specific Science Shop ● Regional Science Shop	● Pop-up Science Shop / pilot project ● Science Shop established within an NPO ● Independent legal entity	● Pop-up Science Shop / pilot project ● Science Shop established within a company
Funding	● Mother organisation ● Project grants ● Social entrepreneurship ● Other	● Mother organisation ● Project grants ● Social entrepreneurship ● Charitable grants ● Other	● Mother organisation ● Project grants ● Other

Infrastructure	● Mother organisation ● Online platform	● Mother organisation ● Private building ● Renting office space ● Sharing with other organisation ● Online platform	● Mother organisation ● Online platform
Coordination Staff	● Part-time university staff ● Hired staff ● Students	● Part-time NPO staff ● Hired staff ● Student interns ● Volunteers	● Part-time SME staff ● Hired staff ● Student interns
Implementation Staff	● Lecturers/researchers ● Students: thesis, course-work, internship ● Volunteer researchers or students ● Other	● NPO staff ● Students: internship ● Volunteer researchers or students ● Other	● SME staff ● Students: internship ● Volunteer researchers or students ● Other
Project types	● Research projects ● Services/products ● Citizen debates ● Educational activities	● Research projects ● Services/ products ● Citizen debates ● Educational activities	● Research projects ● Services/ products ● Citizen debates ● Educational activities
Thematic scope	● Multidisciplinary ● Specialised	● Multidisciplinary ● Specialised	● Multidisciplinary ● Specialised

Handout 2. Advantages and disadvantages of the different operational choices for Science Shops

1. Advantages and disadvantages of the different organisational models

	Advantages	Disadvantages
Pop up / pilot	● Flexible, don't require huge resources (staff or funding) ● Can be used to pilot activity before committing resources	● More difficult to establish reputation and branding
University: Centralised	● Cross-university engagement ● Able to respond to wide range of research needs and topics ● Often more embedded in university's strategy & funding	● Can require dedicated funding and coordination ● Reliant on cross-university support
University: Faculty specific	● Closer to staff and students undertaking the research ● Easier to coordinate	● More difficult for CSOs to approach ● Offers limited research scope to CSOs (if no other Science Shops within the university)
University: Regional	● Provides a central regional contact point for CSOs ● Shared knowledge and networking opportunities	● Requires an additional level of coordination
Based within NPO / SME	● Access to support and expertise within the mother organisation (e.g. financial, marketing & communications) ● Can utilise mother organisation's visibility and reputation for branding and marketing	● May be limited in capacity due to other demands (how many projects can be done)

Independent legal entity	● Freedom and flexibility (with regard to how it is run, funded, branding, etc.).	● Funding insecurity as fully dependent on external funding ● No access to additional support & resources from a mother organisation ● Financial report and accounting responsibilities and other legal duties

2. Advantages and disadvantages of the different funding options

Option	Advantages	Disadvantages
Mother organisation	● Primary funding source ● Potentially sustainable ● Stable	● Dependence on mother organisation ● Reliant on budgetary considerations of the organisation
Project grants	● Often full funding of Science Shop activities and/or research projects ● Financial security for set periods of time	● Limited in time ● Application process can be time-intensive ● Competition for limited funding sources
Social entrepreneurship	● Sustainable ● Independence of external funding ● Expanding client base	● Risk of bias in allocation of time and resources ● Potential erosion of social function of Science Shop

3. Advantages and disadvantages of the different infrastructure options

Option	Advantages	Disadvantages
Mother organisation	● Usually elaborate infrastructure available ● Very common	● Dependence on mother organisation ● Reliant on budgetary considerations of the organisation and availability of spaces
Private office space/building	● Independence ● Security ● Sustainable	● Expensive
Sharing office space	● Reduction of operating costs of the Science Shop	● Not always an option ● Dependence on external organisation/ government decisions
Home offices	● Significant reduction of operating costs of the Science Shop ● Flexibility	● Dependent on commitment of individual staff members
Virtual Science Shop	● Significant reduction of operating costs of the Science Shop ● Accessibility ● Flexibility	● Lack of personal contact (but online modes of collaboration and engagement may substitute for these in some cases)

4. Advantages and disadvantages of the different coordination staff options

Option	Advantages	Disadvantages
Part-time mother organisation staff	● Inside knowledge on the organisation ● Good knowledge of the research process (if lecturers/researchers) ● Lower costs (might be employed for a small part of their time or work on voluntary basis)	● Potential difficulties to allocate time and combine with other positions
Hired staff	● High quality due to possibility to hire specialised professionals ● Undivided attention to Science Shop tasks (particularly if full-time)	● Higher costs, not available for all Science Shops
Students	● Lower costs ● High communication and promoting potential	● Possible lack of experience ● High turnover ● May be difficult to fit into timescale of work
Volunteers	● Free ● Natural motivation	● Can invest only limited time ● Potentially high turnover (compared to permanent staff)

5. Advantages and disadvantages of the different implementation staff options

Option	Advantages	Disadvantages
Students	● Free (no direct costs) ● Abundant	● Risk of lower quality or drop out ● Need supervising
Teachers/researchers, Science Shop staff	● High quality ● Can work independently	● Higher costs (compared to students or volunteers)
Advisory committee	● Direct involvement of stakeholders ● Help from more sources in project implementation	● Potential differences in opinion and need to compromise
Volunteers	● Free ● Natural motivation	● Can invest only limited time ● Potentially high turnover (compared to permanent staff)
Client's staff	● 'Inside' knowledge	● Need training in research methods
Citizens (e.g. in citizen science projects)	● Free ● Large scale potential	● Needs extra efforts and possibly funding to mobilise ● Might need more guidance ● Risks related to data quality

6. Advantages and disadvantages of the different project type options

Type of project activity	Advantages	Disadvantages
Research	● Possibility to train students in research implementation, data analysis and reporting ● Possibility to use knowledge expertise of scientific institution	● NPOs and SMEs can lack scientific personnel and students for implementation of research on their own without outside help
Stakeholder debates	● Can be used by NPOs and SMEs that lack expertise in research and available human resources ● Easier to involve other stakeholders from civil society and decision makers	● Without research evidence, these debates can lack scientific arguments ● Universities can be less keen to use stakeholder debates as the main activity of students undertaking scientific projects for course papers, BA, MA thesis, and require expert facilitation, etc.
Services/products	● Responds to very practical demands of civil society organisations (IT products, design, etc.) ● This is an option for NPO and business based Science Shops that have limited expertise in research and available human resources	● Restricted scientific usability of this activity for universities
Education	● Increase public knowledge and awareness about the latest scientific developments	● Public is only passively involved

7. Advantages and disadvantages of the different thematic scope options

Thematic scope	Advantages	Disadvantages
Specialised	● Possibility to concentrate knowledge resources ● Easier to position as a Science Shop with a particular focus	● Restricted range of societal requests or lack of requests, especially if Science Shop orients itself to work on a very marginal topic
Multidisciplinary	● Can serve a broader range of societal requests	● More difficult to ensure the availability of experts and students in different topics

4 CBPR Project Management

4.1. Objectives

In the area of expanding knowledge, after this module, participants will:

- Gain knowledge about CBPR, its relation to RRI, and the benefits and challenges of this research approach
- Strengthen their knowledge and understanding of the specific steps required to implement CBPR projects.

In the area of skills and attitudes, they will:

- Assess their commitment towards participatory research approach
- Be able to manage a CBPR project
- Be motivated to perform more participatory and responsible research projects

4.2. Session outline

Methodology	**Material required**	**Duration** Total: 3hr 45 min
1. Welcome	Training agenda (printed)	5 min.
2. Personal introductions and initial evaluation	- Small sheets with beginnings of sentences - "Post-it" notes (different colours)	15 min.
3. Sharing experiences Storytelling	Invited speakers or case studies	45 min. (including Q&A and discussion)
4. Presentation Part 1	- PowerPoint projector & large screen - Key messages - PowerPoint presentation	20 min. (including Q&A and discussion)
5. Interactive exercise 1 "Benefits of CBPR for different stakeholders"	- Cards with different types of stakeholders	20 min.
6. Presentation Parts 2–4	- PowerPoint projector & large screen - Key messages - PowerPoint presentation	45 min. (including Q&A and discussion)
7. Interactive exercise 2 "Plan your own CBPR project"	- Template for SciShops.eu Project Model Canvas	60–75 min.

4.3. Description of methodologies

Welcome

The trainer welcomes participants, presents the session's aims, distributes and comments briefly on the training agenda.

Personal introductions and initial evaluation

If there is a need (depending on the training programme), the trainer can ask participants to present themselves.

For the initial evaluation, attach 2-3 sheets of paper with questions for the participants on the wall. Questions could be:

- To what degree are you informed about CBPR project management?
- To what extent do you feel empowered to manage CBPR projects?
- How valuable do you believe CBPR projects to be?

Give sticky notes to the participants, ask them to write answers to every question (on a separate sticky note) and put them on the wall. At the end of this training, invite all participants to the wall and together go through all questions and comments to see if they were answered during the day.

Sharing experiences

Participants are asked to share their experiences of running CBPR projects. Alternatively, if there are no participants with such experience, the cases can be presented in the form of written stories/video or inviting a speaker to share their experiences (physically present, or online).

Written stories can be chosen from Deliverable 2.2. "Existing RRI tools and successful participatory community-based research case studies report" (Garrison et al. 2018). The choice depends on the audience of the training, e.g. if the training is performed in a Central East European country, it is worth giving examples of Science Shops from these countries. We recommend taking:

- One case based at a university, e.g. Science Shop Language, Culture, Communication, University of Groningen (the Netherlands, Western Europe), InterMEDIU (Romania, Central East Europe);
- One case based at an NPO, e.g. Bonn Science Shop (Germany, Western Europe), Science Shop based at Social Innovation Institute (Lithuania, Central East Europe);
- One case of an e-Science Shop – Universitat Oberta de Catalunya (UOC) Science Shop, Spain (there is no e-shop in Central Eastern Europe that we are aware of).

Presentation(s) are followed by a Q&A session or a plenary discussion. Questions for discussion could be:

- What are the benefits of CBPR?
- What are the challenges of running CBPR projects?

PowerPoint presentation

Key messages corresponding to the different slides

Science Shops represent an approach to Community Based Participatory Research (CBPR) as their main activity is to conduct CBPR projects. The aim of this presentation is to provide a general introduction to the idea of CBPR and how it is related to RRI. This presentation also provides an overview of the

steps to be followed for implementing CBPR projects, including main challenges and recommendations.

1. What is CBPR?

Community-based participatory research (CBPR) is a way of organising research where scientists work together with non-governmental organisations, communities and other groups of society to co-create new knowledge or understanding of community issues. The new knowledge can later be used to foster change in the community (Branco et al., 2017).

Different authors describe various partnership approaches to research. Even though the term "CBPR" is commonly used to talk about "community-centered", "community-involved", "participatory", or "collaborative" research, what they all have in common is the intentional engagement of community members in sharing their perspectives and local knowledge with scientists. The most important difference of CBPR from other approaches that conduct research in community settings is the active involvement of community members in all phases of the research process (Riffin et al., 2016).

CBPR is defined by nine key principles (Israel et al., 1998):

1. Recognises the community as a unit of identity;
2. Builds on the strengths and resources within the community;
3. Facilitates a collaborative, equitable partnership in all phases of the research;
4. Fosters co-learning and capacity building among all partners;
5. Balances knowledge and action for the mutual benefit of all partners;
6. Addresses locally-relevant problems and considers multiple determinants of a problematic issue;
7. Occurs in a cyclical and iterative process that includes ongoing evaluation of successes and obstacles;
8. Disseminates findings and knowledge gained to all partners;
9. Involves a long-term process and commitment to sustainability.

CBPR is an approach to research that seeks to address locally-relevant issues collaboratively. Researchers and community members are encouraged to engage in all aspects of the research process, including decision-making, capacity building, knowledge generation, and the dissemination of findings. Usually CBPR projects start with a problem identified by a local community or CSO. This type of research is designed to promote long-term commitment between researchers and community members. The goal of CBPR is to share knowledge and understanding with community members and create mutual benefit for all partners (Riffin et al., 2016).

The literature has pointed to a number of advantages (benefits) that can occur from using a CBPR approach (Riffin et al., 2016):

1. Ensuring that the research topic reflects a major issue identified by the community;
2. Improving the quality, validity and sensitivity of the research by drawing upon community wisdom;
3. Promoting trust between communities and researchers;
4. Improving the translation of research findings into policy and practice;
5. Enhancing the uptake of the research findings by community members.

Example

The Science Shop run by the Environmental Social Science Research Group (Hungary) conducted a project on "Forgotten citizens of Europe: Participatory Action Research for Local Human Rights" aimed at exploring local human rights issues and the experiences of the Roma communities in Southern Hungary. Alongside participatory research, a network of local stakeholders, professionals, activists, schools, and municipality was established and engaged in the project. The engagement of the municipality was of crucial importance to the implementation of the final result of the project – to establish an alternative school for Roma children in the local community.

More information: SciShops deliverable 2.5 "Existing Science Shops assessment" (Stanescu et al. 2018).

Some more key rationales discussed in the literature on community-based research (Israel et al., 1998):

- It enhances the relevance, usefulness, and use of the research data by all partners involved;
- It joins together partners with diverse skills, knowledge, expertise and sensitivities to address complex problems;
- It improves the quality and validity of research by engaging local knowledge and local theory based on the lived experiences of the people involved;
- It strengthens the research and program development capacity of the partners;
- It creates theory that is grounded in social experience, and creates better informed/more effective practice that is guided by such theories;
- It increases the possibility of overcoming the understandable distrust of research on the part of communities that have historically been the "subjects" of such research;
- It provides additional funds and possible employment opportunities for community partners;
- It involves communities that have been marginalized on the basis of, for example, race, ethnicity, class, gender, and sexual orientation in examining the impact of marginalization and attempting to reduce and eliminate it.

The European wide survey conducted by the SciShops project in December 2017 revealed that a vast majority of 642 respondents thinks that their organisation would benefit from community-based participatory research, with no distinctive differences between researchers, community organisations and policy-makers. However, there are some differences between the stakeholder groups in their views on what the main benefits of community-based participatory research are. Researchers identified building trust and understanding between researchers and society as the main benefit. Finding solutions to societal problems is also something that researchers consider to be an important benefit. Community organisations and policy makers, in contrast, identified knowledge transfer between different stakeholders as one of the main benefits of this type of research. Therefore, more attempts are needed to demonstrate other benefits of CBPR projects to all stakeholders.

More information: SciShops deliverable 2.3 "Stakeholder survey summary report" (Bergman M. et al. 2018).

2. Relation between CBPR and RRI

RRI is an inclusive approach to research and innovation, to ensure that societal actors (researchers, citizens, policy makers, business, third sector organisations etc.) work together during the whole R&I

process. It aims to better align both the process and its outcomes of R&I with the values, needs and expectations of society (European Commission website, Responsible research & innovation).

Main RRI elements are public engagement, ethics, open access, gender equality, science education, and governance. CBPR reflects all the main elements of RRI:

Public Engagement:

- CBPR is research approach that is centred upon the engagement of the community – research with and for the community.

Ethics:

- CBPR responds to societal needs and values;
- CBPR is inevitably committed to ethical principles & legislation and to prevent misconduct, as a wide range of stakeholders are involved.

Open access:

- CBPR results are free accessible.

Gender equality:

- CBPR is aware not only about gender inequality, but it is also inclusive and sensitive towards all marginalised groups in society.

Science education:

- CBPR contributes to creating a more scientifically literate society;
- CBPR equips students with competences responding to societal research needs.

Governance:

- CBPR can be easily integrated into universities and research institutions, embedded in academic curricula.

CBPR is also in line with RRI process requirements, for example:

- CBPR involves a broad range of stakeholders;
- CBPR process is often interdisciplinary;
- CBPR includes silent voices – those that are underrepresented;
- CBPR contributes to the education and empowerment of the community.

Science Shops through the whole process of implementing CBPR projects need to take into consideration the dimensions of RRI, for example, ensuring research ethics, considering gender balance of project participants wherever possible, etc.

More information: A general toolkit covering all dimensions of RRI is presented in the SciShops deliverable 2.2 "Existing RRI tools and successful participatory community-based research case studies report" (Garrison et al., 2018).

3. Steps for implementing CBPR projects

This part of the presentation is based on the "Practitioner roadmap and methodology toolkits", prepared by SciShops project partners (Russo et al., 2018), which should be consulted for more information.

The practitioner roadmap provides an understandable, approachable and straightforward step-by-step guide for implementing projects in Science Shops. The guide addresses the key steps to run projects at Science Shops, why a given step is important, and what factors have to be taken into consideration.

The main phases of implementing CBPR projects are: Engagement; Research development and implementation; Dissemination, Evaluation and Exploitation.

Phase I: Engaging

Main steps of the Engagement phase

Step 1. Identify the community of interest

Step 2. Conduct an interest and needs assessment

Step 3. Contact different stakeholders

Step 4. Involve students and academic staff

Step 5. Assemble a Community Advisory Board

The main issues in this phase are:

- **Participatory nature of CBPR**. The core principles and values of the CBPR framework ensure that community members participate in the research and developing outcomes that they can use to make changes in their own communities. This requires a high level of contact and interaction between researchers and the community. Participation falls along a continuum – from community members having minimal input and the focus primarily being on gaining community responses – to community members engaging in developing research tools and processes – to community members engaging in all aspects of the research, from the design phase, through data collection, data analysis, dissemination and action. In the CBPR framework, more participation is better (Burns et al., 2011). Therefore, Science Shops should try to engage all relevant stakeholders to take advantage of their knowledge, skills and social contacts, as well as to ensure their involvement in all phases and steps of CBPR project implementation.
- **Involvement of students and academic staff.** CBPR project implementation often relies on the work of students, interns and academic staff. Different types of Science Shops (e.g. based within universities, NPOs or businesses) have different access to such human resources. Some universities, for example, may already embrace CBPR in their teaching, and for others more effort will be required to convey the benefits of CBPR to students and academic staff and motivate them to participate.

Phase II. Project development and implementation

Main steps of Research development and implementation phase are:

Step 1. Identify clear CBPR goals

Step 2. Appraisal of current research status

Step 3. Identify common research question and hypothesis

Step 4. Select the best research methods and assess their practical feasibility

Step 5. Conduct research

Step 6. Analysis and Interpretation

The main issues in this phase are:

- **The role of the researchers and coordinators.** Research projects run by Science Shops are implemented by, or under supervision of, experienced researchers or university teachers. Therefore, they usually have the necessary expertise in conducting research. Thus Science Shops coordinators do not need to be researchers themselves or to have in depth experience of the research process.
- **The weight of the research component in the CBPR**. By its nature, CBPR is applied research as it seeks to change issues that are critical to communities. However, sometimes what is needed for communities is not only a report containing the research results, but other services, products or outcomes to be developed based on the research results. The research component in the CBPR project could therefore range from being a consultation with an expert with knowledge, to desk research, a measurement (e.g. measurement related to the design of a children's playground), to a social survey or laboratory experiments. The research that can be undertaken also depends on the capacity of the Science Shop mother organisation as not all Science Shops have access to laboratory equipment. In addition, if students are to be involved in CBPR, the time frame of their courses must be considered, as well as their abilities to use some research methods. Some research methods may also be too expensive to undertake (e.g. a national social survey most likely will be too expensive for a CBPR project without funding).

Phase III: Dissemination, Evaluation and Exploitation

CBPR projects do not end with the writing of a research report. A necessary phase is a follow-up of the activities, which includes dissemination of the project's results, evaluation and impact assessment, and additional efforts to support the exploitation and long-term sustainability of the research results.

Steps of Dissemination, Evaluation and Exploitation phase:
Step 1: Select the right communication and dissemination activities
Step 2: Perform project evaluation and impact assessment
Step 3: Support exploitation and long-term sustainability

The main issue in this phase is:

- **Ensuring impact.** The work of a Science Shop needs to go beyond a report on the research results. Even if the dissemination and exploitation of research results are the main responsibility of the communities that raised the issue, the Science Shop can help them in planning dissemination, communication and exploitation activities and be involved in these activities to encourage the exploitation of results by using its expertise, skills and social contacts. Some CBPR projects may have a minor impact on their local community or some disadvantaged social group, e.g. to enable the NGO's or communities to better serve their members or the social group that is represented by researching the demand for services or preparing the design of the children's playground. Other projects may achieve a bigger impact in the long-term, e.g. establishing a specialised school, improving the quality of drinking water, etc.

More information: SciShops deliverable 2.5 "Existing Science Shops assessment" (Stanescu et al. 2018).

4. Quality management

One of the biggest issues for Science Shops is research quality management, especially in cases when research is entirely made by students, interns or volunteers. Quality of research is usually one of the reasons why NPOs and community organisations are sceptical towards requesting research from Science Shops. However, Science Shops have developed several ways to ensure the quality of research:

- **Supervisors.** When research is entirely carried out by students, interns or volunteers, it is important to ensure that their work is supervised by an experienced researcher, which could be a lecturer at a university or other higher education institution, or someone from the Science Shop staff with experience in research. It is obligatory in cases where a Science Shop project is undertaken as a part of training course requirements that the students receive course credits.
- **Consultants.** When there is a lack of some type of knowledge (on the research topic or methods, or otherwise), it is worthwhile to involve external consultants who can help to solve the problems arising and answer research related questions (e.g. consultants from a consultancy company, professional organisation or other professors with expert knowledge of the topic).
- **External stakeholders**, especially civil society organisations which supply the research requests. Their participation in all research activities (formulation of the research question, creating research tools, collecting and analysis of data, interpretation of results) can validate the conclusions and result in better and more appropriate recommendations.
- **Advisory board.** Establishment of an advisory board for CBPR projects, which involve different stakeholders, can also improve the quality of research by developing consensus on the research question, methods of investigation, and data interpretation.

Aside from the quality of research, it is also important to ensure quality of the whole CBPR project management. There are at least two ways to achieve this:

- **Regular communication** among those involved in the project implementation. Such communication is an indispensable part of any project management process. This may require weekly or biweekly meetings face-to-face or online, depending on the need; sometimes there is a need to communicate more frequently than at other times. Regular communication meetings can be a useful opportunity to plan and discuss activities as well as provided feedback to the coordinator.
- **Evaluation** of project management, which can be internal (performed by the project team) and external (performed by someone outside of the team) and can use quantitative and qualitative approaches. This question is addressed in more detail in Training module 6.

5. Challenges of CBPR

There are a number of challenges related to CBPR. Some of these challenges relate to stakeholder engagement (they are presented in Training module 4, "Stakeholder engagement"), some are more related to research methodology and implementation. The latter challenges are discussed here as distinct challenges, even though they are interrelated with barriers for creating successful partnerships (Israel et al., 1998):

- **Questions of scientific quality of the research**. Community-based research is continually challenged by the questions raised regarding its validity, reliability, and objectivity for both basic research and evaluation research. The predominance of the scientific method may make

it difficult to convince academic colleagues, potential partners, and funders of the value and quality of collaborative research.

- **Proving intervention success.** The success of a particular intervention in a community-based research effort may be difficult to prove. For example, such interventions are often conducted in communities with multiple interventions, and it is difficult to tease out the effects of the particular intervention being evaluated.
- **Seeking a balance between research and action**. Creating a balance between research and action that is mutually agreed upon by the partners involved is not a matter of deciding between research versus action, but a question of emphasis and timing. Community members are frequently, although not always, more interested in how the data promotes community change rather than using the data to address basic research questions.
- **Time demands**. The active involvement of all partners in the research process, including questionnaire development, survey administration, and feedback and interpretation of data, exacts a tremendous commitment of time from all participants. Community members may well have many other obligations and may perceive some of the issues of concern to researchers (e.g. sample size, generalisability) as less than pressing.

The main recommendations or facilitation factors to overcome these challenges are (Israel et.al., 1998):

- **Methodological flexibility and different criteria for judging quality**. Given the aims and the dynamic context within which community-based research is conducted, methodological flexibility is essential; that is, the use of methods that are tailored to the purpose of the research and the context and interests of the community. Furthermore, different criteria for judging quality, as well as different techniques for establishing the trustworthiness of data have been proposed such as triangulation, involving multiple sources of data, methods, and investigators.
- **Involvement of community members in research activities.** The involvement of community members in the actual conduct of the research enhances the quality of the process and the results. This may include, for example, involving community members in the development of research instruments, as well as hiring and training community members as interviewers for a community-based survey.
- **Conduct community assessment/diagnosis.** A key factor facilitating the successful conduct of community-based research is the ongoing analysis of community strengths, resources, structure, and dynamics. This continual process of getting to know the community enhances the relevance and appropriateness of all aspects of the research and intervention.
- **Conduct training on CBPR.** Given that community-based research is a different approach from what many researchers, community members, and policy makers are accustomed to, the conduct of training that addresses both process and methodological issues, as well as advantages and limitations of this approach, can be useful.
- **Involve partners in the publishing process.** The involvement of partners in the process of writing and publishing has been suggested as a way to obtain more in-depth discussions, reflection and increased understanding of the methodology, results and overall process of conducting community-based research. Community and practitioner partners can be involved, for example, as co-authors in a writing team, as respondents to initial manuscript drafts, or as reactants to preliminary data analysis and interpretations.

Interactive exercises

Interactive exercise 1. "Benefits of CBPR to different stakeholders"

Aim: This exercise helps to understand the benefits of CBPR and the expectations of different stakeholders.
Number of participants: not limited; participants are asked to form 5–6 groups.
Duration: 15 min.

Process: Participants work in groups. Each group takes the role of one of the stakeholder groups, e.g. university, researcher, community organisation, policy maker, student, etc. (cards with different roles can be prepared in advance and each group blindly picks one card). Every group reflects on what the benefits of CBPR to their chosen stakeholder are.

Wrapping up: Groups are asked to present the results of their discussions. The instructor finishes with a summary/discussion about what are mutual benefits and what benefits are specific to some types of stakeholders.

Interactive exercise 2. "Plan your own CBPR project"

Aim: The exercise helps to understand the logic of planning of a CBPR project and experience the different perspectives of different stakeholders.
Number of participants: not limited; participants are asked to form groups of 4–5 persons.
Duration: 60 min.

Process: Participants work in groups. Each participant takes on the persona of one of the stakeholder groups, e.g. researcher, community organisation, policy maker, student, etc. (pieces of paper can be prepared in advance, each assigning the different roles, and participants can blindly pick one of them). Every group develops a project based on a specific community request for research and using the SciShops.eu Project Model Canvas[2].

Some examples of community challenges:

- **Water quality**. Members of the local community are concerned about the drinking/tap water quality and approach a research group to help them with this issue.
- **Multilingual children training**. Parents in the local community are concerned about the language teaching methods for their multilingual children and approach a research group to help them with this issue.
- **Child obesity.** Members of the local community are concerned about the rise of child obesity in the community and approach a research group to help them with this issue.
- **Wildfires.** Members of the local community are concerned about the increase of wildfires in the community and approach a research group to help them with this issue.
- **Roma minority integration.** Researchers approach a local community to study the causes of the poor situation of the Roma minority in that community. Researchers (among them, two of Roma origin) are also interested in the potential solution to the problem.
- **Biodiversity.** A local beekeeping community approaches researchers to study the decline of bees in the community. They are also interested in potential mitigation actions.

[2] The Project Model Canvas was used by Pedro Russo in SciShops.eu summer school held in Castelldefels, 16-20 July 2018.

Participants are asked: How would you (as a group) develop a Science Shop project? Please fill out the corresponding components of the SciShops.eu Project Model Canvas.

The SciShops.eu Project Model Canvas is included in the Appendix.

Wrapping up: Groups are asked to present their prepared plan on a specific community request. The trainer leads a discussion on the benefits and challenges of this exercise and its respective results.

4.4. References and further reading

Literature

Bergman, M., Garrison, H., Kleibrink, J., Jung, S., Gečienė, I., Nevinskaitė, L., Kontić, B., Stanescu, R. and C. S. Ionescu (2018) ENHANCING THE RESPONSIBLE AND SUSTAINABLE EXPANSION OF THE SCIENCE SHOPS ECOSYSTEM IN EUROPE. D2.3 *Stakeholder survey summary report*. Available at: https://project.scishops.eu/wp-content/uploads/2018/03/SciShops.eu_D2.3_Stakeholder-survey-summary-report.pdf

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Israel, B.A., Schulz, A.J., Parker, E.A. and A.B. Becker (1998) Review of community-based research: Assessing Partnership Approaches to Improve Public Health. *Annual Review of Public Health*, 19, pp. 173–202.

Kontić, B, Kontić, D., Kleibrink, J., Jung, S., Stanescu, R. and C. S. Ionescu (2017) *ENHANCING THE RESPONSIBLE AND SUSTAINABLE EXPANSION OF THE SCIENCE SHOPS ECOSYSTEM IN EUROPE* D2.1 *Baseline research and best practice report on participatory and community-based research*. Available at: https://project.scishops.eu/wp-content/uploads/2018/03/SciShops.eu_D2.1-Baseline-research-and-best-practice-report-on-participatory-and-community-based-research.pdf

Riffin, C., Kenien, C., Ghesquiere, A., Dorime, A., Villanueva, C,, Gardner, D,, Callahan, J,, Capezuti, E,, and M. C. Reid (2016) Community-based participatory research: understanding a promising approach to addressing knowledge gaps in palliative care. *Annals of Palliative Medicine* 5(3), pp. 218–224.

Russo, P., Gečienė, I., Nevinskaitė, L., Grossi, G., Barisani, F. and R. Schroeder (2018) ENHANCING THE RESPONSIBLE AND SUSTAINABLE EXPANSION OF THE SCIENCE SHOPS ECOSYSTEM IN EUROPE D 4.2 *Practitioner roadmap and methodology toolkits*. Available at: https://project.scishops.eu/wp-content/uploads/2018/08/SciShops.eu_D4.2_Practitioner_roadmap_and_methodology_toolkits.pdf

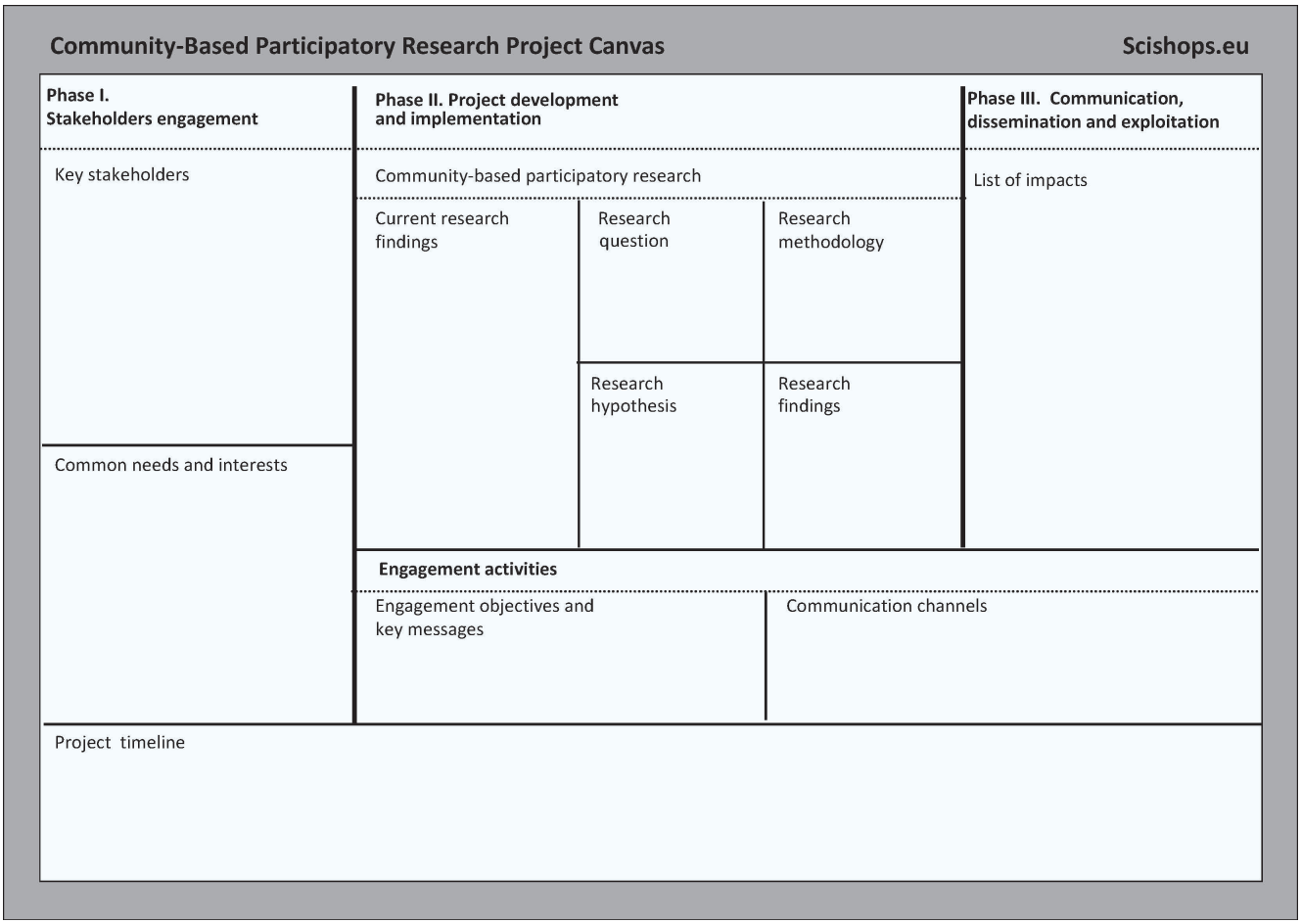
Stanescu, R., Ionescu, C. S., Garrison, H., Kleibrink, J., Jung, S., Gečienė, I. and L. Nevinskaitė (2018) ENHANCING THE RESPONSIBLE AND SUSTAINABLE EXPANSION OF THE SCIENCE SHOPS ECOSYSTEM IN EUROPE. D2.5 E*xisting Science Shops Assessment*. Available at: https://project.scishops.eu/wp-content/uploads/2018/06/SciShops.eu_D2.5-Existing-Science-Shops-assessment.pdf

Websites

European Commission (EC), Responsible research & innovation, https://ec.europa.eu/programmes/horizon2020/en/h2020-section/responsible-research-innovation, retrieved on 31.08.2018

Appendix

CBPR Project Canvas



5 Stakeholder Engagement

5.1. Objectives

In the area of expanding knowledge, after this module, participants will:

- Have an overview of the main stakeholders of a Science Shop, and the benefits and challenges of stakeholder engagement
- Be familiar with the steps needed to engage stakeholders before, during and after Science Shop project
- Be conversant with the main methods of stakeholder involvement

In the area of skills and attitudes, they will:

- Be able to create and sustain relationships with Science Shop's stakeholders
- Be able to map stakeholders of concrete Science Shop projects
- Be encouraged to use new ways and methods of stakeholder engagement

5.2. Session outline

Methodology	**Material required**	**Duration** Total: 3hr 50 min
1. Welcome	Training agenda (printed)	5 min.
2. Personal introductions and initial evaluation	"Post-it notes" (different colours)	15 min.
3. Presentation	- PowerPoint projector & large screen - Key messages - PowerPoint presentation	90 min. (including Q&A and discussion)
4. Sharing experiences		60 min. (including Q&A and discussion)
5. Interactive exercise "Mapping stakeholders"		60 min.

5.3. Description of methodologies

Welcome

The trainer welcomes participants, presents the session's aims, distributes and comments briefly on the training agenda.

Personal introductions and initial evaluation

If there is a need (depending on the training programme), the trainer can ask participants to present themselves.

For the initial evaluation, attach 2-3 sheets of paper with questions for the participants on the wall. Questions could be:

- What do you think "to engage" means?
- Have you ever tried and engaged a public body in research? If yes, how?

Give sticky notes to the participants, ask them to write answers to every question (on a separate sticky note) and put them on the wall. At the end of this training invite all participants to the wall, and together go through all questions and comments to see if they were answered during the day.

PowerPoint presentation

Science Shops represents one model of public engagement in science. It is based on the involvement of stakeholders during the whole process of community based participatory research (CBPR). Science Shop projects might include different degrees of participation, as well as involve a different range of stakeholders and publics. Therefore, it is important to understand the rationale for the stakeholders' involvement as well as various modalities.

The aim of this presentation is to give participants information about the types of stakeholders, the concept and degrees of public engagement, discuss reasons behind stakeholder and public engagement, show benefits and challenges for stakeholder involvement, give an overview of the steps of stakeholder involvement during CBPR projects, and give a short review of changing methods in public engagement.

Key messages corresponding to the different slides

1. What is a stakeholder?

A stakeholder is "an individual, group, or organisation, who may affect, be affected by, or perceive itself to be affected by a decision, activity, or outcome of a project" (Project Management Institute, 2013).

In Science Shop projects, it is important to make a difference between publics and stakeholders. Stakeholders are defined as those who are affected or can affect a decision about the issue(s) that the project deals with. Publics are groups of people who are not affected by the issue(s) that the project deals with but who engage with the issues through discussions or otherwise (Reed at all 2018).

Another relevant difference for Science Shop projects is between internal and external stakeholders. **Internal stakeholders** are individuals and groups from within the organisation who are a part of the project implementation, such as project supervisors, researchers, students, interns or volunteers. Even if they are mainly from the same institution as the Science Shop staff, they still need to be identified and involved in the CBPR project.

External stakeholders are those groups from outside of the organisation that are affected by the project or are otherwise involved in project activities. External stakeholders can be grouped into **four broad groups**: stakeholders from civil society, the public sector, the business sector, and the general public.

Science Shops mostly work with civil society organisations – communities and NGOs – as "client organisations", which submit requests for a research or other type of project and should be involved throughout the implementation of the project. Policy makers and other public agencies, for-profit businesses and social enterprises also can be Science Shops clients if they have a question of wider societal relevance and agree to publish the results openly. Nevertheless, these stakeholders are more frequently engaged as stakeholders that can discuss, support and sometimes help to implement project results. Involvement of these stakeholders at an early stage of the project increases the possibility of making a bigger impact in terms of project outcomes at local and even national levels.

The general public is less frequently involved in Science Shop projects; however, it can also participate in different engagement activities such as focus groups, discussion, world cafes, dissemination and education events.

Examples of different external stakeholders:

- **Civil society**: communities, voluntary organisations, NGOs
- **Public sector**: schools, colleges, universities, cultural, health agencies, national, regional and local authorities, financial institutions (funders)
- **Private sector**: business, social enterprises
- **General public**: public, individuals, citizen groups

More information: The National Co-ordinating Centre for Public Engagement website, https://www.publicengagement.ac.uk/about-engagement/who-are-public

2. What is public engagement?

There are many definitions of public and stakeholder engagement. Nevertheless, all of them emphasise that it includes many different ways in which the general public or stakeholders are involved in various project activities (Reed at all 2018).

Public and stakeholder engagement can take many different forms. Often, they are classified by intensity of participation. For example, one classification distinguishes three broad approaches to stakeholder and public engagement (Ribeiro and Miller, 2015):

1. Education, where experts provide other individuals and organisations with information on a topic;
2. Dialogue, where some stakeholders consult and seek the views of other individuals and organisations;
3. Co-production of knowledge, based on cooperation between a range of experts, citizens and interest groups.

Other authors do not regard education as engagement, since in this case, public or stakeholders are only passive recipients of information, and also propose more refined schemes. For example, based on Jellema and Mulder (2016), stakeholder and public engagement falls along a continuum from discussing and consulting, to involving, collaborating, and supporting. In discussing and consulting activities, external stakeholders have only minimum input and the focus is primarily on gaining stakeholders' responses. Starting from the involving activity, stakeholders are more and more engaged in all aspects of the project, from the planning, development of tools and processes, through to data collection, data analysis, dissemination and action. In activities classified as supporting, Societal actors

are in the lead in the research initiation and most of the execution, and are supported by researchers or institutions on their request.

Another characteristic of stakeholder involvement is its non-linearity. One project can simultaneously aim at different levels of public engagement during its implementation.

Several internal and external factors may create obstacles for performing public engagement in Science Shops activities. Internal factors are mainly related to the Science Shop's coordination and implementation staff's competencies and experience in doing public engagement. External factors are related to culture of participation in the society, as in some countries stakeholders are more willing to be more actively involved, whereas in others they are more passive (e.g. in countries with weak civil society).

The impact of engagement activities on society or decision-making not only depends on the approach taken, but also on other dimensions, including who participates, when the engagement takes place, what issues are considered or excluded, and power dynamics between participants.

More information: SciShops deliverable 4.2 "Practitioner roadmap and methodology toolkits" (Russo et al., 2018).

3. Why engage with stakeholders and citizens?

There are many reasons for stakeholder and public engagement in Science Shops, founded on several lines of argumentation.

From a normative view, engagement is seen as 'a right thing to do'. Commitment to engagement rests on a commitment to empower citizens and is seen as a good thing in its own right, without the need for further justification. This view rests on a democratic political worldview that encourages participation in general (Datta 2011).

However, participation should not be an end in itself. **From a pragmatic perspective**, engagement is seen as a better way for researchers to achieve things. It helps to collect more knowledge, experience and expertise in addressing the complex nature of any kind of issues and problems. It is claimed that participatory approaches have the capacity to "reduce conflict, build trust, and facilitate learning among stakeholders and publics, who are then more likely to support project goals and implement decisions in the long term" (Reed et al. 2018). Thus, engagement is considered to improve quality of research by providing new insights and perspectives and to increase the likelihood of research impact.

In more general terms, participatory processes in science address problems such as a lack of trust in science and experts. By running Science Shops, research institutions and other host organisations demonstrate their commitment to responding to society's concerns and participation in solving societal problems. For publicly funding research institutions, it is also a matter of accountability (The National Co-ordinating Centre for Public Engagement). Science Shops are a form of public engagement as such, and by making their approaches even more participatory, they can add more to the transparency and trustworthiness of science.

From a societal perspective, engagement allows diverse groups to raise concerns of relevance to them which might otherwise be overlooked (Datta 2011). It also builds capacity among the public by creating networks and performing an educational function (Slocum 2003).

For individual citizens, participation in public engagement means the ability to contribute to shaping one's environment, which might be related to political engagement or a need to self-expression. Furthermore, there is an educational function (Kelty et al. 2015), which applies to learners of all ages and from all walks of life with an interest in gaining knowledge of a particular area. Also, participation might be motivated by the possibility to share affective bonds with fellow citizens or community members without a need of further practical or instrumental reasons.

More information: SciShops deliverable ble 4.2 "Practitioner roadmap and methodology toolkits" (Russo et al., 2018).

4. Challenges for stakeholder engagement

A number of challenges and contingencies are specifically related to the engagement, development and maintenance of partnerships between community members and other external stakeholders on the one hand, and Science Shop's staff and researchers on the other (based on Israel et al., 1998 and BIOSTEP, 2017):

- **Engagement is not always high on stakeholders' lists of priorities,** because engagement is seen to bring risks (e.g. doubts over others' willingness to engage constructively). Besides, some stakeholder organisations (e.g. NGOs) have very limited resources and may choose to focus their resources on certain issues more than others.
- **Lack of trust and respect**, particularly between researchers and community members. Community members may hesitate to get involved even if researchers are proposing a community-based approach. Once established, trust cannot be taken for granted; researchers must continually prove their trustworthiness.
- **Additional administrative burden** and practical difficulties, as it can lead to slower and more complicated decision-making, and the need to take time to develop and co-create shared visions and goals. Also, there is the possibility that agreement/consensus may not be reached, which in turn could lead to difficulties in developing or implementing new ideas or projects.
- **Inequitable distribution of power and control**. Within any community-based research partnership, the distribution of information, time, formal education, and income reflects broader social inequalities structured around race/ethnicity, class, and gender. These inequalities affect who attends, who participates, whose opinions are considered to be valid, and who has influence over decisions made.
- **Conflicts associated with differences in perspective, priorities, assumptions, values, beliefs, and language**. Conflicts within a community-based research partnership may occur between members within the same organisation (e.g. community-based organisation, university), as well as across organisational affiliation. They may be associated with differences in overall philosophy, decision-making styles, values, priorities, assumptions, beliefs, and use of language.
- **Engagement is a time-consuming process**. Numerous issues relate to the time involved in conducting community-based research, particularly the time required to establish and maintain trusting relationships. This issue is especially problematic if researchers view community-based research as just another project and are not committed to developing the necessary long-term relationships.
- **Obstacles for broader involvement.** Science Shops may prefer to continue to focus engagement on existing partners, rather than building broader engagement, e.g. because

there may be strong strategic and engagement processes in specific sub-themes, so that they do not see the need to engage other stakeholders.

Main recommendations or facilitation factors to overcome these challenges are:

- **Show benefits and ensure effectiveness.** Discussing or organising training about public engagement will facilitate better understanding by all stakeholders of the benefits of engagement activities. All attempts should be made to organise engagement activities in the most constructive and productive way.
- **Jointly developed operating norms and procedures**, which foster attentive listening, openness, caring, inclusiveness, agreement to disagree, identifying and addressing conflicts, opportunity for all to participate, negotiation, compromise, mutual respect, confidentiality among participants and equality. These norms cannot be imposed on a partnership, but must be developed and agreed upon by its members.
- **Identification of common goals and objectives,** recognising that each organisation involved has its own mission, goals, and objectives. Here again, the extent to which these are informal or formal written arrangements should be decided by the group itself.
- **Democratic leadership.** The success of a collaborative partnership is determined in part by the extent to which the designated leader(s) fosters democratic processes and decision-making. Thus, effective leaders are supportive of, and facilitate, the implementation of the operating norms discussed above.
- **Presence of community organiser and support staff**. Critical to the success of the partnership is the involvement of representatives from the community, e.g. a community organiser who is able to bring together people in the community, who has a history of community involvement, and who is respected and perceived as a leader in the community. Responsibilities of support staff may include informal communication outside of meetings, providing minutes of meetings, gaining input on agenda items, circulating materials, establishing computer linkages, distributing grant-related and other information.
- **Researcher role, skills, and competencies.** Effective community-based researchers can be a facilitator, co-learner, and/or consultant. To further establish trust and show commitment, researchers need to spend time in the community on an ongoing basis. To carry out this role, a community-based researcher needs skills and competencies in addition to those required in research design and methods, for example: communication, group process, team development, negotiation, conflict resolution, understanding and competency to operate in multicultural contexts, the ability to be self-reflective and admit mistakes, the capacity to operate within different power structures, and humility.
- **Support for researchers in implementing stakeholder involvement.** Sometimes it is good to hire/involve additional staff in a Science Shop to help researchers with planning, developing and maintaining stakeholder engagement.
- **Prior history of positive working relationships.** Building upon prior positive working relationships is a viable strategy for conducting community-based research. Thus, identifying participants based on pre-existing trusting relationships is an important consideration for developing research partnerships. Such a history may be established through such mechanisms as previous collaborative research endeavours, consultations, student internship programs, conferences, and participation in community-wide coalitions.

5. Science Shops' work with stakeholders

The main external stakeholder that Science Shops deal with is civil society organisations (CSOs), or 'clients' that provide research requests for Science Shop projects. Working with this group of stakeholders includes several tasks.

Performance of stakeholder analysis. It is important to identify a pool of community/ not for-profit organisations, which may have research or other activity requests for a Science Shop. This can be done using desk research to compile a list of potential 'clients' from publicly available information that can be used later for contacting them. When starting a Science Shop or later, an advisable option is to perform a needs analysis, to identify potential research needs of CSOs. Some tools have been developed by existing Science Shops for undertaking a stakeholder analysis, e.g. The Living Knowledge Network provides an example of a survey to explore the interests of Civil Society Organisations, developed by the Science Shop Brussels, Belgium. This is a questionnaire that includes questions about the CSO's profile, its potential needs for requesting research from a Science Shop, and asks for contact information for future collaborations. The questionnaire is available here: http://www.livingknowledge.org/fileadmin/Dateien-Living-Knowledge/Dokumente_Dateien/Toolbox/LK_D_Questionnaire_needssurvey2002_2003.pdf

Develop ways for collecting research requests. Science Shops can develop different ways to collect research requests: via the use of personal connections with NPOs and communities, spreading the word about research possibilities in mass media (local newspapers, news portals), presenting the work of a Science Shop at different events (conferences, seminars, workshops, etc.), developing an internet platform, conducting an active search of NPOs or communities that deal with pressing issues and encouraging them to submit a request research on the topic, etc.

From Science Shops studies conducted within the SciShops project, it became clear that all young Science Shops initially face difficulties collecting research questions, while mature and experienced ones often no longer need to advertise their services and receive more requests than they can deal with. The social and cultural context of a country can also have impact, as in countries with a less developed civil society, passive forms of collecting research requests are less likely to be fruitful. In this case, a more proactive approach is needed; strong personal contacts need to nurtured and specific events for target audiences organised (e.g. co-creation events with researchers and community members) to increase success.

Collect and evaluate research requests. When collecting and evaluating research requests, it is important consider that requests often need to be reformulated into research questions, considering the timing and availability of material and human resources, because not all research needs by CSOs may be suitable for research project, particularly if to be performed by students. Consultants and an Advisory Board can be very valuable in deciding which received requests are suitable for developing into Science Shop CBPR projects.

Some examples from Deliverable 2.2. "Existing RRI tools and successful participatory community-based research case studies report" (Garrison et al. 2018) demonstrate how Science Shops work with finding and selecting research requests.

Example 1

The Research Shop at the University of Guelph (Canada)

Having more than 10 years' experience, The Research Shop does not need to advertise itself but receives research requests directly from community organisations, including NGOs and social service providers as well as other grassroots organisations. In some cases, this involves a group of community organisations coming together with a shared and identified need. However, relationships with community organisations are still often developed via personal contacts. For example, many of the students and Community Engaged Scholarship Institute (CESI) staff members sit on the boards of various community initiatives, task forces and community health centres, giving them in-depth insights into community needs.

CESI also organises an annual engagement event aimed at bringing together representatives of community organisations to explore ways of enhancing their community-university partnerships as well as showcasing existing research projects. Held in public spaces, such as shopping centres, they provide an opportunity to raise awareness of their activities. This process has previously resulted in new enquiries.

Example 2

The Science Shop Language, Culture and Communication at University of Groningen, Netherlands.

This Science Shop was set up in 1986 and has no problems receiving research questions. Usually around 25-30 questions are received a year, some of which can be answered without the need for a research project. However, because the Science Shop is small, it can only manage a maximum of ten projects a year. Although they receive a sufficient number of research questions, sometimes the coordinators themselves proactively identify organisations with interesting problems to research.

Not all requests are transformed into research projects as sometimes it is not possible to do this because the Science Shop doesn't have the expertise or students available to undertake the project, or the question is too big or too complicated for a student to answer.

Example 3

Institute of Social Innovations Science Shop, Lithuania

This Science Shop has only been run for five years and is thus still struggling with collecting research requests. When the Science Shop was first set up, they sent letters inviting research requests to over 1,000 NGOs and received just one response. This is partly due to civil society being relatively underdeveloped in Lithuania. In addition, the public is not particularly interested in research and NGOs do not understand its use in their own work and activities. At the government level, knowledge-based decision-making is acknowledged in declarations but there is a lack of understanding on the ground about what this means in practice.

The identification of research requests relies on the enthusiasm and persistence of the Science Shop's staff in following up potential avenues. Research requests are generated by ongoing conversations and direct contact with NGOs, through which they are made aware about the work of the Science Shop. Information campaigns have proven unsuccessful in the past but the Science Shop does raise awareness of its work and the benefits of undertaking this type of research through articles and interviews in the media.

Develop long term relationships with stakeholders. Best practices of Science Shops show the importance of maintaining relationships with stakeholders after the end of a project. This task usually is performed by the coordinator of the Science Shop as project implementation staff (students, interns, volunteers, researchers and supervisors) are not so much involved in the running of the Science Shop. This is known as sustainable relationship management; when Science Shops try to keep contact with all stakeholders, particularly with community organisations after completion of a project. Lots of Science Shops report that they get a lot of repeat business due to the good relationships that are established through the projects and this can also lead to other collaborations in the future. Some of these relationships also develop into long-lasting partnerships, with Science Shops providing ongoing help and consultations to former clients, organising joint events and developing g new CBPR projects together etc.

6. Advisory Board

One way to maintain relationships with stakeholders, both external and internal, is through an Advisory Board. To have one is not universal practice among the Science Shops, but some of them do have such a body. Advisory Boards act as an advisory and sometimes supervisory body; however, they are also helpful in developing partnership networks of Science Shops, as its members' contacts can be used by Science Shops to solicit research requests and result in the involvement of other stakeholders.

Some examples from Deliverable 2.2. "Existing RRI tools and successful participatory community-based research case studies report" (Garrison et al. 2018) demonstrate how Science Shops work with advisory boards.

Example 1
European University Cyprus Science Shop

The management structure of the Science Shop consists of a Director and an Administrator (contact officer) based within the Business School, an Advisory Board, and a Scientific Committee. The Advisory Board represents all stakeholders and includes the Science Shop's Director, Vice Director for research at the university, Deans of six of the university's schools, three representatives of community organisations, and one representative of the Science Shop's Scientific Committee. The Advisory Board has an advisory role, but the networks of its members are also utilised for finding research requests.

Example 2
Interchange Liverpool, UK

Interchange has a Management Committee consisting of academics from the University of Liverpool and Liverpool John Moores University, representatives from community organisations, as well as student alumni. The Management Committee acts as a legal and advisory board.

7. Stakeholder involvement in project implementation

Involvement of civil society organisations (CSOs). The main external stakeholder during implementation of the project is the 'client' organisation(s) – one organisation or a group or organisations that submitted the request for the project. They can, and should be, involved into all steps of the project's design and implementation, although the actual degree of involvement will depend on the context and their willingness, as well as capabilities of the CSO itself.

Involvement of other external stakeholders. The project can also involve other relevant external stakeholders, e.g. professional organisations in the field, local authorities, etc. The process of stakeholder identification, or 'mapping' of stakeholders, will be addressed in the interactive exercise performed at the end of this module. Other stakeholders can be contacted and invited to take part in discussions or other one-off events, or become members of a project's advisory committee.

Involvement of internal stakeholders. After a request for CBPR is received from a client, the first task is to analyse what internal stakeholders (supervisors, researchers, students, etc.) can conduct the requested research. If there are no such interested and competent persons for the requested research topic, and if there is no possibility to invite them from outside (this is especially important for Science Shops based at NPOs and business), then the research cannot be conducted. The possibility of using a multidisciplinary research team should be also considered, as some requests can be better answered by involving researchers from different scientific disciplines, e.g., a decrease in the bee population can be investigated with the help of both chemists (e.g. to examine the impact of pesticides) and biologists (to examine parasites and other killers of bees).

Advisory committee. Some Science Shop projects, particularly larger ones, may rely on an advisory committee that includes relevant stakeholders and has a supplementary project supervision role. Such a committee might include representatives of clients, local authorities, relevant citizen or professional associations, and other stakeholders. Below is one example.

Example

Many of the projects run by **Wageningen University & Research Science Shop** (the Netherlands) are supervised by a coordinator and an advisory committee. As an example, the advisory committee of a project that aimed to propose a plan for reconstructing an allotment complex in Ede, Netherlands, besides the supervisors of the master student who did the main research, also included a representative of the client, chairman of the steering group for renovation of the garden complex, a consultant from a private consultancy firm, a representative of a national organisation for hobby gardeners, a coordinator of the district where the complex was located, a representative of the "Green Office" at Utrecht University, and two coordinators of the Science Shop.

More information: Alix, L. and H. Eppink (2012) *Welkom op Tuinenpark De Koekelt*. Science Shop project report. Available at: http://edepot.wur.nl/210766

Stakeholder involvement in project implementation is addressed in more detail in Module 3 "CBPR project management" and described in the "Practitioner roadmap and methodology toolkits", developed by SciShops project partners (Russo et al., 2018).

8. Stakeholder involvement in the dissemination and evaluation of project results

Stakeholders' part in project dissemination. As Science Shops projects mainly involve answering the requests of community organisations, communication and dissemination activities will depend on a community organisation's preferences and will be carried out with its involvement or solely on its initiative, especially if the project is implemented by students.

Relevant stakeholders for dissemination. It is important that the results are disseminated to relevant stakeholders, e.g. the broader research community via conferences and publications, policy-makers (if relevant), the general public (e.g. via the media / public engagement activities), and other organisations working in the field of research (e.g. environment, etc.) to whom the results could be of interest.

New stakeholders, who didn't participate in previous phases of project implementation, can be involved in a project's dissemination and evaluation. This can result in better exploitation of the research results and a bigger impact.

9. Organising engagement activities

There are several issues to consider when organising stakeholder and public engagement activities.

Aims of involvement. It should be remembered that stakeholder and public participation is not a goal in itself. In some projects/issues, the participation of outside actors might be not necessary or not appropriate to reach the goals – the definition of goals must bear in mind the benefits and limits of participation. Moreover, participation might even bring unintended results if it is not carefully aligned with project goals and the organisation/project is not able or ready to incorporate public input. Thus, the project team should have a clear picture of why they want to involve stakeholders or the public, what the expected results of the activity are, and how they will be used.

Finding relevant external stakeholders. If a Science Shop has already appointed a team of internal stakeholders, it must try to identify and engage relevant external stakeholders. Relevance may take different forms: providers of access to the research object (e.g. if the object is bees, then individual beekeepers, or even better their associations, farmers who would allow samples to be taken from their fields for the examination of pesticides), NPOs interested in the topic (e.g. environmental groups and organisations), providers of valuable contacts (e.g. most large environmental organisations have good contacts with environment related government departments), decision makers (e.g. the national agency responsible for pesticide control etc.).

Decision on the form of engagement. There are many tools and approaches, ranging from conventional social science methods such as qualitative interviews and focus groups, to more specific tools such as scenario workshops or citizen panels. For example, the Action Catalogue (http://actioncatalogue.eu/) includes 57 methods focusing on research driven by involvement and inclusion. Decisions about which method(s) to employ must consider at least the following criteria: objectives (reasons for involvement and expected outcomes), topic (e.g. the nature and scope of the issue), contextual situation (e.g. available time), the available resources (e.g. funding and available facilitation competencies), and the number and nature of participants (e.g. their knowledge on the topic or interest in the issue).

Importance of planning. A key feature of successful engagement is the effective design of engagement activities, which in turn implies the need to take time in the planning stage, and for careful consideration of the timing of engagement, the contextual conditions that are necessary, and the

representativeness of participants in terms of both planned participants, and who actually participates in practice.

More information: SciShops deliverable 4.2. "Practitioner roadmap and methodology toolkits" (Russo et al., 2018).

10. Engagement methods/techniques

Engagement may take less structured forms of discussion, and not being 'labelled' with a specific method or title, does not make them any the less valuable. However, structured and tested forms of engagement are beneficial as they help to ensure that all participants are equally involved and heard. We will not mention all the possible techniques, only the most popular and more innovative ways of engagement.

To discuss concrete methods of stakeholder engagement, the trainer is advised to use the handout presented in the Appendix.

Sharing experiences

Participants are asked to share their experiences of involving stakeholders in running CBPR projects. Alternatively, if there are no participants with such experience, cases can be presented in the form of written stories/ or a video or by inviting a speaker to share their experiences (physically present or online).

Instead of using participants and external speakers, some examples of CBPR with a strong component of stakeholder involvement could be presented. These examples can be chosen by the trainer and based on his/her experience, or can be used from deliverables: 2.2. "Existing RRI tools and successful participatory community-based research case studies report" (Garrison et al. 2018) and 2.5 "Existing Science Shops assessment" (Stanescu et al. 2018).

We propose using the following cases from health, environment and social CBPR:

Case 1

Science Shop "The Living Lab for Health" at the IrsiCaixa AIDS Research Institute in Spain

The Healthy Minds (Sana Ment) project (2015 – 2016) was the Living Lab for Health's first implementation project on the topic of mental health, run as part of the EU EnRRICH project. Its aim was to design and implement health interventions for, and with students, involving them in research and innovation projects. The project was run as a pilot involving 15 schools and was a collaboration between educators, pupils, researchers, patients' associations and policy makers.

Stages of the project included:

- Selection of the theme from a list of health topics – the pupils chose stress and depression.
- Collective needs agenda – pupils prioritised their needs and interest in the subject.
- Co-design and implementation of community research projects together with researchers, NGOs, pupils and teachers.
- Final recommendations on promoting emotional well-being developed with public health experts and patient associations.
- Presentation of results through dissemination activities, such as the Caixa Congress.

More information: Sana Ment project. http://www.irsicaixa.es/en/living-lab-health/sana-ment-project

Case 2

Science Shop Wageningen University & Research, The Netherlands

A good example of urban development research (2006) in the Netherlands was the Ons Buiten project to demonstrate the benefits of gardens to the community. The research question was submitted by the Board of the Ons Buiten, which designed and developed community gardens containing small plots that were rented to citizens. The Ons Buiten community garden was on a list of community gardens designated to be transformed into a housing area. In this context, the Science Shop conducted a research project together with senior staff from the Department of Rural Sociology and the Education and Competence Studies Group, as well as two BSc students from the Van Hall Larenstein University for Professional Education (part of Wageningen University & Research, WUR).

A number of working groups were set up at Ons Buiten. Members of the community discussed and drew up a project plan in which they outlined the objectives of the community gardens and planned activities. The project developed a brochure that was considered "a welcome support and a source of inspiration for all those garden parks that face threats time after time" (Van der Hoeven and Stobbelaar, 2006). The project had a clear social impact on the community, involving its members and other stakeholders from the beginning in the change process and listening to their wishes and interests. The findings of the study highlighted the fact that the garden was bringing a lot of value to the community and, furthermore, made recommendations to secure the future sustainability of the garden.

More information: Van der Hoeven, N., Stobbelaar D., J. (2006) De meerwaarde van tuinparken De betekenis van tuinparken in een stedelijke omgeving. Science Shop project report. Available at: http://edepot.wur.nl/44891

Case 3

Science Shop at Environmental Social Science Research Group, Hungary

One part of the project "Forgotten citizens of Europe: Participatory Action Research for Local Human Rights" conducted by the Science Shop at Environmental Social Science Research Group (ESSRG), Hungary, was aimed at exploring local human rights problems and the experiences of the Roma communities in Szeged in Southern Hungary. The project used action research methods: participatory research that involved inviting Roma communities and local experts from Szeged to discussion groups; debates on local human rights issues; engaging and network building of local stakeholders, professionals, activists, schools, and the municipality. The engagement of the municipality was of crucial importance to the implementation of the final result of the project – to establish an alternative school for Roma children in the local community.

More information: Málovics, G. (2012) Forgotten Citizens of Europe: Participatory Action Research for Local Human Rights. Available at: http://www.livingknowledge.org/fileadmin/Dateien-Living-Knowledge/Library/Project_reports/PERARES_Structuring_PER_in_Social_Sciences_Research_and_forgotten_citizens_of_Europe_D6.1.pdf

The presentation(s) is followed by a Q&A session or a plenary discussion. Questions for discussion could be:

- What are the benefits of stakeholder involvement?
- What might be the challenges of stakeholder involvement?

Interactive exercise

"Mapping stakeholders"[3]

Aim: To develop the skills of stakeholder analysis by mapping the stakeholders of projects and drafting a stakeholder engagement strategy.

Number of Participants: not limited; participants should be divided into groups of 4-5 people.

Duration: 30 min. to 60 min., depending on the depth of the analysis

Process: There are a number of variations in mapping out stakeholders. The most common way to map is by power and interest:

- **Power**: describes a stakeholder's level of influence – how much it can direct or coerce a project and other stakeholders.
- **Interest**: describes the degree to which a stakeholder will be affected by the project.

Different groups are given different examples of projects to work with. Some examples of project research requests that they can work with (the same examples from previous modules can be used):

- **Water quality**. Members of the local community are concerned about the drinking/tap water quality and approach a research group to help them with this issue.
- **Multilingual training for children**. Parents in the local community are concerned about the language teaching methods for their multilingual children and approach a research group to help them with this issue.
- **Child obesity.** Members of the local community are concerned about the rise of child obesity in the community and approach a research group to help them with this issue.
- **Wildfires.** Members of the local community are concerned about the increase of wildfires in the community and approach a research group to help them with this issue.
- **Roma minority integration.** Researchers approach a local community to study the causes of the poor situation of the Roma minority in that community. Researchers (among them, two are of Roma origin) are also interested in the potential solution of problem.
- **Biodiversity.** A local beekeeping community approaches researchers to study the decline of bees in the community. They are also interested in potential mitigation actions.

The groups are given large sheets of papers, post-it notes, and pens. They have to complete three tasks:

1) To create a list of stakeholder groups by answering these questions:
    - Who will implement the results of the project?
    - Who will be impacted by the project?
    - Who can support the project?
    - Who can obstruct the project?

[3] Based on: Gamestorming: A toolkit for innovators, rule-breakers and changemakers. Stakeholder Analysis. Available at: http://gamestorming.com/stakeholder-analysis/

2) To map the list onto a matrix, based on their relative power and interest. If the stakeholders have been captured on sticky notes, the group should be able to place them directly on the matrix.
3) To draft a strategy for stakeholder involvement. After each stakeholder has been placed on the matrix, the group should discuss specific strategies for engaging their stakeholders. They may ask:
    - Who needs to be involved in the Project Advisory Board?
    - Who needs to be informed of what, and when?
    - Who needs to be consulted about what, and when?
    - Who should be responsible for engaging each stakeholder, and when and how will they do it?

After the group work is finished, group representatives are asked to present the findings to the whole group.

Wrapping up. The exercise is finished with a short discussion on the benefit of such an exercise and its applicability to running projects at Science Shops.

5.4. References and further reading

Literature

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Appendix

Handout: Stakeholder engagement methods

The following handout is based on excerpts from O'Haire et al. (2011) (description of all methods except Co-creation workshops) and Bertini (2014) (description of Co-creation workshops).

Stakeholder engagement methods

Sources:

O'Haire, C., McPheeters, M., Nakamoto, E., et al. (2011)
Methods Future Research Needs Reports, No. 4. Rockville: Agency for Healthcare Research and Quality (US). Available at: https://www.ncbi.nlm.nih.gov/books/NBK62556/

Bertini, P. (2014). Co-creation: methods & approaches. Available at: https://www.linkedin.com/pulse/20140530181242-144684-co-creation-methods-approaches/

Focus/working groups. A planned discussion in a small (4 to 12 members) group of stakeholders facilitated by a skilled moderator. This is designed to obtain information about preferences and opinions in a relaxed, non-threatening environment. The topic is introduced and, in the ensuing discussion, group members influence each other by responding to ideas and comments. The moderator may use some predetermined questions as prompts to encourage discussion or to return the conversation to the intended focus of the discussion.

Citizens' juries. Used to elicit the views of members of the public about a variety of health and other issues. Based on the principles of "deliberative democracy" and active citizenship, they aim to promote decision-making based on the process of 'careful consideration,' debate, and respect for different viewpoints. They bring together diverse members of the public as jurors who are given information relevant to the issue under debate by "expert witnesses," (innovators, patients, health care policy-makers, and clinicians) and the discussion has a facilitator or moderator present to guide the process. The session can include small and large group priority-setting exercises based on actual examples of technologies under consideration for assessment by local and national bodies. The end result is often a written report authored by the jurors, which can also take the form of a questionnaire with juror responses.

Town meetings. Individuals residing in a specific geographic area are invited to a public meeting to discuss issues relevant to their community. Often, this meeting is announced by the local media and attended by residents as well as other individuals including state and local officials, health care providers, researchers, manufacturers, and topic experts. In general, everyone is offered the opportunity to speak in a relaxed environment, the meetings are often loosely organised and used to identify and make a broad list of research topics/interests. Voting to prioritize research items may also occur.

Co-creation workshops. A workshop focused on making rather than listening, where all participants collaborate and contribute to find and create ways to address the needs through creative knowledge sharing and constructive activities, and where the team is invited to negotiate and agree on the best solution that satisfies all stakeholders. Because co-creation involves meaning making, negotiation and consensus, a facilitator and a number of facilitation techniques and approaches are required, e.g. mapping the ecosystem, urgency axis for prioritization, various stickers-based and brainstorming

techniques, etc. Once the team has defined the solution, the project staff are in charge to develop the idea towards a more advanced stage by keeping in touch and asking for ongoing feedback from the participants through various means, including more workshops.

Nominal group technique. Structured problem-solving or ideas-generating activity in which individuals' ideas are gathered and combined in a face-to-face, non-threatening group environment. The process is intended to promote creative participation in group problem-solving. Each member of the group is invited to express their opinions that are used to generate a list of priorities. Members may be asked to vote or rank priorities from the list either formally or informally. The voting process may occur multiple times. The nominal group technique is designed to promote the free exchange of opinions and the generation of a list of priorities in a structured and non-hierarchical discussion forum (maximizes creative participation and ensures balanced output while utilizing each participant's experience and expertise to reach consensus on complex topics). The purpose is to provide structure to a group discussion when the group is facing the challenge of reaching agreement on complex topics.

Delphi technique. The Delphi technique uses a series of consecutive questionnaires to determine the perceptions of a group of individuals. The Delphi method allows respondents to communicate their opinions anonymously. Each questionnaire is considered a round. The method is often used to prioritize research/topics. For example, Hauck and colleagues conducted the following study to identify research priorities of clinical staff working with the community:

Round 1: This questionnaire was used to create a list of five important questions relating to future research in care for children in this community. Content analysis was used to analyse and summarize the responses and develop the second questionnaire. All issues were discussed, assigned a general category, and then described as a research topic.

Round 2: The clinical staff was asked to prioritize the research ideas/suggestions using a 7-point Likert- type response format, with one indicating a low priority and seven the highest priority.

Round 3: The top 10 research topics were identified. Both clinicians and clients were asked to rank the topics identified.

6 Communication and Public Awareness

6.1. Objectives

In the area of expanding knowledge, after this module, participants will:

- Be familiar with the principles of effective communication for Science Shops
- Know how to set objectives for an effective communication strategy, targeting audiences and crafting effective messages
- Have an overview of communication planning and evaluation activities

In the area of skills and attitudes, they will:

- Be able to map different channels to communicate messages
- Gain skills about how to monitor and evaluate a communications strategy
- Develop a strategic mindset to plan effective communications

6.2. Session outline

Methodology	**Material required**	**Duration** Total: 3hr 30 min
1. Welcome	Training agenda (printed)	5 min.
2. Personal introductions and initial evaluation	"Post-it notes" (different colours)	15 min.
3. Presentation	- PowerPoint projector & large screen - Key messages - PowerPoint presentation	90 min. (including Q&A and discussion)
4. Interactive exercise 1 "Crafting targeted messages"	- Cards with different types of stakeholders	40–50 min.
5. Interactive exercise 2 "From theory to practice: Deciding communications"	- Notepads or sheets of paper, pens	40–50 min.

6.3. Description of methodologies

Welcome

The trainer welcomes participants, presents the session's aims, distributes and comments briefly on the training agenda.

Personal introduction and initial evaluation

If there is a need (depending on the training programme), the trainer can ask participants to present themselves.

For the initial evaluation, attach 2-3 sheets of paper with questions for the participants on the wall. Questions could be:

- How important is communication for a Science Shop?
- How difficult is for Science Shops to implement communication activities?
- How do you define if a communications activity has been successful?

Distribute post-its to the participants, ask them to write answers to every question and stick them on the wall. At the end of this training, invite all participants to the wall to go through all questions and comments together to see if they were answered during the day.

PowerPoint presentation

Introduction

The objective of this presentation is to highlight the importance of planning communications activities as a crucial part of any project, specifically for community-based research projects and the establishment and sustainability of Science Shops.

The training is aimed at providing the basic knowledge and tools to set up an effective communications strategy and define objectives and methods for evaluation. In addition, the presentation will include some tools and recommendations to optimise time, resources and efforts when planning and implementing a communications plan.

The focus of this training is on the communication and dissemination of Science Shop projects and their results. However, the whole approach contributes to the development of a general communications strategy for the whole Science Shop (also see 'General communications activities conducted by Science Shops' included in 2.6. Planning communications activities section in this training module).

If a Science Shop is undertaking a large number of projects, it will be difficult to carry out a significant communications strategy for each project. However, the Science Shop should look at using all the resources available to them for the communications work, including those of its mother organisation, the participating researchers/students, and the community organisations and other organisations involved in the project. The development of a communications plan at an early stage of the project will help in deciding where to concentrate the communications efforts to gain maximum impact.

Key messages corresponding to the different slides

1. Why communicate/disseminate? The importance of communicating Science Shops projects and results

A communications strategy should be developed during the early stages of a project's development in order to achieve the best results. This part is usually overlooked, especially when the people in charge of the project don't have a communications background.

This represents a common challenge within research projects, where the focus is often given exclusively to the study: the methodology, the sources of information, the reliability and utility of the results. However, the time and the effort required for planning how to communicate the project and its outcomes is often underestimated.

Within the context of Science Shops, communication activities can be divided into two broad objectives:

- **Communicating to raise awareness of a Science Shop**; for example, with the aim of raising the profile of the Science Shop, attracting researchers/students to participate, advertising the services of the Science Shop to local community organisations, building up awareness and trust within local communities.
- **Disseminating the outcomes of a community-based research project**; at the end of the project, conducting the right communications activities can help to reach people that can benefit from the results of the research: e.g. other researchers, students working in the same field or the general public, where the findings are of broader public interest. Also, the dissemination of the findings of the research can lead to changes and improvements at the local level, serving as a tool for advocacy and influencing policy-makers to make decisions based on the results and demands of the community. Dissemination of project results also helps to contribute to the first objective i.e. raising broader awareness of the Science Shop.

What are the benefits of undertaking communications activities?

- **Obligation to communicate**. If society is not aware of how research impacts their lives, they never will know the importance of the work undertaken by researchers, specifically research of direct benefit to communities. There is an obligation to communicate with society especially when the project is funded by public organisations and institutions (funding coming from taxpayers). As a result, this also helps to build public trust in science.
- **Promoting the Science Shop.** Communication is needed to promote the service offered by Science Shops to local communities and civil society organisations and get new research requests.
- **Staff recruitment**. Communication helps to attract new researchers and students interested in undertaking community-based participatory research.
- **Multiplication of impact.** Giving visibility to the results of each community-based research project can improve the possibilities of multiplying the impact: influencing policy-making processes, helping to fund local initiatives, inspiring other communities regardless of geographic locations etc.
- **Reputation building**. A well implemented Communications Plan also benefits the researchers and their institutions: enhancing their reputation, increasing the opportunities for support (financial, potential partnerships and synergies, etc.), raising the profile of the

institution/researcher/initiative within the scientific community, and leading to cross-sectoral and interdisciplinary new approaches for the research (Scherer et al. 2018).

- **Inspiration to others**. Raising awareness of a Science Shop's project can inspire other initiatives that can lead to different uses of the results and other community-based projects, and as a result contribute to a more democratic and open use of Science.

2. Creating a Communications/Dissemination Strategy

The successful implementation of communication and dissemination activities requires some planning. It is inadvisable to carry out actions without any strategy. Thinking in advance and creating a plan with key points about why and how these activities are going to be developed will help to optimise resources, costs and time; thus, increasing the possibilities of success and the effectiveness of the communications and dissemination efforts. In addition, some funding programmes, for example Horizon 2020 require this strategic approach for all projects, and a communication and dissemination strategy can often be a prerequisite for grant applications (Communicating your project: Participant Portal Horizon 2020 Online Manual, at http://ec.europa.eu).

The following sections outline the steps to be undertaken to create a strategy.

3. Objectives

The first step to developing a strategy is to decide and define the objectives, i.e. what we want to achieve with our communications efforts.

Starting from a general communication/dissemination objective such as raising awareness, persuading, involving, building trust or informing our audiences, it is important to turn the general objectives into more specific ones. We need to define **SMART objectives**:

- **Specific**: avoiding generalities, focusing on concrete and more tangible goals.
- **Measurable**: add numbers (wherever possible), i.e. metrics and indicators that can be easily measured. Thanks to a series of online tools, it is easy and possible to measure the impact of digital communication activities such as social media engagement, website traffic, readers of an article, etc.
- **Attainable:** It is fine to be ambitious when setting objectives, but it is also important to be realistic. A previous analysis of the resources (time, budget, task force) and available channels and opportunities can help to define good objectives that are actually achievable.
- **Relevant:** communication objectives have to be always linked to the project purpose, expected impact, as well as the context and characteristics of the research.
- **Time-bound:** each objective should be set within a time period i.e. to have a start and an end point. This is also necessary to be able to evaluate the success of the actions.

Example of a 'SMART' objective: to raise awareness of the Science Shop at the local level: to get three articles about the new Science Shop published in three different local newspapers within three months. This objective is specific, measurable (3 articles), it seems possible to achieve (local newspapers are easier to contact and they are normally interested in what is happening in the city/region/village as local initiatives are one of their main sources of content), relevant to the development of the Science Shop (it will help to raise the profile of the Science Shop), and a deadline has been set up.

Other examples could be:

- Dissemination of results> Raise awareness of the results of a research project > three articles in three different scientific publications within a year after the end of the project.
- Dissemination of results> Persuasion> Statement from one relevant decision-maker (politician, local administrator, private company) to improve/make a change on a situation based on the results of the research after the results are published and maximum one year later.
- Communication of the Science Shop> Raise awareness> Achieve 600 monthly visits to the website or 1000 subscriptions to the Science Shop's newsletter/mailing list in one year (should be realistic according to the size of the Science Shop: local/national, existing networks to invite to join the newsletter, etc.)
- Communication of a project> Raise awareness>Elaboration of a mailing list of interested stakeholders to send them relevant updates about the project. Target: collection of 50 emails for this mailing list by the third month of the project.

4. Stakeholders

When creating a communications strategy, we need to select and analyse the target audience we aim to reach with our communications activities. **Who will be the recipient/s of our messages?**

The first step is to know who your stakeholders are (the question that is addressed comprehensively in Module "Stakeholder analysis"). In the broad sense, target audiences of Science Shops can be understood as their stakeholder groups. A stakeholder is "an individual, group, or organisation, who may affect, be affected by, or perceive itself to be affected by a decision, activity, or outcome of a project" (Project Management Institute, 2013). Science Shops' stakeholders can be classified into **internal stakeholders** (individuals and groups from within the organisation that are a part of the project implementation, such as project supervisors, researchers, students, interns or volunteers) and **external stakeholders** (those groups from outside of organisation that are affected by the project or are otherwise involved in project activities). External stakeholders can be grouped further into four broad groups: stakeholders from civil society (the main stakeholder are CSOs who provide research requests), the public sector, the business sector, and the general public (see Module "Stakeholder Engagement" for more information).

However, not all stakeholders of the Science Shop or its specific project will be the target audience, as the Science Shop may decide to focus its communication efforts on just some of them, depending on the stakeholder's importance or concrete communication objectives at that time. For example, all of students at a university might be defined as stakeholders, but specific communication efforts might be targeted only to students in science disciplines. Thus, target audiences are more specific groups that are intended recipients of the messages.

Another point to consider is whether the outcomes/or the project are relevant at a local, national or international level. For example, if a Science Shop is conducting a research about the effectivity and sustainability of a waste collection system in a village, it would not make sense to put effort into targeting the national media. However, it might be meaningful to target local associations, administrations and local media, among others - in order to raise awareness of the issue.

Once the target audiences are defined, you need to decide the best way to reach them: i.e. what are the best messages, channels, activities to use to communicate with the stakeholders to meet the objectives of the strategy.

5. Targeted messages

In order to craft effective messages that catch the attention of the audience and increase the likelihood of achieving the desired effect, here are some recommendations to consider:

- Think first about the **audience's needs** rather than those of the research/or your organisation. Appealing to their interests or offering a solution to their problems is a good way to start the message.
- Consider **the characteristics of the audience** with regards to their level of knowledge, background, any language barriers etc. when formulating messages. A message aimed at members of the public will be different to one addressed to professionals with a research background. Likewise, a message aimed at a scientific researcher from the same field will also be different to one addressed to an expert in another area.
- The message should be shaped **according to the characteristics of the channel** where it will be shared e.g.: the size and style of a message posted on Twitter will differ from a message contained in an email or article.
- Less is more: the shorter, the clearer and the more relevant a message is for the recipient, the more effective it will be.

6. Channels

In Communications, the most commonly used channels are generally classified according to two groups: **online and offline**.

Online includes:

- Websites
- Social media
- Online publications
- Press (online)
- Blogs
- Podcasts
- Video
- Emails, newsletters, etc.

Offline includes more 'traditional channels. Those of most relevance to Science Shops include:

- Press (offline) (e.g.: local or national newspapers)
- Television and Radio (local or national)
- Magazines and journals (e.g.: with a specific scientific focus)
- Books and other publications
- Leaflets, brochures and printed material
- Events and Meetings
- Exhibitions

Channels can also be classified according to whether they are **generalist channels** addressed to a wide audience (i.e.: large newspapers, TV and national radio channels, etc.) or **specialized** channels in one topic/area, targeting specific communities and stakeholders (scientific and social science magazines, research publications, Open Science repositories, conferences, etc.). The selection of specialist or generalist channels will depend on the nature of the research project and the aim of the

communication activity (e.g.: to inform the general public, to raise awareness within the scientific community, etc.).

7. Communications activities

Once the objectives, audiences, main messages and the channels have been worked out in the strategy, it is time to make concrete plans for how this information should be turned into specific communication activities that will seek to achieve the objectives defined at the beginning of the strategy.

Creative thinking can lead to great ideas, but it is necessary to keep in mind the rest of the strategy when deciding which activities are going to be carried out to promote the project or its results. The cost, the reach, the relevance to the objectives and the target audience all have to be assessed while making decisions.

One of the main communication activities that a Science Shop needs to do is to **promote its services to community organisations and create public awareness of the Science Shop**. This can be done in a variety of ways and some examples are listed below:

- Targeted information on the Science Shop's and/or mother organisation's website (perhaps with a simple enquiry form)
- Use of social media channels
- A drop-in facility, whereby the office is open to the public at specific times of the week
- Presentations at local events and conferences
- Face-to-face meetings with individual community organisations
- Targeted mailings (via post or e-mail)
- Flyers and leaflets to hand out
- A regular newsletter (to the Science Shop's mailing list)
- Articles in local media and/or interviews with the Science Shop coordinator
- Briefing events to which community organisations are invited
- Use of external networks, websites, newsletters

Again, particular consideration needs to be given to the key messages used to promote the services of the Science Shop, making them as relevant as possible to the needs of the community organisations.

Some of the activities that can be used to **communicate the results of Science Shops projects** (partly based on Russo et al. 2018) are:

- Use of own and/or mother organisation's website and social media
- Press releases (distributed to relevant media) and other collaborations with the media
- Annual or other reports (printed or online)
- Knowledge cafés and other public engagement events, workshops, exhibitions
- Scientific publications
- Presentations and posters at conferences
- Policy briefs and papers
- Use of Open Access/Data repositories

One very important channel for a Science Shop is **direct personal communication**. Many Science Shops, particularly younger ones, indicate that often it is direct face-to-face communication that helps them to get research requests and engage other stakeholders.

A **website** is a key communications tool for a Science Shop, which can be used to host general information about the Science Shop and is a key reference point to which to direct stakeholders interested in the work of the Science Shop; it can also serve as a platform to host and disseminate information about individual projects. A Science Shop may be able to use the website facility of its mother organisation e.g. to have a section on a university or NGO's website dedicated to the Science Shop. If a Science Shop needs to set up its own website, consideration needs to be given to the development and maintenance of the website and whether external resources are required.

One of the most well-known and more intuitive Content Management Systems (the tool used to update and modify content on a website) is Wordpress.org. The creation of the website can be delegated to an expert web developer (as mentioned above), but it is advisable to request a 'friendly' and easy-to-use interface that will allow others to make changes and create new pages on the website. You do not need an extensive knowledge of website management to use WordPress and there are many tutorials available on Internet (a quick search on Google or YouTube would be enough to answer many common questions about the use of WordPress). In that way, coordinators, researchers, students and/or volunteers can be in charge of content on the website regardless of their background and knowledge.

Other Content Management Systems can be used, for example, the web developer can create a new one 'on demand' specially for the Science Shop. The key point is to ask those responsible for building the website to provide tools and instructions so that content can be managed by the person who will be in charge of those tasks within the Science Shop.

External resources (that might incur costs) might also be needed to implement other communications actions too. For example, the design and printing of leaflets, brochures or other graphic materials. It may be necessary to hire a graphic designer or require help from a student, trainee, volunteer with skills and/or background in graphic design.

Examples of activities undertaken by existing Science Shops can be found below. The examples mainly include the use of channels such as websites, social media, publications and events.

Examples of websites

Example 1
The Netherlands: Science Shop, Wageningen University & Research (WUR)

One of their main channels of communication used to raise awareness about their Science Shop and research projects as well as to disseminate results is **the university's website** (https://www.wur.nl/en.htm). In this case, we observe how the Science Shop benefits from an already established channel owned by the mother organisation from which it is receiving support (the website of the Science Shop can be found at https://www.wur.nl/en/Education-Programmes/science-shop.htm).

The Science Shop website is clearly structured in a way that makes the search easy. The visitor can see at a glance what the Science Shop is about - thanks to a clear and visible message on the central-left side of the homepage:

Wageningen University & Research Science Shop supports non-profit organisations by implementing research projects with a potential societal impact in the fields of nutrition and health, sustainable agriculture, water management, environmental quality, and processes of social change.

The navigation makes it easy to find project information and results. It is interesting that the site includes an area (also quite visible) to share testimonials from clients that have used the Science Shop services about their experience. These types of messages help to build up the reputation of the Science Shop.

The use of a plain language makes the content easy to read and understand for the wider public (not only students and researchers, but also including a broader public from different backgrounds and with different levels of knowledge).

Example 2

Northern Ireland: Community University Knowledge Exchange, Queen's University Belfast

This is another example of a Science Shop that uses the resources of its mother organisation; the webpage of the Science Shop (https://www.qub.ac.uk/sites/ScienceShop/) is hosted on the University's website (https://www.qub.ac.uk/). The design is very visual, using big pictures and short text containing clear 'Call-to-action' messages well targeted to the different type of audiences. Some examples are:

I'm a student, where do I start? [...] Make a difference by applying your knowledge, skills and experience, working within your course to address real issues facing communities today.

The message is crafted from the students' perspective and not as a mere description of the Science Shop's work. This is important, as if you want to connect with the audience, you need to appeal to the audience's needs and interests ('what's in it re for them?') and not just one's own.

Other clear messages to other audiences are:

- For academics:
  I'm an academic, where do I start? Find how you can support students in their projects
- Communities:
  I'm a community group, where do I start? Find out how we can help

Example 3

Canada: Office of Community-University Engagement, University of Victoria

Looking at the University of Victoria's **website** (https://www.uvic.ca), you can see how the University is communicating the work of the Science Shop to build up their reputation as an institution with extensive expertise and high-quality research:

Dynamic, hands-on learning; research that makes a vital impact; and discovery and innovation in Canada's most extraordinary academic environment provide an Edge that can't be found anywhere else.

This is clearly a message targeted to students, researchers and other stakeholders where community-based research (or, as they call it, 'civic engagement') is promoted as an added value to those who engage with the University's programmes and activities.

Example 4

Germany: District Future - Urban Lab, Karlsruhe Institute of Technology

The **website** for this project has a really minimalist and visual design. This shows that a website does not have to be complex. It is quite the opposite, here the information is presented in a really concise way, and the language used is simple and clear to understand.

They have also added a **blog** section (http://www.quartierzukunft.de/en/blog/) where they publish news articles about project developments and results.). This is a more easily digestible and accessible way to present the outcomes of research. It is also a good idea to spread and disseminate the results through social media channels and newsletters by sharing links to articles on a website; it is also easier to ask other partners and stakeholders to share the information as they simply have to share the url with their networks.

Other examples of communication activities undertaken by Science Shops are presented in the box below.

Examples of other communication activities

Social media

There are not many specific examples of how Science Shops use social media to promote the work of the Science Shop. We observe that many Science Shops use the Social Media channels of their mother organisations (e.g. Universities). Science Shops can take advantage of existing, channels, sending content to the people in charge of Social Media at their mother organisations, as they usually already have a well-established audience and can easily help to spread messages about the Science Shop and its projects. However, when this is not possible, it can be useful to create a dedicated profile on Social Media (or a group) for the Science Shop. By inviting peers to join Facebook/Twitter and participating in groups with similar interests (e.g.: about sustainability, if the Science Shop tackles these kinds of issues), it is possible to build up a community on social media interested in the Science Shop.

- Facebook page of the Green Office of KU Leuven: https://www.facebook.com/pg/greenofficekuleuven/posts/. This Facebook page does not have a huge audience (less than 3000); however, a good level of engagement is observed: many posts have more than 30 likes, which is a good number, considering the small audience and the increasingly restrictive Facebook changes that make it difficult for publications to reach audiences when they are not paid ones. On the page, they share news and videos about their activities.

Video

- European University Cyprus; video presenting the EUC Science Shop: https://www.youtube.com/watch?v=VEq1dinbyYI
- Short films presenting case studies of projects undertaken by the Science Shop at Queen's University Belfast: https://www.qub.ac.uk/sites/ScienceShop/Students/StudentCaseStudies/
- UTS Shopfront YouTube channel with videos presenting projects, programmes and events: https://www.youtube.com/channel/UCDwpYw9DarjqEgdmY4uiO0Q/videos

Leaflets, brochures and printed material

- UTS Shopfront Impact 2016 brochure (Community-University-Engagement): https://issuu.com/utsshopfront/docs/shf057_fa1_impact_brochure_a4
- The Living Lab for Health Infographic explains in a visual way the different stages of their Community-Based-Research project called 'Sana Ment': http://www.irsicaixa.es/en/living-lab-health/sana-ment-project

Awards

- Awards presented to students for Outstanding Community Engagement projects at a celebration to mark CARL's (Community-Academic Research Links) 50th student-community project: https://www.ucc.ie/en/scishop/news/carl50---celebrating-our-50th-student-community-project.html
- The Science Shop, a joint collaboration between Queen's University Belfast and the University of Ulster, presents annual Science Shop Awards. News about a Science Shop project run by the University of Ulster for the Giants Community Foundation that won second prize in the 2010/2011 Science Shop Awards: https://www.ulster.ac.uk/news/2011/december/science-shop-success-for-ulster-students

Some useful resources for further information and tips on how to use some of these channels can be found in the Annex (which can be used to facilitate the training of participants by handing them out as printed document).

8. Evaluation

The last step when planning an effective Communications Strategy is to define how it is going to be evaluated at the end of the project.

Best practice communication evaluation requires careful planning ahead and "on time" measurement. Once your communication activities are completed, it is usually too late to measure – it may even be too late to measure once you have just started your activities.[4]

- It is important to stress that this is a crucial part of the strategy that needs **to be decided at the beginning**, before the activities are implemented. Here is where the results at the end of the execution of the communications plan will be assessed against the set objectives in order to determine the effectiveness of the communications activities.
- Tools/mechanisms should be established to measure the completion of the objectives. Those can be qualitative, such as **interviews or focus groups**, or quantitative e.g. **surveys, participation records, website metrics** etc. The more specific an objective is, the easier it will be to find a way to measure the level of achievement.

[4] Source: TOOLKIT for the evaluation of the communication activities. Directorate-General for Communication: https://ec.europa.eu/info/sites/info/files/communication-evaluation-toolkit_en.pdf

- **Monitoring communications activities** and producing interim evaluations will help to optimise and make modifications to activities, if required, in order to reach the objectives.

An Excel sheet or another sort of document can be shared with staff members in order to gather information about all of the communications activities and to track them. A simplified template for a Communications Monitoring Tool is presented in Annex. The tool consists of a table for monitoring communication activities, with columns representing the main information on the communication activities undertaken: "Who published", "Type of activity", "When", "Where", "Type of audience", "Link", "Results". Alternatively, the monitoring tool can include a series of such tables for different types communication measures, e.g. Articles, Social Media, Newsletter, Events, Other activities.

Even if a Science Shop does not evaluate its communication activities, it is useful to track communication activities for the purposes of accountancy (e.g. for use in reports, in reporting to its mother organisation). This information can be used in conjunction with figures on the inflow of research requests and the number of students or volunteers who want to take part in Science Shop activities, because it might help to identify which communication activities are most effective at increasing awareness of the Science Shop and participants willingness to collaborate.

One simple action that can be used to evaluate the effectiveness of communication activities is collecting information on where new 'clients' of the Science Shop, students who decide to carry out its projects, and volunteers have heard about the Science Shop.

9. Roles division for Communications and Dissemination activities

Who is going to take responsibility for the different tasks related to communications and dissemination efforts? That is a question that does not have a unique solution, as each Science Shop will have their own resources and limitations.

Some of the factors affecting the task division regarding Communications/Dissemination are:

- **Budget** for the project: some projects have very small budgets (or even just consist of voluntary work and donations), others may be funded by specific grants, a part of which can be allocated for Communications and Dissemination activities.
- **Staff**: Is it possible for the Science Shop to hire part-time/full time professionals to carry out these activities? Does the Science Shop have access to internal communication resources elsewhere in the organisation, if part of a larger organisation? Does the community organisation or other participants have resources that can be utilised? Maybe a call for volunteers will be needed? (e.g. students, researchers, staff from mother organisations).
- **Time:** How much time can be dedicated to develop communications activities? Can part of the staff involved in the project allocate some hours to communication and dissemination as part of their work on the project?

Science Shops can consider giving the main responsibility for the planning, coordination and implementation of Communication and Dissemination to the following profiles:

- **Employees**: If the Science Shop has part-time and/or full-time employees (within the Science Shop itself or in the mother organisation), they can take the lead in conducting Communications/Dissemination activities. They may be already working as coordinators, in a secretariat or in other roles and add these tasks to their responsibilities. Some Science Shops may also have access to dedicated staff for Communications (e.g.: Science Shops with mother organisations such as NGOs, universities, Foundations etc.)

- **Researchers:** when the budget is limited, the researcher/s could be in charge of these activities. The disadvantage of this option is that the researcher may lack the time or skills to undertake communications work (this is where some training is highly recommended). On the other hand, they have a good understanding about the Science Shop and research findings.
- **Students:** This is a good option for small budgets, as students conducting the research can help to implement the communications tasks. Offering internships in communications can be even a better solution. In that way a student enrolled in related studies can gain experience and. at the same time. the Science Shop can benefit from the knowledge and skills of the intern.
- **Volunteers:** the same as above can apply when calling for volunteers to contribute in the project to cover communications' needs - exclusively or in addition to other tasks.
- **External (outsourcing communications)**: Communication/Digital Agencies, freelance employees. When the budget allows it, hiring external services can be an optimal option that will save the rest of the Science Shop team time, reducing workloads and enabling the Science Shop to benefit from the expertise of communications professionals.
- **Members from the Community** participating in the project can be also encouraged to share content about it, acting as amplifiers of the communications and dissemination efforts. This offers two advantages: involving the communities according to the main values of the CBPR concept, and also as a valuable, low cost way to promote the Science Shop and/or the results.

When someone (or a team) is taking responsibility for leading and/or implementing communications tasks, it is important to ensure that they have the right skills to develop these tasks or that they are given the necessary training and support.

Interactive exercises

Exercise 1: "Crafting targeted messages"

Aim: The exercise aims to improve the participants' skills in writing tailored messages for different kind of recipients (audiences) and different objectives.

Number of participants: not limited; participants are asked to form pairs or groups of 3-4 depending on attendance.

Duration*:* 30 min.

Process: Participants should write key short messages crafted specially to catch the interest of one of type of stakeholder.

In order to be able to develop the exercise, some cards should be given to each group containing 1) The stakeholder and 2) The type of research conducted.

Some examples that can be used to create these cards are:

1) Stakeholders:

- Private sector: SMEs, LEs
- Policy Makers/Local Administrations
- Existing projects/initiatives
- Research and education sector (Universities, Research Institutes)
- NGOs
- Community-based organisations
- Public/Society (in a wide sense)

2) Type of Research[5]:

- Study for a more effective and community-friendly design of the city
- Effect of natural anti-microbial substances (lemon acid or vinegar) on the reduction of the microbial population on freshly prepared salads
- The student movement and feminism through social networks
- Improving food health and increasing access to healthy food for low-income communities
- Greening and the long-term sustainable development of industrial parks

The examples for the exercise can be modified by the trainer to better adapt them to the participants needs (i.e.: if the new coordinators of a Science Shop already know the research topics/areas they will be addressing, those can be used on the cards instead).

The messages should focus on: 'how can the stakeholders benefit from the community-based research project?' Each group of participants have to write at least three different messages. 10-20 minutes will be given for the writing part, and 20 minutes for discussion.

Wrapping up: Groups are asked to share what they have written with everyone, and others invited to provide comment on ways to improve the messages. The outcomes can be written down and hosted in an online document to share with the participants after the session as a source of inspiration.

Exercise 2: "From theory to practice: Deciding communications"

Aim: This exercise helps to apply the main points that have been taught during the training into practice.

Number of participants: not limited; participants are asked to form pairs or groups of 3-4 depending on attendance.

Duration*:* 30-40 min.

Process: Keeping the same cards (stakeholders and types of research). The participants have to think about 1-2 communications objectives (i.e.: Raise the profile of the Science Shop/Institution, raise awareness of a local issue, Lead to policy changes, Connect with other initiatives…). They can be both general communications objectives aimed at promoting the Science Shop or aimed at disseminating specific results of projects. Once the objectives are defined, they will have to think about suitable communication activities to reach the stakeholder that has been given to them (the stakeholder can be changed if the one on the card is not relevant to the research). For example:

- Effect of natural anti-microbial substances (lemon acid or vinegar) on the reduction of the microbial population on freshly prepared salads> Dissemination of Results> Persuade SMEs and LEs producing salads to incorporate natural substances to preserve the food instead of using chemical ones. > Publish an article about the outcomes of the research in a food-industry specialised magazine (i.e.: trade unions monthly publications).

Wrapping up: Groups are then asked to share their ideas with all of the participants and to have an open discussion about the adequacy and effectiveness of the proposed actions. The objective is not only to boost creativity but also to highlight the importance of thinking beforehand about the potential

[5] Some examples are taken from SciShops Deliverable 2.2: Existing RRI tools and successful participatory community-based research case studies report.

impact of the activities and optimise the effort; learning how to select the most effective ones, always bearing in mind the objectives and the target audience.

6.4. References and further reading

Literature

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Sense about Science. Public engagement: a practical guide, http://senseaboutscience.org/activities/public-engagement-guide, retrieved on 31.08.2018

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Appendixes

Handout: Additional sources on communication and awareness building

RESOURCES AND TOOLS FOR AN EFFECTIVE USE OF CHANNELS TO PROMOTE SCIENCE SHOPS, COMMUNITY BASED-RESEARCH PROJECTS AND DISSEMINATING RESULTS

'Successful Communication: A Toolkit for Researchers and Civil Society Organisations' gives some tips on how to write Policy Papers (chapter 12, pages 28-29) and also includes a section (chapter 18, pages 43-45) on how to engage with the media and write Press Releases: https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/192.pdf

Social media guide for EU funded R&I projects: http://ec.europa.eu/research/participants/data/ref/h2020/other/grants_manual/amga/soc-med-guide_en.pdf

'A scientist's survival kit: communicating science' offers some recommendations on contacting journalists and how to communicate with them (Chapter 'Using Journalists' pages 55-62): https://www.livingknowledge.org/fileadmin/Dateien-Living-Knowledge/Dokumente_Dateien/Toolbox/LK_C_Communicating_Science_Kit.pdf

Social Media Tools:

- A free tool to schedule Twitter posts: https://tweetdeck.twitter.com/
- Schedule Facebook Posts: Facebook has a free-to-use tool for 'Pages', making it easy to prepare posts in advance. To use it: Go to Page> Publishing Tools> Create. Write the post and select the date and time when it will be published. Attach video, pictures, links when needed.
- Free tool to schedule posts for different social media platforms: https://hootsuite.com/

Communication monitoring tool

Who published	Type of activity	When	Where	Type of audience	Link	Results

Organisation	Name of the event	When	Medium	Type of audience	Link	Results (participants)

7 Project Evaluation and Impact Assessment

7.1. Objectives

In the area of expanding knowledge, after this module, participants will:

- Acquire knowledge of the concept, importance and methods of project evaluation and impact assessment
- Obtain a greater insight into the impacts of Science Shop projects
- Be familiar with the specifics and good practices of project evaluation and impact assessment at Science Shops

In the area of skills and attitudes, they will:

- Be able to choose and apply methods and tools for project evaluation and impact assessment
- Be more motivated to perform project evaluation and impact assessment of Science Shops

7.2. Session outline

Methodology	**Material required**	**Duration** Total: 3 hr 45 min
1. Welcome	Training agenda (printed)	5 min.
2. Personal introductions and initial evaluation	"Post-it notes" (different colours)	15 min.
3. Presentation Parts 1-5	- Projector & large screen - Key messages - PowerPoint presentation	60 min. (including Q&A and discussion)
5. Interactive exercise 1 "Plan your project evaluation strategy"	-	40 min.
6. Presentation Parts 6-11	- Projector & large screen - Key messages - PowerPoint presentation	45 min. (including Q&A and discussion)
7. Interactive exercise 2 World café on challenges of impact assessment	- Room with three large separate tables - Large sheets of paper	60 min.

7.3. Description of methodologies

Welcome

The trainer welcomes participants, presents the session's aims, distributes and comments briefly on the training agenda.

Personal introductions and initial evaluation

If there is a need (depending on the training programme), the trainer can ask participants to present themselves.

For the initial evaluation, attach 2-3 sheets of paper with questions for the participants on the wall. Questions could be:

- What questions do you have about project evaluation and impact assessment?
- On a scale from 0 to 5, how much do you think evaluation and impact assessment of Science Shop projects is useful (0=not useful, 5=useful)?
- On a scale from 0 to 5, how much do you think evaluation and impact assessment of Science Shop projects is an easy task (0=easy, 5=difficult)?

Give sticky notes to the participants, ask them to write answers to every question (on a separate sticky note) and put them on the wall. At the end of this training invite all the participants to the wall and go through all questions and comments together to see if they were answered during the day, and also discuss how much their attitudes about project evaluation and impact assessment have changed.

PowerPoint presentation

Key messages corresponding to the different slides

Project evaluation and impact assessment are very important activities undertaken by Science Shops to ensure project quality management and demonstrate the Science Shops' impact on society. However, many Science Shops still neglect the importance of such activities and do not perform them in their work (Stanescu et al., 2018). The aim of this presentation is to present a general introduction to project evaluation and impact assessment, its benefits and related challenges. This presentation also provides an overview of the steps to be followed for implementing project evaluation and impact assessment.

1. Definition of project evaluation

Project evaluation is a systematic and objective assessment of an ongoing or completed project. The aim is to determine the relevance and level of achievement of project objectives, development effectiveness, efficiency, impact and sustainability (OECD DAC Glossary, 2002). Project evaluation helps to steer the project towards the set goals and assesses how well planning and managing for future impact is being done during the project cycle (International Labour Office, 2018). Project evaluation is a valuable tool to assess and improve Science Shops' activities.

2. Types of project evaluation

Types of project evaluation are distinguished on the basis of when the evaluation is performed:

- **Early stage** (*ex-ante*) **evaluation** should take place in the preparatory phase of a project, before any substantive work has been done. The main purpose of evaluation at this stage of a project is to ensure that the objectives and methods have been clearly defined and that the resources

are in place to meet the stated objectives. It can also help identify the anticipated impacts of the project.

- **Monitoring** is a type of evaluation that is performed while a project is being implemented, with the aim of improving the project's impact. As a result of the evaluation, certain measures may be taken during the project which may lead to an increase in its foreseen impact (Gnaiger and Schroffenegger, 2003). Unlike other types of project evaluation, monitoring is usually performed through communication and reflection between the project coordinator and the staff involved in the project implementation. As such it does not need specific tools and does not result in a report.
- **A mid-term evaluation** is formative in nature and typically used to assess achievements half-way through the project and to derive lessons for implementation. It should be conducted at the mid-point of projects that run for more than six months. Thus, it may not be practical for shorter projects. The main purpose of evaluation at mid-point in a project is to identify where improvements can or must be made in order to complete the project satisfactorily.
- **A final** (*ex-post*) **evaluation** is performed shortly before the end of a project (or a project's phase) in order to determine the extent to which planned and unplanned objectives and outcomes were achieved, to identify the factors of success or failure, to assess the sustainability of the benefits generated, and to draw conclusions that may inform future projects. This evaluation aims mainly to establish the level of satisfaction of those involved with the outputs and conduct of the project.
- **Post-project evaluation** should be conducted one year after the delivery of the final report. This aims to establish longer-term impacts of the project both through retrospective assessments of the outcomes and through the detail of research outputs. It may be especially useful for longer-term planning by Science Shops.

More information: Trench, B., Smith Kaiser D, Vargiu A., van der Windt H. (2013) PERARES Deliverable D9.1- Evaluation Guidelines and Instruments, available at: https://www.livingknowledge.org/fileadmin/Dateien-Living-Knowledge/Library/Project_reports/PERARES_EValuation_Guidelines_and_Instruments_D9.1.pdf

3. Criteria of project evaluation

The following main criteria can be advised for Science Shop project evaluation (based mainly on UNODC criteria definitions and sample, UNODC):

- **Design** of a project measures the extent to which the logical framework approach was adopted, with measurable expected objectives, outcomes and outputs, performance indicators.
- **Relevance** of a project or programme is the extent to which its objectives are continuously consistent with recipient needs.
- **Efficiency** is a measure of how resources/inputs (funds, expertise, time, etc.) are converted into outputs.
- **Effectiveness** is the extent to which a project achieves its objectives and outcomes.
- **Stakeholder engagement** is a measure of the level and quality of project coordinators' cooperation with partners and other stakeholders.

- **Impact** is the positive and negative, primary and secondary, long-term economic, environmental, social change(s) produced or likely to be produced by a project, directly or indirectly, intended or unintended, after the project was implemented.
- **Sustainability** is concerned with measuring whether the benefits of a project or programme are likely to continue after they have come to an end.

Explanations:
- **Inputs** - resources at the disposal of the project, including staff and budget;
- **Outputs** - the tangible goods and services that the project activities produce (measurable);
- **Outcomes** - results likely to be achieved once the beneficiary community uses the project outputs; these are usually achieved in the short to medium term (direct effects of the project);
- **Final outcomes**/long-term impact - the final results achieved indicating whether project goals were met. Indirect effects of the outcomes are achieved over a longer period of time.
- **Performance indicators** - a quantitative or qualitative measurement by which the performance, efficiency, achievement, etc. of a person or organisation can be assessed, often by comparison with an agreed standard or target

Examples of performance indicators:
- Students or other project assistants involved in the project
- Total credits, e.g. ECTS, obtained by students for participation in project
- Academics involved in the project
- Civil society organisations contributing to the project
- Private enterprises contributing to the project
- Local government agencies contributing to the project
- State agencies contributing to the project
- Organised meetings with stakeholders
- Academic publications produced arising from this project
- Requests for advice on policy or legal issues relating to the project topic

More information: Trench, B., Smith Kaiser D, Vargiu A., van der Windt H. (2013) PERARES Deliverable D9.1- Evaluation Guidelines and Instruments, available at: https://www.livingknowledge.org/fileadmin/Dateien-Living-Knowledge/Library/Project_reports/PERARES_EValuation_Guidelines_and_Instruments_D9.1.pdf

4. Steps of project evaluation

Main steps of project evaluation (mainly based on Perares Project Evaluations 2012):
Step 1. Preparing the evaluation
Step 2. Collecting data
Step 3. Analysing results
Step 4. Writing the evaluation report
Step 5. Communicating the results

Step 1. Preparing the evaluation. In preparing a project evaluation, the following activities are recommended:

- Identify who in the project team will be responsible for overseeing the evaluation;
- Identify stakeholders and partners to be included in the evaluation;
- Discuss the purpose and procedures of the evaluation with participants and set out the scope and aims of the evaluation;
- Prepare partners for the possibility that evaluation results may not be universally welcomed;
- Identify specific indicators, which can help to make it possible to demonstrate project results;
- Prepare or select tools for evaluation.

Step 2. Collecting the data. The main recommendation in this step is to use contact methods for collecting of data (face-to-face qualitative or quantitative interviews, focus groups, evaluation meetings, etc.) rather than sending questionnaires out. This ensures a higher completion rate and completion on time. However, it may not always be possible to have the forms completed in this way. If the forms are being sent by email or post, it is important to keep track of where and how many forms have been sent out and returned. Keep the completed forms safe at least until the end of the project.

Step 3. Analysing the results. Filling in the forms does not constitute the evaluation. It is the analysis of the responses and reflection on this analysis that makes for an evaluation. It is the responsibility of the project coordinator and key partners to ensure all other partners have an opportunity to respond to the evaluation findings as represented in an overall evaluation report.

Step 4. Writing the evaluation report. Along with a summary of findings, the evaluation report should outline in a single page the conclusions and recommendations, including plans to remedy any shortcomings. A draft copy of the evaluation report should be provided for all stakeholders who should be invited to give their observations on it. The report should then be finalized.

Step 5. Communicating the results. Early stage or mid-term evaluation reports are usually only circulated to stakeholders involved in the project, while final evaluation and post-project evaluations can also be used to inform the communication of project results to a wider audience.

5. Tools for Science Shop project evaluation

The essential tool for evaluation and impact assessment, adapted to the kind of projects implemented by Science Shops, is the "Perares Project Evaluations" toolkit. It presents four different checklists and survey forms for project and impact evaluation for different stages of a project:

- Checklist for early-stage evaluation; this is to be used in the preparatory phase before substantive interventions happen and researchers go into the field;
- Questionnaire for mid-point evaluation; this is to be used at a stage in a project when the project can still be modified without damaging it;
- Questionnaire for end-point evaluation; this is to be used when the project report is submitted;
- Questionnaire for post-project evaluation; this is to be used for assessing longer-term impacts and carried out approximately 12 months after the project has completed.

More information: Trench, B., Smith Kaiser D, Vargiu A., van der Windt H. (2013) PERARES Deliverable D9.1- Evaluation Guidelines and Instruments, available at: https://www.livingknowledge.org/fileadmin/Dateien-Living-Knowledge/Library/Project_reports/PERARES_EValuation_Guidelines_and_Instruments_D9.1.pdf

However, the Science Shop can develop its own tools for evaluation or adapt existing tools for its needs. The evaluation can also be done using qualitative interviews, focus groups or evaluation meetings, and the necessary information collected without the use of questionnaires or surveys. Some Science Shops use both qualitative and quantitative ways, as shown in one of the following examples from Deliverable 2.2. "Existing RRI tools and successful participatory community-based research case studies report" (Garrison et al. 2018).

Example 1

The Science Shop Language, Culture and Communication at University of Groningen, Netherlands.
Coordinators of Science Shop carry out an evaluation with students and the community organisations to assess their satisfaction with the project process and the results and if their expectations have been met. The evaluation consists of their own standard questionnaire that is completed face-to-face together with the students and organisations to allow other observations to be discussed as well.
At the start of the project, objectives in terms of impact for the organisation requesting the research are clearly defined to ensure that the results can be used by the organisation at the end of the project. Due to the thematic approach, certain projects can result in considerable societal impact over time. However, the impact is not formally monitored after the end of the project.

Example 2

UTS Shopfront Community Program is a Science Shop based at the University of Technology Sydney, Australia.
Shopfront has a formal evaluation process that takes place at the end of each semester. Customised online surveys are completed by both the students and community organisations to evaluate the quality and significance of their experiences. Shopfront also gets face-to-face or telephone feedback from the community organisations at the end of each project.
Shopfront views a project as successful if it results in an outcome that is used by the community organisation. Many projects also result in follow-on projects in a different disciplinary area (for example a community consultation may lead to a funded project, or a feasibility study may lead to a new programme design).

6. Definition of impact assessment

Impact assessment is usually defined as a tool used to identify the environmental, social and economic impacts of a project (e.g. the conventions on biological diversity). Yet in fact, impact evaluation should also assess long-term changes produced by the project. It is a tool conceived to rate the effectiveness of a project by determining the importance of changes triggered by its activities. Such changes cover all the positive and negative impacts; intended and unintended; and direct or indirect long-term results arising from the project activities in the economic, social, cultural and environmental arenas (OECD-DAC, 2010; Stanescu et al., 2018).

7. Rationale behind impact assessment

Despite the fact that impact evaluation is one of the parts or types of project evaluation, it deserves special attention because, on the one hand, impact assessment is rarely undertaken by Science Shops,

and on the other, it provides insights into the long term impact of Science Shop projects and in this way demonstrates the main benefits of work done by Science Shops.

As revealed by SciShops' study on Science Shop impacts, impact assessment is not a standard practice among Science Shops or, if done, it is not widely communicated, as examples of systematic impact assessment are very rare (Stanescu et al. 2018). The main reason is rooted in the fact that a majority of projects do not include long-term impact assessment in their design, and after the end of the project there are no allocated resources for conducting this type of assessment.

Nevertheless, while project evaluation might be indeed a superfluous activity for short term student-implemented projects, post-project impact assessment is beneficial to all Science Shops as:

- a tool to demonstrate accountability;
- a useful source of evidence for future project proposals;
- an argument for fund-raising activities.

Moreover, the recent emphasis on "research impact" or the "third mission" of universities will heighten the need for universities to demonstrate their impact on communities, and this will also apply to Science Shops and how they collect evidence on their impact on society.

The results of impact assessment can an invaluable source of information for communication and dissemination activities within the research community, civil society and interested authorities.

8. Possible impacts of Science Shops projects

The impacts of Science Shops projects can be direct and indirect. Direct impact mainly deals with social impact – a change or direct influence that a CBPR project can have on community/society. Indirect impact of these projects can be in various areas:

- Scientific Impact
- Economic impact
- Health impact
- Technological impact
- Environmental impact
- Political Impact

An analysis of the impacts of 31 selected Science Shops across Europe and beyond was conducted by SciShops partners and based on the PERARES "Post-project evaluation" questionnaire (Stanescu et al., 2018). The analysis revealed five main types of impacts that Science Shops have on their communities. In more than 50% of cases the Science Shop projects:

- Increased stakeholders' knowledge of how research is done;
- Increased researcher's interest in the subject;
- Helped to develop ongoing relationships between academics and CSOs;
- Influenced the direction of further research;
- Showed the prospect to produce long-term impacts for the community: changes in public policy, legislation, awareness on the issue, etc.

Revealed specific impact on stakeholders

Students:

- new knowledge and skills
- concept and practice of social responsibility
- building professional reputation

Science Shops:

- influence on choice of subsequent research topics
- increased interest of academics and students in community-based participatory research
- increase in research requests
- expansion of collaborations and networking
- establishment of new Science Shops

Community organisations:

- improvement of programmes or services
- increased trust in research
- increased citizen awareness/understanding about issues and involvement in tackling the problems
- citizen learning about the research process
- educational impact on citizen
- impact on quality of life improvement

More information: SciShops deliverable 2.5 "Existing Science Shops assessment" (Stanescu et al. 2018).

Example

Science Shop InterMEDIU at the Technical University of Iasi (TUI), Romania

In its pilot project "Evaluation of the quality of drinking water supplied in the city of Iasi", this Science Shop achieved the following project outputs:

- Large public debate involving the stakeholders
- Press releases and articles in the local newspapers
- One TV debate
- Four papers published in peer-reviewed journals
- Three graduation theses

The following short-term impacts were identified:

- Increased the stakeholders' knowledge about university researchers' potential contribution to solving environmental problems
- Increased cooperation and collaboration between universities and civil society organisations as representatives of the community
- Increased the interest of academics and students in CBR and solving community concerns related to the environment
- InterMEDIU TUI promoted and disseminated its research activities, to raise community awareness about the quality of drinking water and to gain its trust
- The researcher groups identified new research topics on other community concerns related

to their quality of life.

- Broader collaboration with another Romanian Science Shop from the University "Dunarea de Jos" of Galati that ran a similar research project upon request from the local water company.

The following long-term impacts were identified:

On the community:

- Improvement to the quality of drinking water and the reduction of the risk of occurrence of hazardous chemical compounds in the treated water
- Gaining trust on the research done by the Science Shop and on the reliability of information about the quality of drinking water in Iasi
- Opened up public debate about drinking water quality, involving CSOs, academics, research institutions, governmental organisations, water companies and the media
- New invitations addressed to the InterMEDIU TUI by other NGOs to get involved in two additional projects regarding water quality
- NGO project partner became a catalyst of the public debates and seminars organised by the InterMEDIU TUI, in promoting public involvement in environment protection

Impacts on the university/Science Shop's researchers

- InterMEDIU TUI gained recognition of its research group at university and national levels
- Students developed new research skills: how to apply social inquiry techniques and how to put their technical knowledge into practice
- Students acquired new knowledge about research methodologies and project management, improved their communication skills and were able to use the experience they had gained in other projects
- Science Shop gained experience of working with international partners and skills in addressing/approaching community problems.
- The university developed new curricula and engaged students in voluntary research and in cooperating with community organisations
- Faculty staff acquired an in–depth understanding of methods and ways to involve and coordinate students in teamwork and interdisciplinary research activities.

Impacts on enterprises (Water Works Company):

- Awareness of the need to improve and modernise the drinking water treatment facilities
- Long-term collaboration with the Science Shop which provided reliable information used to inform upgrades and improvements to the efficiency of the drinking water treatment plants
- Awareness of the need to incorporate the research findings into local development strategies related to drinking water quality

More information: SciShops deliverable 2.5 "Existing Science Shops assessment" (Stanescu et al. 2018).

9. Steps of impact assessment

Main steps of impact assessment:

Step 1. Identify which potential impacts are relevant to the project

Step 2. Plan and allocate resources for impact assessment

Step 3. Chose tools for the impact assessment

Step 4. Decide which stakeholders need to be involved

Step 5. Perform the impact assessment and write a report

Step 6. Communicate the results

Step 7. Monitor the impact

Step 1. Identify which potential impacts are relevant to the project. Impacts can vary in different Science Shop projects depending on the topic, scope of the project and available resources. Depending on how these factors develop, projects can anticipate small or quite substantial impacts. The envisioned impacts should be connected to the project objectives, activities, and outcomes. The main stakeholders of the project should be involved in this step as well as the following steps. It is worth asking the questions: When/if the stakeholders will use your research results, what would change? What changes in individuals, groups, organisations, or at a societal, cultural or some other level can you envision? Would these changes be beneficial or might some groups be disadvantaged in some way as a result of your research?

Step 2. Plan and allocate resources for impact assessment. As already mentioned, if an impact assessment is not planned and financial and human resources allocated, it is unlikely that an impact assessment will be undertaken once the project has come to an end. The recommendation is to conduct an impact assessment one year after the end of the project.

Step 3. Select the tools for impact assessment. Identify specific indicators demonstrate impact. Use, adapt or create impact assessment tools (questionnaires, interview guides, etc.) for the impact assessment. Sometimes qualitative methods can give you more innovative insights about the impacts achieved and what needs to be improved, than quantitative questionnaires, which as a rule mainly reflect what is already known and only show the distribution of opinions. As with the project evaluation, it is worth using a number of methods to contact respondents to ensure a higher completion rate and timely completion.

Step 4. Decide what stakeholders need to be involved. It is useful to involve not only the main project stakeholders, but also other relevant stakeholders from the field related to the implemented project. It is worth asking questions such as: What is the purpose of stakeholder participation in this impact evaluation? Whose participation matters, when and why? When is participation feasible?

Step 5. Perform the impact assessment and write a report. In this step, data should be collected using dedicated tools and involving all the relevant stakeholders. As in project evaluation, a draft copy of the assessment report should be given to all stakeholders in order to receive their feedback and improve the report.

Step 6. Communicate the results. In fact, the main goal of the impact assessment is to demonstrate the impact of a Science Shop project to a wider audience as well as all relevant stakeholders in order to ensure future support and funding. Detailed recommendations on how to successfully communicate project results are provided in training module 6 "Communication and public awareness".

Step 7. Monitor the sustainability of the impact. It is also worth monitoring the achieved impact in order to identify changes at local or even at national level, as in the example provided below:

Example

Wageningen University & Research (WUR) Science Shop at Wageningen University, The Netherlands

WUR Science Shop in 2006 performed the "Ons Buiten" project that demonstrated the benefits of gardens to the community. During the project short (one year) and long term (ten year) plans for the maintenance of the community garden were developed. These plans outlined the activities to be undertaken to achieve the goals. It was also agreed that the steering committee would meet twice a year during this ten-year period to monitor and evaluate the activities.

More information: SciShops deliverable 2.5 "Existing Science Shops assessment" (Stanescu et al. 2018).

10. Tools of impact assessment

The essential tool for impact assessment, suitable for the kind of projects implemented by Science Shops, is the "Perares Project Evaluations" toolkit, which includes the already mentioned questionnaire for post-project evaluation. However, any Science Shop can also develop its own tools for impact assessment or adapt existing tools for its needs.

11. Best practices of impact assessment conducted by Science Shops

Several examples of impact assessment by Science Shops CBPR initiatives:

Example 1

UTS Shopfront Community Program at the University of Technology Sydney (Australia) each year produces an impact report (e.g. UTS Shopfront Impact Report 2016).

Lisa Andersen, the Programme Manager of Shopfront, analysed 10 years of evaluation data, to define the value that is created for community partners and students through the project work in her paper on 'Useful, usable and used': Sustaining an Australian model of cross-faculty service learning by concentrating on shared value creation'.

Example 2

In 2016-2017, the Office of Community-University Engagement at the University of Victoria (Canada), co-sponsored a research project, Community-Engaged Research at the University of Victoria 2009-2015. The project examined the breadth and impact of community engagement initiatives that occurred at UVic between 2009–2015. The study identified 167 instances of impact at UVic, and calculated that $21 million was secured in research funding for community engaged

projects between 2009–2015. One publication produced by the project was a brochure with 12 impact case studies that illustrate the impact of community-engaged research conducted by the university. The reports can be downloaded from here:
https://www.uvic.ca/cue/research/our-research-projects/index.php

Interactive exercises

Interactive exercise 1: "Plan your project evaluation strategy"

Aim: the exercise will help participants to think about their own project evaluation strategy.
Number of participants: not limited; participants are asked to form groups of 4-5 people.
Duration: 40 min. (20 min. of work in groups + 20 min. presentation)

Process: Participants work in groups. Each group is given the same task, but for different kinds of CBPR projects:

- The first project is small and short (up to 6 months) and is performed by students as a one semester coursework and involves only one community organisation.
- The second project is medium-sized, lasts about two years and involves several local community organisations, as well as other stakeholders.
- The third project is large, lasts more than two years and involves not only local, but also national NPOs, policy makers, etc.

The groups are then asked to draft a project evaluation strategy by answering these questions:

1) What type of project evaluation would be affordable to undertake?
2) What is needed to do to perform this type of evaluation?
3) Who needs to be involved in the evaluation?
4) What criteria should be included in the evaluation and how could they be assessed?
5) How data will be collected? Who will perform data collection?
6) How should results of the evaluation be communicated?

After the group work, groups are asked to present their findings (a summary of their discussion and the most interesting insights) to the other participants.

Wrapping up: The exercise is finished by a short summary given by the trainer emphasising the number of options for performing project evaluation at Science Shops.

Interactive exercise 2: World café on the challenges of impact assessment

Aim: To discuss challenges related to impact assessment at Science Shops and possible solutions.
Duration: 60 min. (3x15 min. of work in groups + 15 min. presentation)
Process: For this exercise, the room has to be prepared so that there is space for three larger groups to work together at separate tables. Three discussion leaders should be appointed, one for each table (the trainer plus two participants, whom the trainer should ask and brief about this exercise in advance).

Each table will discuss one of the three questions:

1) what are the general challenges of impact assessment?
2) what are the reasons why Science Shops generally do not perform impact assessment of their projects?
3) what can Science Shops do to enable impact assessments of their projects to be undertaken?

After 15 minutes, the groups change tables and start discussing another question. The table leader (who remains at the same table) summarises the discussion from the previous group, so the groups do not repeat the points made by previous groups and continue from there to look for more insights. The table leaders should be given large sheets of paper on which to write down the points made by each group.

After the three rounds are finished, table leaders present the results of the discussions to the whole group.

Wrapping up: The exercise is finished by a short summary presented by the trainer who should emphasise the complexity of the assessment task and various ways to solve challenges related to it.

7.4. References and further reading

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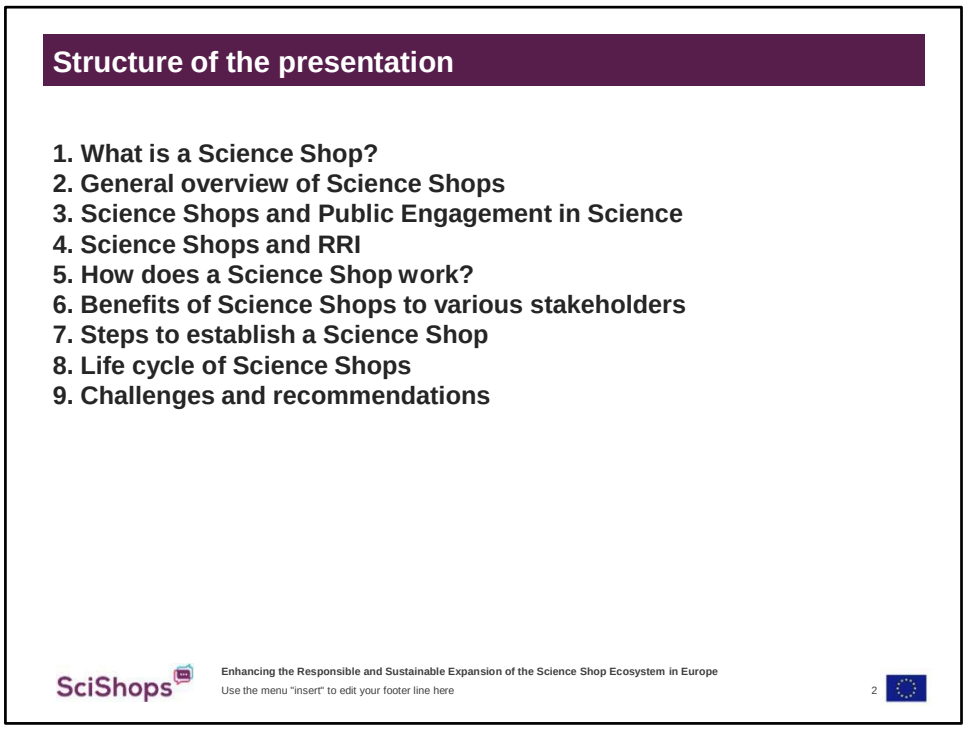
8. PowerPoint Presentations



1. What is a Science Shop? (1)

Science Shop is a small organisation that carries out scientific research in a wide range of disciplines.

Science Shops respond to civil society's needs for expertise and knowledge. This way science shops combine research with service to society.

SciShops Enhancing the Responsible and Sustainable Expansion of the Science Shop Ecosystem in Europe 3

1. What is a Science Shop? (2)

The Living Knowledge Network explains that Science Shops seek to:

- provide civil society with knowledge and skills through research and education;
- provide their services on an affordable basis;
- promote and support public access to, and public influence on, science and technology;
- create equitable and supportive partnerships with civil society organizations;
- enhance understanding among policymakers and education and research institutions of the research and education needs of civil society;
- enhance the transferable skills and knowledge of students, community representatives and researchers.

SciShops Enhancing the Responsible and Sustainable Expansion of the Science Shop Ecosystem in Europe 4

2. General overview of science shops

The first Science Shop was established in 1973 at the chemistry faculty in Utrecht (the Netherlands).

Since then more Science Shops were established in the US, Germany, France, Denmark, Belgium, Austria, Spain, the UK, Israel, Romania, Lithuania, Latvia, Poland, South Africa, Canada, South Korea, etc.

3. Science Shops and public engagement in science (1)

Science Shops is one approach to close the gap between traditional scientific research and the needs of communities

Public engagement is multifaceted and can take many forms

Ideally, it should be a two-way process:

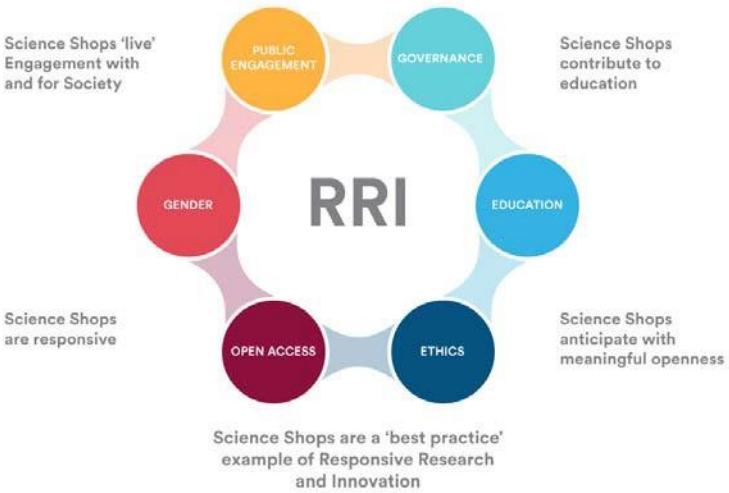
> "Simply trying to educate the public about specific science-based issues is not working. We need to move beyond what too often has been seen as a paternalistic stance. We need to engage the public in a more open and honest bidirectional dialogue about science and technology." – AAAS Chief Executive Officer Alan Leshner, Science 2003

3. Science Shops and public engagement in science (2)

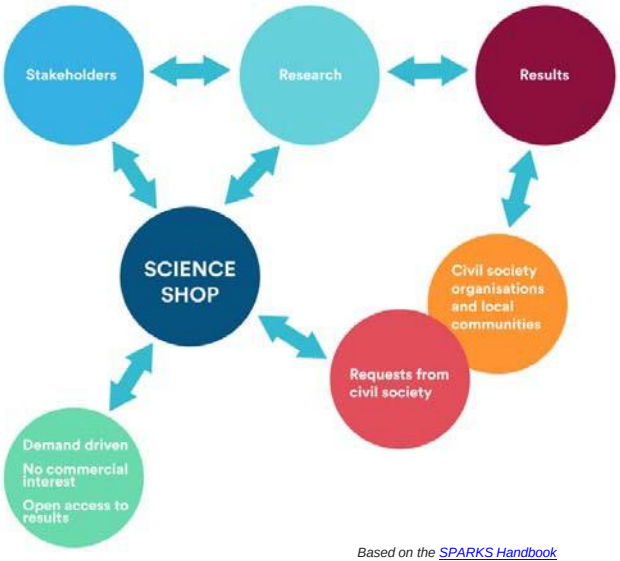
Importance of public engagement:

- Answerability
- Trust
- Relevance
- Responsiveness

4. Science Shops and RRI



5. How does a Science Shop work?



Based on the SPARKS Handbook

6. Benefits of science shops to various stakeholders (1)

Universities:

- Problem-based learning
- Contribution to the development of university curricula and research
- PR and social responsibility (improved image)
- "Third mission"

Students:

- Enhanced learning
- New skills (e.g. joint problem definition, project-based working, communicating, planning) and employability
- Credits for courses

6. Benefits of science shops to various stakeholders (2)

Researchers:

- Case materials for either future publication or further theoretical analysis
- Networking
- PR and social responsibility
- Science communication

Society:

- New products, services, ways of organisation
- Informed and engaged public
- Empowerment
- Media/public attention

6. Benefits of science shops to various stakeholders (3)

Policy makers:

- Informed decisions
- Adequate funding for scientific research
- Appropriate regulations

7. Steps of establishing and running a science shop (1)

Establishing a science shop

- Survey the territory
- Build alliances
- Inform

How to generate research requests?

- Introduce the science shop to your local community groups
- Develop new tools for collecting questions
- Introduce the science shop through your local communication channels

7. Steps of establishing and running a Science shop (2)

Tasks of the staff of a Science Shop:

- Organise a first meeting with clients to understand the problem and collect relevant questions/problems
- Do the preliminary research
- Transfer client's question into a research question
- Organise a second meeting with the client together with relevant experts and local stakeholders
- Find a suitable supervisor for the research project
- Find students or researchers who will be working on the research project
- Maintain communication between client and research group
- Prepare a presentation of results
- Support client in implementing results and recommendations
- Make inventory of follow-up research or research themes
- Do the project evaluation

8. Life cycle of Science Shops

Development of Science Shops is not linear: possible periods of growth and decline

Science Shops need to respond and adapt to internal changes and changing environment

9. Key challenges and recommendations for sustainability of science shops

- Funding
- Difficulties to get requests from civil society organisations
- Matching research requests with resources
- Working with a diverse range of stakeholders
- Loss of science shop's key persons

Thanks For Your Attention!

SciShops

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 653747

Modules for training science shops' staff

Operational Models

Name of the trainer

SciShops

ENHANCING THE RESPONSIBLE AND SUSTAINABLE EXPANSION OF THE SCIENCE SHOP ECOSYSTEM IN EUROPE

This project has received funding from the European Union's H2020 SwafS-01-2016 under Grant Agreement No 741657

Structure of the presentation

1. How to run a Science Shop?
2. Key aspects
3. Organisational model
4. Funding
5. Infrastructure
6. Coordination staff
7. Implementation staff
8. Project types
9. Thematic scope
10. Interdependencies between the key aspects
11. Key aspects as opportunities and challenges

1. How to run a Science Shop?

Any organisation can run a Science Shop

There is no single or dominant model of a Science Shop

How a Science Shop operates and develops depends on its institutional context and the wider social, cultural, economic and political environment of the country

2. Key aspects

Key aspects – the essential organisational characteristics of a Science Shop.

The key aspects are:

- Organisational model
- Funding
- Infrastructure
- Coordination staff
- Implementation staff
- Project types
- Thematic scope

3. Organisational models (1)

Options:

- Pop-up Science Shop
- Permanent science shop established within a university/research institute/NPO/business company
- Independent legal entity

3. Organisational models (2)

Options of university-based Science Shops:

- Centralised
- Faculty-specific
- Regional

4. Funding

Options:

- Mother organisation
- Project grants
- Social entrepeneurship and paid services
- Charitable grants
- Tax system
- Other options: donations and membership fees; sponsorships; registration as charities; tax benefits; running without dedicated funding.

5. Infrastructure

Options:

- Mother organisation
- Renting or acquiring office space
- Sharing with other organisations
- Home offices
- Online platforms

6. Coordination staff

Options:

- Part-time mother organisation staff
- Dedicated hired staff
- Students
- Volunteers

7. Research staff

Options:

- Students
- Lecturers/researchers
- NPO/company's employees
- Volunteers
- Other options

8. Project types

Options:

- Research projects
- Services/products
- Stakeholder debates
- Educational activities

9. Thematic scope

Options:

- Specialised Science Shops
- Multidisciplinary Science Shops

10. Interrelationships of aspects

Different key aspects are interrelated and influence each other

11. Key aspects as opportunities and challenges

Key aspects can work as opportunities and challenges in the course of a Science Shop's lifetime

Thanks For Your Attention!

SciShops

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 653747

Modules for training science shops' staff

CBPR Project Management

Name of the trainer

SciShops

ENHANCING THE RESPONSIBLE AND SUSTAINABLE EXPANSION OF THE SCIENCE SHOP ECOSYSTEM IN EUROPE

This project has received funding from the European Union's H2020 SwafS-01-2016 under Grant Agreement No 741657

Structure of the presentation

1. What is CBPR?
2. Relation between CBPR and RRI
3. Steps for implementing CBPR projects
4. Quality management
5. Challenges of CBPR

1. What is CBPR? (1)

Definition of CBPR

Community-based participatory research (CBPR) is a way of organising research where scientists work together with non-governmental organisations, communities and other groups of society to co-create new knowledge or understanding about community issues. The new knowledge can later be used to attain change in the community.

1. What is CBPR? (2)

Principles of CBPR:

- Recognises the community as a unit of identity
- Builds on strengths and resources within the community
- Facilitates a collaborative, equitable partnership in all phases of the research
- Fosters co-learning and capacity building among all partners
- Balances knowledge and action for the mutual benefit of all partners
- Addresses locally-relevant problems and considers multiple determinants of problematic issues
- Occurs in a cyclical and iterative process that includes ongoing evaluation of successes and obstacles
- Disseminates findings and knowledge gained to all partners
- Involves a long-term process and commitment to sustainability

1. What is CBPR? (3)

Advantages of CBPR approach

- Ensuring that the research topic reflects a major issue identified by community;
- Improving the quality, validity and sensitivity of the research by drawing upon community wisdom;
- Promoting trust between communities and researchers;
- Improving the translation of research findings into policy and practice;
- Enhancing uptake of the research findings by community members.

1. What is CBPR? (4)

Other rationales for CBPR:

- Enhances the relevance of the research data to all partners;
- Connects diverse partners to address complex problems;
- Improves the quality and validity of research;
- Strengthens the research and programme development capacity of the partners;
- Creates theory that is grounded in social experience;
- Might increase trust in research on the part of communities that have historically been the "subjects" of such research;
- Provides additional funds and possible employment opportunities for community partners;
- Involves previously marginalised communities.

1. What is CBPR? (5)

Results of the European wide survey on CBPR by SciShops project (2017, N=624):

- Researchers, community organisations and policy-makers equally believe in benefits of CBPR to their organisations, but stress different benefits
- Researchers: building trust and understanding between researchers and society; finding solutions to societal problems
- Community organisations and policy makers: knowledge transfer between different stakeholders

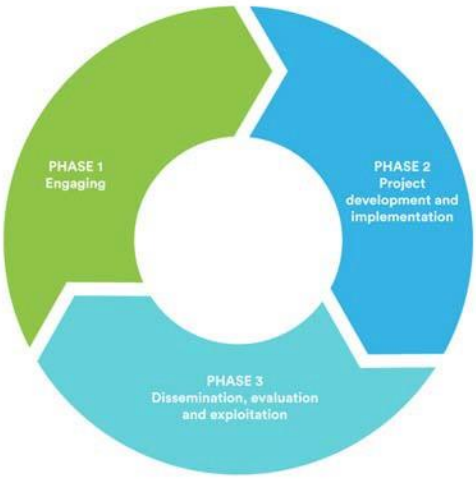
2. Relation between CBPR and RRI

2. Relation between CBPR and RRI

CBPR is in line with the process requirements of RRI:

- CBPR involves a broad range of stakeholders;
- CBPR process is often interdisciplinary;
- CBPR includes silent voices – those that are underrepresented;
- CBPR contributes to the education and empowerment of the community.

3. Steps of implementing CBPR projects



3. Steps of implementing CBPR projects

Phase I: Engaging

3. Steps of implementing CBPR projects

Issues in the Engagement phase:

- Participatory nature of CBPR
- Involvement of students and academic staff

3. Steps of implementing CBPR projects

Phase II: Research development and implementation

3. Steps of implementing CBPR projects

Phase II: Research development and implementation

Issues in Research development and implementation phase:

- The role of the researchers and coordinators
- The weight of the research component in the CBPR

3. Steps of implementing CBPR projects

Phase III: Dissemination, Evaluation and Exploitation

3. Steps of implementing CBPR projects

Phase III: Dissemination, Evaluation and Exploitation

Issues in Dissemination, Evaluation and Exploitation phase:

- Ensuring impact

4. Quality management

Phase III: Dissemination, Evaluation and Exploitation

Skepticism of CSOs in Science Shops, due to the quality of research done by students

Quality of Science Shops' research can be ensured by involvement of:

- Supervisors
- Consultants
- External stakeholders
- Advisory boards

Other ways to ensure quality of project management:

- Regular communication among those involved
- Monitoring and evaluation

5. Challenges of CBPR

Challenges of CBPR:

- Questions about scientific quality of the research
- Proving intervention success
- Seeking balance between research and action
- Time demands

Possible responses to challenges:

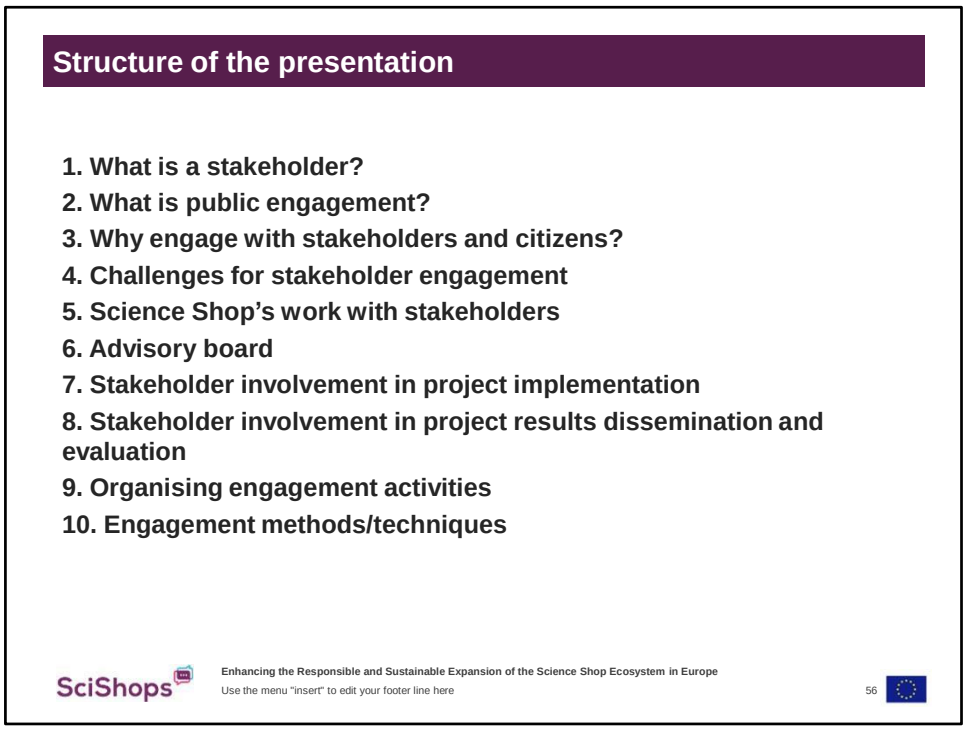
- Methodological flexibility and different criteria for judging quality
- Involvement of community members in research activities
- Community assessment/diagnosis
- Training on CBPR
- Involving partners in the publishing process

Thanks For Your Attention!

SciShops

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 653747


Modules for training Science Shops' staff
Stakeholder Engagement
Name of the trainer
SciShops
ENHANCING THE RESPONSIBLE AND SUSTAINABLE EXPANSION OF THE SCIENCE SHOP ECOSYSTEM IN EUROPE
This project has received funding from the European Union's H2020 SwafS-01-2016 under Grant Agreement No 741657


Structure of the presentation
1. What is a stakeholder?
2. What is public engagement?
3. Why engage with stakeholders and citizens?
4. Challenges for stakeholder engagement
5. Science Shop's work with stakeholders
6. Advisory board
7. Stakeholder involvement in project implementation
8. Stakeholder involvement in project results dissemination and evaluation
9. Organising engagement activities
10. Engagement methods/techniques
SciShops
Enhancing the Responsible and Sustainable Expansion of the Science Shop Ecosystem in Europe
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56

1. What is a stakeholder? (1)

"Stakeholder is an individual, group, or organisation, who may affect, be affected by, or perceive itself to be affected by a decision, activity, or outcome of a project" (Project Management Institute, 2013).

Some distinctions:

- Stakeholders vs. public
- Internal vs. external stakeholders

1. What is a stakeholder? (2)

External stakeholders

Source: The National Co-ordinating Centre for Public Engagement (NCCPE) website

1. What is a stakeholder? (3)

The main stakeholders for Science Shops are civil society organisations (CSOs) who provide research requests

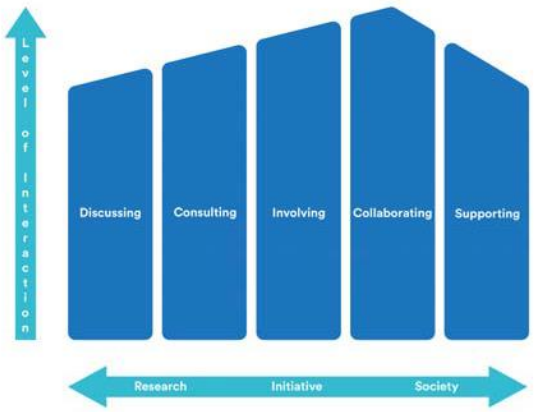
2. What is public engagement? (1)

Engagement – involvement of stakeholders or the public in project activities

Classification by intensity of participation – case 1 (Ribeiro and Miller, 2015):

- Education
- Dialogue
- Co-production of knowledge

2. What is public engagement? (2)



Source: Jellema, J. and A. J. Mulder (2016) *Public Engagement in Energy Research*.

2. What is public engagement? (3)

Engagement is not linear: one project can include different levels of engagement

Obstacles to engagement:

- Internal – related to competencies of Science Shop's staff
- External – culture of participation in the country

Other considerations:

- Who participates, when the engagement takes place, what issues are considered or excluded, and power dynamics between participants.

3. Why engage with stakeholders and citizens? (1)

Normative view:

- Engagement as 'a right thing to do' in its own right, based on democratic values

Pragmatic perspective:

- Engagement as a better way for researchers to achieve objectives: provides new insights, encourages support to the project among the involved groups

3. Why engage with stakeholders and citizens? (2)

For the Science Shop's institution in general:

- Accountability, increase of trust in science

From society's perspective:

- Engagement allows diverse groups to raise concerns of relevance to them, which might otherwise be overlooked

For individual citizens:

- Ability to contribute to shaping one's environment; education

4. Challenges for stakeholder engagement (1)

Challenges for stakeholder involvement:

- Engagement is not always high on stakeholders' lists of priorities
- Lack of trust and respect
- Additional administrative burden
- Inequitable distribution of power and control
- Conflicts associated with differences in perspective, priorities, assumptions, values, beliefs, and language
- Engagement is a time-consuming process
- Obstacles for broader involvement

4. Challenges for stakeholder engagement (2)

Possible recommendations to overcome the challenges:

- Show benefits and ensure effectiveness
- Jointly developed operating norms and procedures
- Identification of common goals and objectives
- Democratic leadership
- Presence of community organiser and support staff
- Researcher role, skills, and competencies
- Support for researcher in implementing stakeholders' involvement
- Prior history of positive working relationships

5. Science Shop's work with stakeholders

Tasks of working with CSOs as potential clients:

- Perform stakeholder analysis
- Develop ways to collect research requests
- Collect and evaluate research requests
- Develop long-term relationships with stakeholders

6. Advisory board

Advisory board is a way to maintain permanent relationships with stakeholders:

- Participation in important decisions
- Benefits from board members' networks

7. Stakeholder involvement in project implementation

CSO's involvement:

- In all steps of the project

Involvement of other external stakeholders:

- Depending on the project, e.g. professional organisations in the field, local authorities, etc.

Involvement of internal stakeholders (supervisors, researchers, students):

- Depending on the topic

Advisory committee:

- Includes main stakeholders and supplements supervisory role

8. Stakeholder involvement in dissemination and evaluation

Considerations:

- Dissemination may depend on "client" organisation's preferences
- It is important that the results are disseminated to the relevant stakeholders
- New stakeholders can be involved in project dissemination and evaluation

9. Organizing engagement activities

Considerations:

- Aims of involvement: participation is not a goal in itself!
- Finding relevant external stakeholders
- Decision on engagement form
- Importance of planning

10. Engagement methods/techniques

Structured engagement helps to ensure that all participants are equally involved and heard

Some forms of engagement activities:

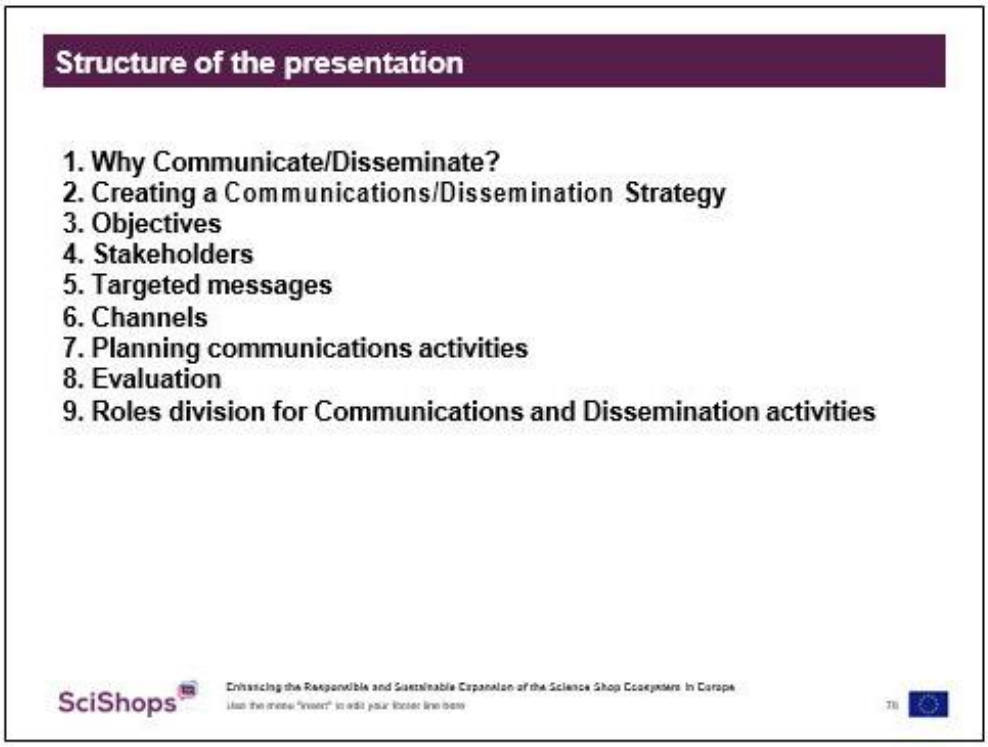
- Focus/working groups
- Citizens' juries
- Town meetings
- Co-creation workshops
- Nominal group technique
- Delphi technique

Thanks For Your Attention!

SciShops

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 653747


Modules for training science shops' staff
Communication and Public Awareness
SciShops
Name of the trainer
ENHANCING THE RESPONSIBLE AND SUSTAINABLE EXPANSION OF THE SCIENCE SHOP ECOSYSTEM IN EUROPE
This project has received funding from the European Union's H2020 SwafS-01-2016 under Grant Agreement No 741657


Structure of the presentation
1. Why Communicate/Disseminate?
2. Creating a Communications/Dissemination Strategy
3. Objectives
4. Stakeholders
5. Targeted messages
6. Channels
7. Planning communications activities
8. Evaluation
9. Roles division for Communications and Dissemination activities
SciShops
Enhancing the Responsible and Sustainable Expansion of the Science Shop Ecosystem in Europe

1. Why Communicate/Disseminate? (1)

The importance of communicating Science Shops' projects and results

Two broad objectives:

- Communicating to raise awareness of a Science Shop;
- Disseminating the outcomes of a community-based research project

1. Why Communicate/Disseminate? (2)

The importance of communicating Science Shops' projects and results

Obligation to communicate:

- building public trust in science

Promoting the Science Shop:

- services of the Science Shop, new research requests

Staff recruitment

Multiplication of impact:

- policy-making processes, funding for local initiatives…

Reputation building

Inspiration for others:

- More democratic and open use of science

2. Creating a Communications Strategy

Why have a strategy?

- Optimise resourses, costs and time
- Increase likelihood of success and effectiveness of communication efforts
- Might be a requirement in some projects

A communications strategy should be developed during the early stages of a project's development in order to achieve the best results

3. Communication objectives (1)

Creating a Communications/Dissemination Strategy

3. Communication objectives (2)

Creating a Communications/Dissemination Strategy

Examples of SMART objectives:

- **Dissemination of results**> Raise awareness of the results of a research project > three articles in three different scientific publications within a year after the end of the project.
- **Dissemination of results**> Persuasion> Statement from one relevant decision-maker (politician, local administrator, private company) to improve/make a change on a situation based on the results of the research after the results are published and maximum one year later.
- **Communication of the Science Shop**> Raise awareness> Achieve 600 monthly visits to the website or 1000 subscriptions to the Science Shop's newsletter/mailing list in one year (should be realistic according to the size of the Science Shop: local/national, existing networks to invite to join the newsletter, etc.)
- **Communication of a project**> Raise awareness>Elaboration of a mailing list of interested stakeholders to send them relevant updates about the project. Target: collection of 50 emails for this mailing list by the third month of the project.

4. Stakeholders

Creating a Communications/Dissemination Strategy

A stakeholder is "an individual, group, or organisation, who may affect, be affected by, or perceive itself to be affected by a decision, activity, or outcome of a project" (Project Management Institute, 2013).

Internal stakeholders – part of project implementation:

- Project supervisors
- Researchers
- Students
- Interns
- Volunteers

External stakeholders:

- Civil society
- Public sector
- Business sector
- General public

5. Targeted messages

Creating a Communications/Dissemination Strategy

The message should be tailored according to:

- **Audience's needs**, interests> Offering solution
- **Characteristics of the audience**: knowledge, background, language barriers, etc.
- **Characteristics of the channel**

Less is more!

6. Channels (1)

Creating a Communications/Dissemination Strategy

Online:

- Websites
- Social media
- Online publications
- Press (online)
- Blogs
- Podcasts
- Video
- Emails, newsletters, etc.

Offline:

- Press (local or national newspapers)
- Television and Radio (local or national)
- Magazines and journals
- Books and other publications
- Leaflets, brochures and printed material
- Events and Meetings

6. Channels (2)

Creating a Communications/Dissemination Strategy

Channels:

- Specialist vs. generalist
- Local vs. national vs. international

7. Communication activities (1)

Creating a Communications/Dissemination Strategy

Promoting services to community organisations and creating public awareness of the Science Shop:

- Science Shop's **website** (with enquiry form)
- Use of **social media** channels
- A **drop-in facility**
- **Presentations** at local events and conferences
- **Face-to-face meetings** with individual community organisations
- **Targeted mailings** (via post or e-mail)
- **Flyers and leaflets** to hand out
- A regular **newsletter** (to the Science Shop's mailing list)
- **Articles** in local media and/or **interviews** with the Science Shop coordinator
- **Briefing events** to which community organisations are invited
- Use of **external** networks, websites, newsletters

7. Communication activities (2)

Creating a Communications/Dissemination Strategy

Communicating results of Science Shops projects:

- Use of own and/or mother organisation's **website and social media**
- **Press releases** (distributed to relevant media) and other collaborations with the media
- Annual or other **reports** (printed or online)
- Knowledge cafés and other **public engagement events**, workshops, exhibitions
- **Scientific publications**
- **Presentations and posters** at conferences
- **Policy briefs and papers**
- Use of **Open Access/Data repositories**

7. Communication activities (3)

Creating a Communications/Dissemination Strategy

Examples of websites:

- The Netherlands: Science Shop, Wageningen University & Research (WUR) - Science Shop site hosted on the University website: https://www.wur.nl/en/Education-Programmes/science-shop.htm
- Northern Ireland: Community University Knowledge Exchange, Queen's University Belfast: https://www.qub.ac.uk/sites/ScienceShop/
- Germany: District Future - Urban Lab, Karlsruhe Institute of Technology Blog: http://www.quartierzukunft.de/en/blog/

7. Communication activities (4)

Creating a Communications/Dissemination Strategy

Other examples:

Social Media: Possibility of using 'mother organisation's' channels (e.g. University Facebook/Twitter/Instagram…).

- Facebook of the Green Office of KU Leuven: https://www.facebook.com/pg/greenofficekuleuven/posts/

Video:

- European University Cyprus, presentation of the Science Shop https://www.youtube.com/watch?v=VEq1dinbyYI

Awards:

- Awards presented to students for Outstanding Community Engagement projects at a celebration to mark CARL's (Community-Academic Research Links) 50th student-community project: https://www.ucc.ie/en/scishop/news/carl50---celebrating-our-50th-student-community-project.html

8. Evaluation

Creating a Communications/Dissemination Strategy

Important:

- To be decided at the beginning
- Tools/mechanisms should be established to measure the completion of the objectives.
- Those can be qualitative (interviews or focus groups) or quantitative (surveys, participation records, website metrics, etc.)
- Monitoring communications activities (e.g.: Excel sheet as a Communications Monitoring Tool)

Tools:

- Tool to Evaluate Communications activities by the European Commission: https://ec.europa.eu/info/sites/info/files/communication-evaluation-toolkit_en.pdf

9. Roles division for Communications and Dissemination activities

Factors affecting division of tasks:

- Budget
- Staff
- Time

Profiles:

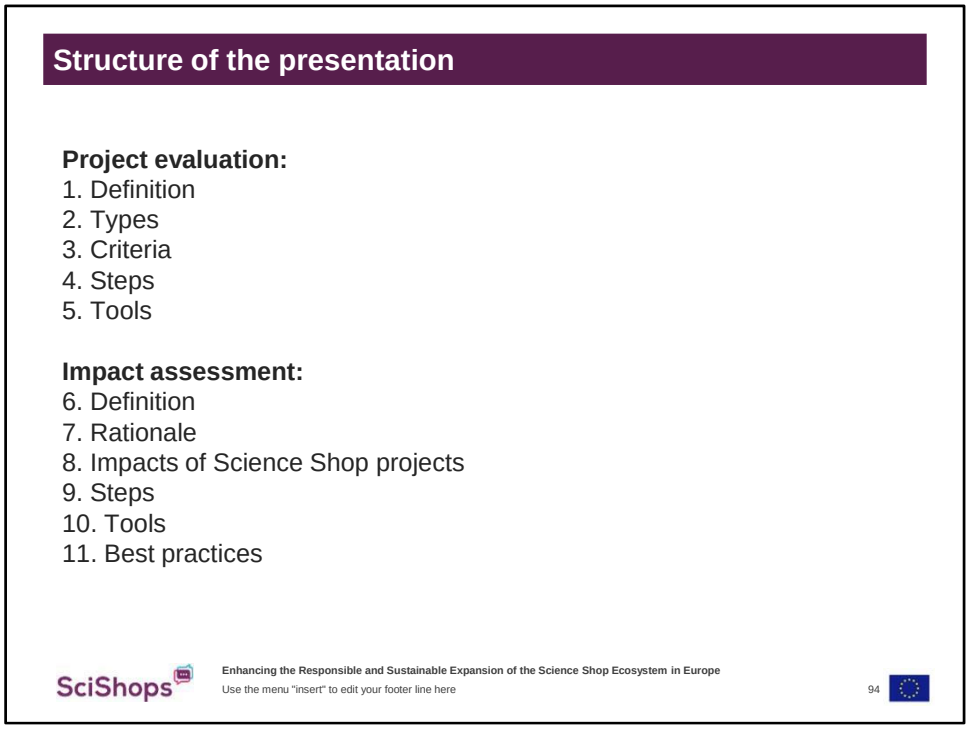
- Employees
- Researchers
- Students
- Volunteers
- External (outsourcing communications)
- Members of the CSO

Thanks For Your Attention!

SciShops

This


Modules for training science shops' staff
Project Evaluation and Impact Assessment
Name of the trainer
SciShops
ENHANCING THE RESPONSIBLE AND SUSTAINABLE EXPANSION OF THE SCIENCE SHOP ECOSYSTEM IN EUROPE
This project has received funding from the European Union's H2020 SwafS-01-2016 under Grant Agreement No 741657


Structure of the presentation
Project evaluation:
1. Definition
2. Types
3. Criteria
4. Steps
5. Tools
Impact assessment:
6. Definition
7. Rationale
8. Impacts of Science Shop projects
9. Steps
10. Tools
11. Best practices
SciShops
Enhancing the Responsible and Sustainable Expansion of the Science Shop Ecosystem in Europe
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1. Definition of project evaluation

Project evaluation is a systematic and objective assessment of an ongoing or completed project with the aim to determine the relevance and level of achievement of project objectives, development effectiveness, efficiency, impact and sustainability (OECD DAC Glossary, 2002).

2. Types of project evaluation

Early stage (*ex-ante*) evaluation:

- in the preparatory phase of a project

Monitoring:

- during the project, with the aim of improving the project impact

Mid-term evaluation:

- to assess achievements half-way through the project

A final (*ex-post*) evaluation:

- shortly before the end of a project to determine the extent to which objectives were achieved and other questions about the whole project

Post-project evaluation:

- about one year after the delivery of the final report, to establish longer-term impacts of the project

3. Criteria of project evaluation

Design:
- the extent to which the logical framework approach was adopted

Relevance:
- the extent to which its objectives are consistent with recipient needs

Efficiency:
- how resources/inputs are converted into outputs

Effectiveness:
- the extent to which a project achieves its objectives and outcomes

Stakeholder engagement:
- the level and quality of cooperation with partners and other stakeholders

Impact:
- change(s) produced or likely to be produced by a project after its end

Sustainability:
- whether the benefits of the project are likely to continue after its end

4. Steps of project evaluation

Based on PERARES Project Evaluations Evaluation Guidelines and Instruments (2013)

5. Tools for Science Shop project evaluation

The essential tool for Science Shops: the "PERARES Project Evaluation" toolkit (available online). Includes:

- Checklist for early-stage evaluation
- Questionnaire for mid-point evaluation
- Questionnaire for end-point evaluation
- Questionnaire for post-project evaluation

Science Shops are free to adapt / develop their own tools!

Also qualitative evaluation methods can be used: interviews, focus groups, evaluation meetings

6. Definition of impact assessment

Impact assessment is a tool conceived to rate the effectiveness of a project by determining the importance of changes triggered by those activities and measured against a baseline scenario.

Such changes cover:

- positive and negative impacts;
- intended and unintended impacts
- direct or indirect long-term results
- political, economic, social, cultural, health-related, technological, and environmental changes

7. Rationale behind impact assessment

Impact assessment is not a standard practice among Science Shops or, if done, it is not widely communicated (Stanescu et al. 2018).

Post-project impact assessment is beneficial for all Science Shops as:

- a tool to show accountability
- a useful source of evidence for future project proposals
- an argument for fundraising activities

8. Possible impacts of Science Shops projects (1)

Source: analysis of impacts of 31 selected Science Shops across Europe and beyond, conducted by SciShops project and based on the PERARES "Post-project evaluation" questionnaire (Stanescu et al., 2018)

In more than 50% cases of Science Shops, the projects:

- Increased stakeholders' knowledge of how research is done
- Increased researcher's interest in the subject
- Helped to develop ongoing relationships between academics and CSOs
- Influenced the direction of further research
- Showed the prospect to produce long-term impacts for the community, e.g. changes in public policy, legislation, awareness on the issue, etc.

8. Possible impacts of Science Shops projects (2)

Impact on internal stakeholders

STUDENTS:

- new knowledge and skills
- concept and practice of social responsibility
- building professional reputation

SCIENCE SHOPS:

- influence on choice of subsequent research topics
- increased interest of academics and students in community-based participatory research
- increase in research requests
- expansion of collaborations and networking
- establishment of new science shops

8. Possible impacts of Science Shops projects (3)

Impact on external stakeholders

- impact on CSOs: improvement of programmes or services
- increased trust in research
- increased citizen awareness/understanding about issues and involvement in tackling the problems
- citizen learning about the research process
- educational impact on citizens
- impact on quality of life improvement

Example: Science Shop InterMEDIU at the Technical University of Iasi, Romania; project "Evaluation of the quality of drinking water supplied in the city of Iasi", this Science Shop achieved the following project outputs [handout]

9. Steps of impact assessment

10. Tools of impact assessment

The essential tool for Science Shops: the "PERARES Project Evaluation" toolkit:
https://www.livingknowledge.org/fileadmin/Dateien-Living-Knowledge/Library/Project_reports/PERARES_Evaluation_toolkit_with_checklist_and_evaluation_form_2012.pdf

Includes questionnaire for post-project evaluation

Science Shops are free to adapt / develop their own tools

11. Best practices of Science Shops impact assessment

UTS Shopfront Community Program at the University of Technology Sydney (Australia):

- Annual impact report
- E.g.: https://issuu.com/utsshopfront/docs/shf057_fa1_impact_brochure_a4

Office of Community-University Engagement at the University of Victoria (Canada) co-sponsored a research project on Community-Engaged Research at the University of Victoria 2009-2015:

- identified 167 instances of impact at Uvic
- calculated that $21 million was secured in research funding for community engaged projects between 2009–2015
- Published a brochure with 12 impact case studies that illustrate the impact of community-engaged research occurring at the university
- https://www.uvic.ca/cue/research/our-research-projects/index.php.

Thanks For Your Attention!

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