



SciShops

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

D2.5

Existing Science Shops assessment



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Executive summary

A prerequisite to expanding the Science Shops ecosystem in Europe is to understand their characteristics, activities, challenges and evolution to date.

This report represents deliverable D2.5, undertaken as part of the SciShops.eu, a Horizon 2020 project on the topic of *Participatory research and innovation via Science Shops*. It contains an analysis of the impacts that 31 selected Science Shops across Europe and beyond have had on their communities and the benefits they brought through their research, delivered in response to civil society's research questions. The 31 selected Science Shops cover three continents and 14 countries (out of which four are outside of Europe) and a large range of research fields. Twenty-one of the Science Shops are university-based and the others are non-university-based Science Shops. The selection includes Science Shops run by partners within the SciShops.eu consortium.

To evaluate the impact the Science Shops have had on the community, the report uses an adapted version of a checklist template developed by the PERARES project as a system of internal evaluation and self-evaluation designed not only for the PERARES project but also for use by other projects that undertake community-based research and community-based participatory research.

Based on the adapted checklist, a table containing the identified impacts for all the 31 Science Shops was created.

The overall results of the analysis show that the most relevant impacts these Science Shops have had on their communities are:

Raising awareness

- the community became aware of the benefits of research and therefore increased its trust in research;
- many of the projects, in particular those with an environmental focus led to increased local awareness about issues and volunteers/citizens becoming actively involved in tackling the problems.

Increasing knowledge

- due to the participatory nature of the projects, community members learnt more about the research process through direct involvement in research;
- stakeholders gained a greater understanding of how researchers can help to solve societal problems;

Building relationships

 the relationship between the Science Shops and community stakeholders in many cases continued after completion of the projects with organisations returning to the Science Shop for further consultations or new collaborations.



Acronyms

ABC	The Area Based Childhood Programme
ACE	The Access and Civic Engagement Office's
AH	Alfalfa House
AHS	Applied Health Sciences
ARCC	Addison Road Community Centre
AS	Accès Savoirs
ATA	Association for Probation Services and Social Work
BNFL	Boutique de Sciences Nord - de France in Lille
САВ	Community Advisory Board
CARL	Community-Academic Research Links
CBL	Community-Based Learning
СВО	Community-based Organisation
CBPR	Community Based Participatory Research
СНС	Center for Child Environmental Health Risks Research, the University of Washington
CPD	Center for Professional Development
CPIE	Centre Permanent d'Initiatives pour l'Environnement
CSO	Civil Society Organisation
СТЕ	Centre For Teaching Excellence
CTSAs	Clinical and Translational Science Awards
CUT	Certificate in University Teaching
CVD	Cardiovascular heart Disease
DCYA	The Department of Children and Youth Affairs
DEIS	The Delivering Equality of Opportunity in Schools Programme
DIT	Dublin Institute of Technology
EcoAttitude	Action research programme
ECSA	The European Citizen Science Association
EESD	Environmental Education and Sustainable Development
EFSUPS (project)	<i>"Exploring the Ground - Fostering Scientific Understanding in Primary Schools"</i> project
EnRRICH (project)	Project "Enhancing Responsible Research and Innovation through Curricula in Higher Education"



ESOC	Department of Epidemiology and Social Medicine
ESSRG	The Science Shop at the Environmental Social Science Research Group
EU	European Union
SERENA (game)	Serious Game about Renewable Energy Technologies for Girls
GHG	Greenhouse gas
HEA	The Higher Education Authority's
HIV	Human Immunodeficiency Virus
HQP	High Quality Personnel
HSE	Health Service Executive
IBEC	Irish Business and Employers Confederation
Institute FBI	Forschung, Bildung & Information – Institute
JICA	Japanese International Cooperation Agency
КІТ	Karlsruhe Institute of Technology
Labworm	Sapientia Science Shop
LC	Lianes cooperation
LITE	Learning Innovation and Teaching Enhancement
NGO	Non-governmental organizations
NPOs	Non-for-Profit Organizations
NSW	New South Wales
NWO	Netherlands Organisation for Scientific Research
OCTRI	The Oregon Clinical and Translational Research Institute
OCUE	Office of Community-University Engagement
OHSU	Oregon Health & Science University
PERARES (project)	Public Engagement with Research and Research Engagement with Society
PICS	Pacific Institute for Climate Solutions
PINN	Patenschaftsmodell Innsbruck
PIs	Principal Investigators
PSP	The Participatory Science Platform
R&D	Research and Development
SBS	Stichting Belangengroep Stad
SIF	Strategic Innovation Fund



SII	The Institute of Social Innovations
SLWC	The Programme for Students Learning with Communities
SOHA (project)	Open Science in Haiti and Francophone Africa"
SPHHS	School of Public Health and Health Systems
SPOT	Boutique des sciences Savoirs pour tous
SWD (project)	Sailors with disABILITIES
TREHB (project)	Training and Research in Environmental Health in Balkans
TUI	Technical University of Iasi
UA	University Antwerp
UCC	University of College Cork
UPB	University Politehnica of Bucharest
URCPIE AuRA	Association that brings together seven Permanent Centers for Environmental Initiatives
UTS	University of Technology Sydney
UVic	University of Victoria
UW	University of Waterloo's
VCOs	Voluntary Community Organisations
VKK	Vereniging Kleine Kernen
WEB	Women's Enterprising Breakthrough Centre
WUR	Wageningen University & Research
WWC	Water Works Company



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1 Introduction

SciShops.eu (Enhancing the Responsible and Sustainable Expansion of the Science Shops Ecosystem in Europe), a Horizon 2020 project on *Participatory research and innovation via Science Shops*, involves 18 partners in 13 European countries. The aim of SciShops.eu is to expand participatory research and innovation by building on and expanding the capacity of Science Shops in Europe and beyond. The project is exploring how different research organisations (e.g. SMEs, research institutes, large enterprises, NGOs and universities) can develop sustainable Science Shops. SciShops.eu aims to establish ten new Science Shops and runs from September 2017 until February 2020.

This report represents deliverable D2.5, undertaken as part of the SciShops.eu project, and contains an analysis of the impacts of 31 selected Science Shops across Europe and beyond on their communities and the benefits they brought through their research, delivered in response to civil society's research questions. The D2.5 deliverable analyses the impacts that existing Science Shops have had on the communities and the benefits they brought through their research delivered in response to the public's research questions. The Science Shops' activities are evaluated based on the outcomes of their projects, identified through desk research.

Science Shops and similar initiatives bridge the gap between researchers and communities by fostering sustainable partnerships, through projects, between universities (faculties and students), research institutes or NGOs, with local citizens and organisations to address community concerns.

Evaluation of a project is an important process that objectively collects and analysis information about a project's outcomes and impacts. The evaluation makes judgements about the project's effectiveness and communicates its results to citizens and funders to gain their support. Project evaluation is a valuable tool to assess and improve Science Shops' activities.

Impact could be considered as the difference between what would happen with the project/action and what would happen without it. The nature of impacts is diverse, covering economic, social, environmental and technological changes.

Impact evaluation/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 that is the crucial point for a valid evaluation/assessment of impacts. Such changes cover all the positive and negative; intended and unintended; direct or indirect long-term results yielding from the project activities in the economic, social, cultural and environmental fields.

The terms "impact" and "effect" are frequently used interchangeably; the same is valid for "evaluation" and "assessment".

Methodology

The report includes three main sections referring to:

- projects outcomes and impacts;
- presentation of 31 different Science Shops;
- the analysis of the impacts of the Science Shops on communities across Europe and beyond and the challenges that were encountered.



The Science Shops' impacts were analysed through the following publicly available online sources:

- the deliverables produced within the previous tasks of SciShops.eu project¹:
 - D2.1 Baseline research and best practice report on participatory and communitybased research – provides an overview of the existing studies, reports, statistics, policies and initiatives in the field of participatory and community-based research across Europe and worldwide;
 - D2.2 Existing RRI tools and successful participatory community-based research case studies report – includes a collection of case studies demonstrating the successful appliance of community-based participatory research;
 - D3.1 European synergy status report.
- Living Knowledge Network website²;
- Science Shops' websites: information about organisation, projects, stakeholders involved, etc;
- reports of EU-funded projects related to Science Shops (e.g., INTERACTS, PERARES);
- other documents, including working and discussion papers, book chapters, master and doctoral dissertations, project reports, literature presenting successful projects carried out by Science Shops or similar organisations;
- Science Shops activity reports.

Another source used to select and analyse the Science Shops' impact was the deliverable D2.4 of the SciShops.eu project - *Science Shop taxonomy* – that contains a classification of Science Shops, in which existing Science Shops have been categorised, based on their field of expertise, type of mother organisation and capacity level. This document is not publicly available.

Selecting existing Science Shops

The selection of the Science Shops that were assessed includes:

- Science Shops run by partners within the SciShops.eu consortium: University Politehnica of Bucharest and Institute of Social Innovations;
- other Science Shops or similar initiatives, included in the D2.4 *Science Shop taxonomy*.

Available data about each Science Shop was collected including: name, host organisation, country, year of establishment, type of organisation, field of research, type of research undertaken, existing website address, examples of projects.

The selected Science Shops had to fulfil the following criteria:



¹ https://project.scishops.eu/project-structure/

² http://www.livingknowledge.org/

- they represent a range of organisational models (university-based and non-university-based);
- they represent European and non-European countries;
- they had to conduct community-based activities (learning and research): CBPR, CBR, CBL;
- community stakeholders benefit from the research.

Impact identification

To determine the impact, information was taken from the relevant projects'/ organisations' websites, as well as from publicly available reports, papers, media articles, surveys and testimonies related to the selected projects. Many of these sources do not mention the projects' impacts explicitly and therefore they had to be inferred. Moreover, a regrettable shortcoming is that only brief descriptions are available for most of the recently run projects, even in the case of the Science Shops which conduct or are engaged in a range of scientific research fields and undertake a large number of projects.

Challenge identification

While evaluating the Science Shops' projects, any challenges that could be identified relating specifically to the projects were also collected. Challenges faced by Science Shops and organisations undertaking community-based participatory research have been explored in depth in the SciShops' deliverable 2.2, *Existing RRI tools and successful participatory community-based research case studies report*.

Impact evaluation/assessment

1. Qualitative criteria

To evaluate the impact that the Science Shops have had on the community, the report used an adapted version of an evaluation checklist found in "Post-project evaluation" chapter of Deliverable 9.1 of the PERARES project (Smith Kaiser et al. 2013)³. The PERARES' report on "Evaluating Projects of Public Engagement with Research and Research Engagement with Society" (van der Windt 2014)⁴ developed a system of internal evaluation and self-evaluation that could be applied not only for the PERARES project but for other projects that undertake CBR or CBPR. SciShops has adapted the checklist for the purpose of this deliverable as shown in Annex 1 of this report.

2. Quantitative criteria and indicators

Quantitative indicators are mentioned whenever they are reported in the investigated sources. Some examples of indicators include



 ³ Smith Kaiser D, Vargiu A., van der Windt H. (2013) PERARES Deliverable D9.1- Evaluation Guidelines and Instruments, available at http://www.livingknowledge.org/fileadmin/Dateien-Living-Knowledge/Library/Project_reports/PERARES_Evaluation_Guidelines_and_Instruments_D9.1.pdf
 ⁴ Henny van der Windt, H., Murphy, P., Smith D., Vagiu A. (2014), PERARES Deliverable 9.2 - Evaluating Projects of Public Engagement with Research and Research Engagement with Society, available at

- stakeholders involved: types of stakeholders (as beneficiaries of the research and of its outcomes), number of stakeholders;
- researchers involved: number of students; number of other types of researchers;
- dissemination events: number of events, number of participants per event, total number of participants;
- publications: number of publications in which research findings were published, etc.

Some indicators are quite specific to the research project and for this reason, most projects cannot be compared to each other.

The evaluation of the Science Shops' impact on their communities was done based on publicly available information. While performing the desk research, no evidence was found that the projects include an impact assessment stage, and therefore that they conducted an impact evaluation of their own projects (*self-evaluation*). However, it could be the case that some Science Shops do undertake a certain level of impact evaluation but this is not openly published. Some examples of impact evaluation for individual projects was carried out within the INTERACTS project⁵. Information about the *overall impact* of Science Shops was not found.



⁵ https://wilawien.ac.at/interacts/reports.html

2 Science Shops Research impact

2.1 Output, outcome, impact

When dealing with projects, one needs to be familiar with project's specific terms such as outputs, outcomes and impacts. Outputs are results obtained when an activity of the project is completed, while outcomes are results of the project achieved after a short or medium period of time from its completion.

Generally, the impact of the project implies a long-term result. For the purpose of the SciShops.eu project, impact is considered to be a measure of the tangible and intangible changes brought about by one project/ activity upon one or more stakeholders.

The impact that a research project may have on the community can be assessed when it is designed, during, or after the project ends. Therefore, the following types of project evaluations can be undertaken:

- 1. ex-ante evaluations carried out to identify the anticipated impacts of the research projects (e.g., social, political);
- monitoring⁶ a type of evaluation that is performed while a project is being implemented, with the aim of improving the project impact. As a result of the evaluation, certain measures may be taken during the project which may lead to an increase of its foreseen impact (Gnaiger and Schroffenegger, 2003);
- 3. ex-post evaluations that monitor the impact of research undertaken^{7.}

Depending on the field on which the effects of the project occur, the impacts of research projects can be grouped into the following categories⁸:

- Scientific Impact⁹: The change induced by the research breaks the current paradigm and determines new trends in research. For example, natural science projects undertaken by university–based Science Shops can produce valuable results, and, in this case, the scientific impacts become academic impacts, occurring within the academic arena (Bader et al., 2006).
- Economic impact: The research might have an economic impact that represents a change in economic or productivity growth, or a technological change on the productivity or the quality of products.
- Health impact: The research contributed to the increase of public health, life expectancy and quality of life, as well as to illnesses prevention.
- Technological impact: The research contributed to the innovation of new products, processes or services.
- Environmental impact: The research contributed to the management of the environment.



⁶ http://web.mit.edu/urbanupgrading/upgrading/issues-tools/tools/monitoring-eval.html

⁷ https://academic.oup.com/rev/advance-article/doi/10.1093/reseval/rvx025/3978693#92844814

⁸ European Science Foundation (ESF) classification of impact.

⁹ https://academic.oup.com/rev/advance-article/doi/10.1093/reseval/rvx025/3978693

- Social Impact: The social impact is a change or influence that research can have on community/society.
- Political Impact: The political impact of research (not including the social impact) could be considered as a change or influence that research can have at the political level.

2.2 General impact of Science Shop activities on the community

For research impact assessments it is essential to know who the stakeholders are.

A stakeholder is any individual or group that is affected by, who can influence or may have an interest in the outcomes of an organisation's actions. In accordance with the Deliverable 3.2 of SciShop.eu project, and in the context of this report, stakeholders are classified as follows:

- Internal stakeholders are considered to be the groups and/or individuals that are already part of the project (i.e. researchers and students).
- External stakeholders are considered to be those individuals or groups that are initially outside the project's environment, but who might be influenced by or influence the project (i.e. universities, research institutes, NGOs, SMEs, large enterprises, community members, local administrations and policy makers).

Community organisations (as internal or external stakeholders) can be involved in research processes in different ways, e.g. starting with asking the research questions, mobilising participants for research studies, co-working with the Science Shop's researchers or even ending up working as a co-leader of a research project with a Science Shop.

There are multiple reasons for why Science Shops involve community organisations in the research and one of them could be to comply with the objectives and priorities of the funder.

The principles of CBR or CBPR apply to the entire duration of the project. Community representatives should be engaged in project activities in a systematic way, by regularly communicating with and giving feedback to the Science Shop's researchers directly involved in the project.

Establishing partnerships between community organisations and Science Shops with the aim of providing solutions to community related issues, brings several important benefits to the former, among which are: community awareness about the relevance of research together with its results, an increased interest in CBR/ CBPR and acquiring more knowledge about the ways research is undertaken.

Community-based learning (CBL) represents an educational experience, recognised by universities, sometimes used in study programmes. It has impact on both internal stakeholders as well as external stakeholders.

For example, some of the most obvious impacts that CBL has on students are: increased interest to learn; improved understanding of topics; integration of theory with practice; better self-knowledge; greater awareness of community and societal problems; better leadership and interpersonal skills. CBL can also be a powerful tool for students who learn more effectively through practical experience and by teaching others.





CBL also has positive effects on the community, by supporting the work of understaffed and underfunded organisations; creating new associations and partnerships with the University; allowing community organisations to work with students and identify future employees.

Community-based research and *community-based participatory research*, are collaborative approaches to research that involve community stakeholders in designing and carrying out research projects aimed at meeting the needs identified by the community (George et al., 2017).¹⁰

The overall impact of CBR/CBPR is related to a greater data validity, a greater impact of the research in terms of community accessibility, community capacity, increased funding opportunities.



¹⁰George, C.L., PhD; Wood-Kanupka, J, Oriel, Kathryn N, PT, (2017) Journal of Allied Health; Washington Vol. 46, Iss. 1, e15-e24.

3 Selected Science Shops

Thirty-one selected Science Shops (Table 1) are analysed within this report. They are located on three continents, covering 14 countries, four of which are outside of Europe. They cover a large range of research fields. Twenty-one are university-based and the remaining ten are NGO-based Science Shops.

Science Shop/similar initiative	Year of establishment	Country
Bonn Science Shop	1984	Germany
Science Shop at Wageningen University and Research	1985	The Netherlands
Patenschaftsmodell (Sponsorship model) Innsbruck	1986	Austria
Language, Culture and Communication Science Shop, University of Groningen	1986	The Netherlands
Science Shop Hannover	1986	Germany
Science Shop at Queen's University Belfast	1989	UK
Science Shop at Ulster University	1989	UK
Institute of Social Science, Research, Education and Information (FBI)	1991	Germany
Science Shop Vienna	1991	Austria
Interchange, University of Liverpool	1993	UK
UTS Shopfront, University of Technology Sydney	1996	Australia
Science Shop InterMEDIU Iasi, Technical University Iasi	1998	Romania
University of Washington, Center for Child Environmental Health Risks Research	1998	USA
Access & Civic Engagement Office, Dublin Institute of Technology	1999	Ireland
Science Shop InterMEDIU Bucuresti, University Politehnica of Bucharest	2002	Romania
Antwerp Science Shop, University of Antwerp	2003	Belgium
Science Shop at Environmental Social Science Research Group (ESSRG)	2005	Hungary



Oregon Health & Science University, Oregon Clinical and Translational Research Institute	2006	USA
Community-Academic Research Links, University of College Cork	2006	Ireland
Science Shop at University of Lyon	2007	France
Centre for Teaching Excellence, University of Waterloo	2007	Canada
Beta Science Shop, University of Groningen	2008	The Netherlands
Science Shop Potsdam	2011	Germany
LabWorm Miercurea Ciuc, Sapientia Hungarian University of Transylvania	2012	Romania
District Future - Urban Lab, Karlsruhe Institute of Technology	2012	Germany
Science Shop Accès Savoirs, University of Laval	2013	France
Social Innovation Institute Science Shop, Vilnius	2013	Lithuania
Curious Minds Participatory Science Platform	2014	New Zealand
Science Shop Nord - de France in Lille	2015	France
University of Victoria Office of Community-University Engagement	2015	Canada
Science Shop at Vilnius College of Technologies and Design	2016	Lithuania

Table 1. Science Shops and similar initiatives selected for assessment.

The selected Science Shops use similar research approaches. However, they differ in terms of their mother organisation, their relationship with a University, or type of research organisation.

Figure 1 shows a linear evolution of the years when the Science Shops were established. Most of the Science Shops are from Germany, followed equally by Austria, Canada, the Netherlands, Romania and the UK (Figure 2). Sixty-eight percent are Science Shops, the others CBR/CBPR institutions (32%) (Figure 3). The majority of the Science Shops are university–based (74%) (Figure 4).

Even though there are no Science Shops in the USA, there are lots of organisations, mainly research centres, that undertake CBR and/or CBPR as part of their activities, two of which are included in the assessment.





Figure 2. Geographical distribution of the selected Science Shops



Figure 3. CBR/CBPR organisations selected for impact evaluation



based

university-

based



4 Science Shops case studies

A description of the selected Science Shops together with examples of the projects they have conducted is given below.

4.1 AUSTRALIA: Shopfront, University of Technology Sydney

UTS Shopfront Community Program¹¹ is a Science Shop based at the University of Technology Sydney, Australia. Since it was set up in 1996, UTS Shopfront has facilitated more than 1000 successful projects completed by UTS students for more than 800 non-profit organisations. UTS Shopfront receives core funding from the University.¹²

UTS Shopfront is one of the university's key programmes championing social justice and social change and its objectives¹³ are to:

- embed and strengthen community engagement across core university activities;
- engage and collaborate with our community sector partners, students, academics and alumni locally and internationally;
- empower students to grow, contribute, challenge and make a difference;
- contribute to innovation and sustainability in the not-for-profit sector through ongoing skills and knowledge exchange.

Projects are undertaken in response to a need identified by a community organisation (or group of community organisations) that approaches the Shopfront. Prior to each semester, UTS launches a call for applications inviting local NGOs to submit project proposals.

Projects are run as disciplinary coursework by final year or postgraduate students and are usually undertaken in small project teams. A Shopfront project coordinator is assigned to individual projects to act as a relationship manager and each project is also supervised by an academic researcher.

The Community Program is a cross-university programme and students come from wide range of faculties, such as architecture, built environment, business, communication, design, education, engineering, information technology, law, and science.

Projects undertaken include research (e.g. desk research, literature surveys, and feasibility studies), design (e.g. user prototyping, visual identity, animations, and films), business planning, financial management, governance, and sustainability. Recently, there is a higher demand for projects involving the development of new technological infrastructure and digital platforms.

Social issues addressed by the projects include health and wellbeing, indigenous Australia, youth, human rights, environment and sustainability, community development, disability, history and heritage, housing and homelessness, international development.

¹¹ https://www.uts.edu.au/partners-and-community/initiatives/uts-shopfront-community-program

¹² Parts of the description of UTS Shopfront are taken from a case study in Deliverable 2.2 (Garrison 2018) 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

¹³ https://issuu.com/utsshopfront/docs/uts-shopfront-annual-report-2015

Sailors with disABILITIES (SWD) is a volunteer-run, not-for-profit organisation that uses sailing in a team environment to build the confidence and self-esteem of people with disabilities, including children. The organisation is committed to changing the way people with a disability regard themselves as well as societal perceptions.

During 2015 UTS Shopfront undertook three projects^{14,15} for the organisation. Firstly, a team of five students from the Design Architecture and Building Faculty designed an online archive, using information that only existed in hard copy to showcase 20 years of history and evolution of the organisation in an interesting and innovative way. SWD views the archive as an asset that they can use to showcase their achievements to date. The project jointly won the 2016 UTS Creative Media Social Justice Award.

The second project was the development of a professional visual identify for SWD to use on its website, yachts and other promotional materials. The students also created a short video animation communicating SWD's vision and mission.

Thirdly, students worked with corporate coaches from Ernst & Young to develop a Volunteer Recruitment and Retention Plan, which SWD could use as a strategy to attract, better engage, retain and reward its volunteers. In 2015 SWD was awarded the Volunteer Management Award by the NSW Minister for Sport and SWD acknowledged the student work as being a key factor in this win.

PROJECT: Alfalfa House

Alfalfa House (AH) is a not-for-profit food cooperative based in Sydney's inner west that provides organic, biodynamic and ethically sourced food with minimal packaging and processing, which is also affordable to its members and visitors.

In 2015, two teams of postgraduate students from the UTS Business School collaborated with AH to conduct an assessment of its current pricing policies and develop a business plan for its longer-term sustainability¹⁶. As part of the pricing project, the students surveyed co-op members on the current pricing, compiled a competitor analysis and made recommendations on how AH could differentiate from similar organisations. Students recommended introducing a variety of new bundles and provided a variety of pricing structures for different food ranges that could integrate into the overall strategy, without compromising the company's guiding principles and values as well as creating the necessary profits required to be sustainable. A separate project involved students undertaking sustainability planning and developing a business plan. This work incorporated financial planning for greater business efficiencies and growth, the feasibility of a physical expansion and/or relocation and the development of key strategies to deepen the organisation's engagement with its membership base.

Recommendations from both projects have subsequently been put into action by Alfalfa House.



¹⁴ https://issuu.com/utsshopfront/docs/shf057_fa1_impact_brochure_a4

¹⁵ https://issuu.com/utsshopfront/docs/uts-shopfront-annual-report-2015

¹⁶ ibidem

PROJECT: Research of Poverty Issues and Research on Closure of Women's Refuges

The Addison Road Community Centre (ARCC) is home to more than 35 community, cultural and environmental organisations. It provides social and economic sustainable development opportunities for the community. It supports refugees and migrant communities to establish viable social enterprise and provide opportunities for artists and potential artists.

Two final year students from the Faculty of Arts and Social Sciences undertook two separate pieces of research for ARCC¹⁷¹⁸.

One examined poverty and the effects of poverty in the Inner West. The student actively participated in focus groups with emerging migrant communities, immersing herself in the working environment and participating in forums and inter-agency meetings.

The other examined the closure of women's refuges following the NSW Government's Going Home Staying Home reforms, utilising information collected from a forum with a range of organisations and from interviews with members of the local community to develop advocacy and communication material for ongoing campaigns.

ARCC reported the research would be used to raise awareness of the issues, secure community funding and support efforts to advocate for the government to take on the responsibility of funding women's support services.

Subsequently one of the students has been hired by ARCC to work on future research projects, events and communications.

PROJECT: Designing refugee stories

In 2015, five students from the Faculty of Design, Architecture and Building undertook a Science Shops project for Mums 4 Refugees¹⁹, a grassroots advocacy group of mothers finding ways to bring positive changes to Australia's treatment of refugees and immigration detention system. The students worked with the group to create an animation of the women on Nauru Island, the location of an asylum-seeker detention camp. The aim was to create a powerful and thought-provoking animation that would allow the audience to empathise with the refugees and asylum seekers and understand the conditions they've been subjected to. The animation received viral support across multiple media channels upon release, including in a number of newspapers, and was viewed over 68,000 times on the Mums 4 Refugees Facebook page alone.

Impacts

Many of the Science Shops projects result in outputs that the community organisations do not have the skills or resources (staff or financial) to undertake by themselves.

¹⁷ https://issuu.com/utsshopfront/docs/uts-shopfront-annual-report-2015

¹⁸ https://www.uts.edu.au/partners-and-community/initiatives/uts-shopfront-community-program/news-and-events/news/research

¹⁹ http://docplayer.net/amp/40575124-Social-justice-report-2015.html

Often the projects result in concrete recommendations that can be utilised by the community organisations e.g. ways to raise their profile, inform strategic planning, pricing strategies, attract and retain volunteers, engage broader audiences, capacity building, strategic partners. These often can be used to make improvements to existing programmes and services. Feasibility studies are used to inform the development of new initiatives and services too.

Documentation produced by students is used as materials for future fundraising, promotion, reporting and evaluation, therefore increasing the community organisation's capacity to get project funding e.g. in the case of the Addison Road Community Centre. New tools and resources developed by the projects (e.g. digital archives, animations, and films) are also used by the organisations to enhance their work e.g. the design projects undertaken for Sailors with disABILITIES.

Some projects also help to raise awareness of issues more widely in the public sphere. For example, the tutor supervising the Mums 4 Refugees' project reported that the animation, which gained a lot of viral support, "made a real and positive contribution to the debate over immigration detention."

Sailors with disABILITIES (SWD) also reported that "The Volunteer Recruitment and Retention Plan enabled us to grow. Working with UTS Shopfront really does make a huge difference to an organisation like ours". In addition, many of the recommendation developed by the Science Shops students for Alfalfa House on pricing strategies and business planning have also been implemented.

As part of its evaluation process, UTS Shopfront evaluates the skills that the community organisations gain from participating in the projects. Results presented in UTS Shopfront's 2016 Impact report²⁰ indicate that the community organisations knowledge of how research done was one of the skills that they gained (9% research methods, 32% understanding of new technologies, 16% design thinking, 9% project management skills, 9% business planning methods).

UTS Shopfront also evaluates the ways in which the community partners value their experience of working with UTS Shopfront. Reasons identified included: it was a usable outcome; it provided a new strategic direction; improved our service delivery; enhanced our professional reputation; raised our profile; prototyped/tested a new concept; saved us money; enhanced our sustainability; the rigour and quality of research; provision of objective advice.

Long-term impacts reported by UTS Shopfront through its projects include:

- changes in public policy;
- law reform;
- new community services.

Many of the community organisations that have worked with UTS Shopfront, return in subsequent years with new project ideas, therefore demonstrating the value of the Science Shop's work to the organisations and how the overall programme is helping to develop continuing relationships between academia and civil society, as well as contributing to the overall development of the Science Shops. To date UTS Shopfront has completed over 1000 community projects.



²⁰ https://issuu.com/utsshopfront/docs/shf057_fa1_impact_brochure_a4

4.2 AUSTRIA: Institute of Social Science, Research, Education and Information

(Institut für gesellschaftswissenschaftliche Forschung, Bildung & Information – Institute FBI²¹)

Institute FBI is a non-university-based Science Shop and research institution operational since 1991, organised as an NGO. The major purpose of the Institute FBI is to establish the link between science and the civil society, by "making advanced knowledge accessible, understandable and applicable for a broad public", through knowledge conversion into practical courses destined for adult education on topics relating to research, society and culture. The Institute FBI has participated in several FP5 and FP6 EU projects (e.g., SCIPAS, INTERACTS, ISSNET, TRAMS) involving Science and Society topics, in projects funded by the European Social Fund (e.g., MIDAS, AQUA, JOIN IN), and other international projects²².

The main focus of its current courses and projects is on subjects such as women and gender-related issues, participatory methods, conditions of employment, mentoring for young people with migrant background and "Cross Work" (gender pedagogic of women with boys and men with girls) – courses for teachers and trainers.

Institute FBI is a founding member of the Living Knowledge network and a member of the Austrian national network of organisations against domestic violence, section Youth.²³

This section presents some of the findings of the European project INTERACTS (Gnaiger and Schroffenegger, 2003), that investigated the practical experience and impact of interaction between NGOs, research institutions and intermediaries, such as Science Shops, in one of the selected community-based research projects carried out by Institute FBI, in the field of social welfare and health. The project *Evaluation of a series of lectures on precaution against heart disease for Turkish migrant women in Tirol* was assessed by INTERACTS in one of its reports, which contains a comprehensive presentation of the project and its outcomes and impacts. The research request was formulated by an NGO, *Ludwig Boltzmann Institutes für Kardiologische Geschlechterforschung* (LBI - Ludwig Boltzmann Institute for Cardiological Gender Studies).

At the end of 1999 and 2001, due to the higher risks faced by Turkish immigrant women of developing heart problems associated with overweight, unhealthy eating habits, lack of physical exercise and a certain genetic disposition, *Frauengesundheitsbüro Tirol* (Women's Health Office of the State of Tyrol) and the *Ludwig Boltzmann Institut für Kardiologische Geschlechterforschung* developed a pilot project to address these issues. Two rounds of lectures in Turkish language were organised aimed at raising the awareness of the Turkish women on the subject and providing information about heart attacks and means of preventing them. The lectures were delivered in several urban and rural communities of Tyrol (in mosques) and were organised in close collaboration with Turkish cultural centres, local religious groups and their hodjas. The lectures, mainly held on Sundays afternoons, were aimed at women falling (at that time) within the range of 50 – 60 years. After the courses, the women completed a questionnaire that was then analysed with a view to improving the next series of lectures. Due to a



²¹ Gnaiger A. and Schroffenegger G (2003), Austrian case studies report, The Innsbruck cases, Interacts Project, https://wilawien.ac.at/interacts/interacts_csr_innsbruck.pdf

²²http://www.fbi.or.at/projekte_international.html

²³http://www.we-run.eu/fbi-centre/

substantial decrease in the number of participants, from 880 in 1999 to 660 in 2001, and given that a third round of lectures was planned for 2002, the NGO requested the services of Institute FBI to

third round of lectures was planned for 2002, the NGO requested the services of Institute FBI to conduct an external evaluation of this situation. The Science Shop (Institute FBI) was selected to carry out this project, based on the participatory and empowering methods they use.

The project had a dual purpose:

- to identify the causes of the decrease in the number of participating women in the second series of lectures, and
- to make recommendations concerning a more direct and effective approach of reaching the Turkish women target group, with a view to including a larger age range of women and making improvements to the cardiovascular heart disease (CVD) preventive actions.

To reach the project objectives, the Science Shop relied on the expertise of two of its researchers, and two former female medical students of Turkish origin, who acted as interpreters.

Based on group discussions, in-depth interviews, conversations with the Turkish community and statistical data, Institute FBI produced an evaluation report. The findings identified that a major barrier to participation was that the NGO focused mainly on the Turkish mosques. Overall, the lectures met the target group's expectations, but the study pointed out some improvements to enhance the number of participants, such as establishing a network of Turkish migrants, using phone calls as an invitation means instead of mail to overcome illiteracy issues, extending the venues to school halls or community centres, as well as introducing new health related topics.

The outputs of the projects consisted in an evaluation report and its presentation. Even though the project did not specify the requirement to assess its impacts on the community, several important short-medium and long-terms effects can be inferred from the INTERACTS report and from other identified sources.

Impacts

The projects outcomes as short and medium-term effects (impacts) consist of an improved series of lectures provided for the Turkish immigrant women by LBI, two other projects entrusted by LBI to the Science Shop, and a job offered by LBI to one student.

The project had impacts as long-term effects on different stakeholders. The most important impact of the project in the long run was the confirmation of expertise awarded to the Institute FBI concerning evaluation, gender sensibility and participatory research. Furthermore, the Science Shop gained experience and insights on new cultural backgrounds and patterns.

The project had a positive impact on the young graduate medical students that acquired new knowledge and skills in conducting interviews and designing a survey questionnaire, which represent valuable and useful tools for their professional field.

The project confirmed the importance of the NGOs' work in the field of preventive health care for immigrant Turkish women and contributed to strengthening its position in terms of fundraising for future projects.



The impact on the female migrants of Turkish community of the pilot project, also known as "The Mosque Campaign" was to increase female Turkish migrants' level of awareness of CVD²⁴. The same source also reported that during 2005 an outpatient department for Turkish women was established at Innsbruck Medical University Hospital, where a female Turkish physician provided primary care and referrals in a culturally friendly environment. Moreover, the project stands as a valuable example of a success story, due to its innovative Turkish language-based approach to increase awareness of CVD prevention strategies²⁵.

Challenges

During the evaluation of the project the following challenges have been identified:

- the NGO had to adapt the prevention pilot project to reach an agreement with members of the Turkish community not directly participating in the project (mainly Hodjas) with the aim of identifying general cultural differences, such as the best way to invite them or suitable timings for the lectures;
- the Science Shop managed to overcome the funding barriers for social research projects (in Austria) and found its niche in a market dominated by academic competitors, due to its strong reputation of providing high quality research services and of using the appropriate methods.

In summary, the project *Evaluation of a series of lectures on precaution against heart disease for Turkish migrant women in Tirol* qualifies as a successful action for all parties involved:

- the NGO found out how to increase participation rates;
- the Science Shop enhanced its area of expertise and strengthened its reputation in the market for services provided in the fields of research, society and culture;
- the participating young graduate medical students enriched their practical knowledge and improved their professional skills.

4.3 AUSTRIA: Patenschaftsmodell (Sponsorship model) Innsbruck

Patenschaftsmodell Innsbruck²⁶ (PINN), founded in 1986, is a service center for companies and other organisations, a Science Shop equivalent, within the Faculty of Social and Economic Sciences at the University of Innsbruck. PINN is aiming at systematically connecting the University with real-life problems and encouraging the promotion of practical aspects in economic scientific education. Students can choose between different "modules" or get the "PINN – Certificate". Thus, students are given their first experience of working in a professional environment. Most Master theses are based on PINN projects.



²⁴Bader, A., Musshauser, D., Sahin, F., Bezirkan, H.,Hochleitner, M., *The Mosque Campaign: a cardiovascular prevention program for female Turkish immigrants* (2006) vol.118(7-8):217-23, available at https://slideheaven.com/the-mosque-campaign-a-cardiovascular-prevention-program-for-female-turkish-immig.html

²⁵ IEEE Pulse, A magazine of the EEEE Engineering in Medicine and Biology Society, January/ February 2015, available at https://pulse.embs.org/january-2015/obesity-turkish-migrants/

²⁶https://sowiholding.at/geschaeftsfelder/pinn-patenschaftsmodell-innsbruck/

The PINN concept consists of a sponsorship relationship: companies or organisations of various sizes, from different sectors and locations assume a sponsorship agreement for a defined period. The terms of the sponsorship must be agreed between the participants, and the PINN managers must guarantee compliance with "fair" conditions. The key elements of the sponsorship are the subjects proposed by the potential sponsoring companies, which are discussed with the relevant subject academic supervisors and addressed by the interested students (as individual projects). The time span of these projects ranges from four to eight months, depending on the complexity of the issue.

The European project INTERACTS selected one community-based research project carried out by Patenschaftsmodell in the field of social welfare and health, to examine the practical experience and impact of interaction between NGO's, research institutions and intermediaries such as Science Shops (Gnaiger an Schroffenegger, 2003). For the purpose of SciShops.eu, the project *Analysis on Customer Satisfaction of the Aggrieved in Mediation in Penal Matters* presented by INTERACTS has been selected.

The project was initiated at the request of the Managing Director of the NGO, *Association for Probation Services and Social Work* (ATA), with a view to evaluating its clients' satisfaction with a service called "mediation in penal matters"- an alternative to a trial in the case of misdemeanor. This service, provided by the NGO, seeks to achieve reconciliation between victims and suspects through mediation, without a trial or a conviction. The aim is for the victims and suspects to get to know and learn to understand each other, to become able to compensate for the damage caused and enable forgiveness. The neutral mediator is to provide an equally fair solution, agreed by all persons involved in the conflict. Upon consensus, the criminal charges can be dropped. Otherwise, criminal proceedings are started.

The main objectives of the study were:

- to evaluate the customers' satisfaction with the services provided, including questions on: organisational boundary conditions, staff, the process itself, assessment of the results;
- to identify the strengths and weaknesses of the NGO;
- to make recommendations for improvements at an organisational level.

To achieve the project objectives, PINN involved two final year undergraduate students. The students were guided by an academic supervisor from the University of Innsbruck within the Faculty of Social and Economic Sciences and were supported by the Managing Directors of ATA, PINN and the Department of Organisation and Learning (the founder of PINN) within the University of Innsbruck. All project costs were incurred by ATA and exclusively covered the work done by the students. PINN worked on this project on a voluntary basis, waiving their honorarium in favour of the two students being paid for their work. The project ran from October 2000 to May 2001.

The roles of each party were very clearly assigned. PINN tackled the tasks involving organisation, coordination and collaboration of the partners, particularly in the initial stage of the project. The students, guided by the academic supervisor and assisted by the NGO, focused on the scientific part of the project and undertook the work.

To carry out the project, the students used a variety of research methods;

moderated group discussion, involving staff members of associated organisations;



- formal interviews with a staff member of the NGO and with the clients;
- a survey, based on a self-designed questionnaire, jointly developed with the NGO and the academic supervisor, that incorporated the results of the moderated group discussion and of the interviews.

The project outputs were presented by the INTERACTS project in a report and consisted of a Masters thesis, two articles in professional journals and one article in a local newspaper.

The project did not plan an assessment of its impacts per se, but information about the impact of the project "*Analysis on Customer Satisfaction of the Aggrieved in Mediation in Penal Matters*" could be extrapolated from the INTERACTS report.

Impacts

Impacts on the NGO. The study highlighted the importance of providing "customer satisfaction" in the long run, and therefore the NGO became aware of the need to continually focus on aspects relating to staff sensitivity in the training of mediators, on ways to communicate to the victim in which the offender takes responsibility for his/her actions, as well as on improved in-depth dialogues between the parties involved in the conflict. The report also provided a valuable tool for demonstrating to political decision-makers the usefulness of the service of mediation in penal matters offered by the NGO. Furthermore, through the information provided in the articles published by the students in professional journals, the NGO gained enhanced visibility, and thus increased its chances of attracting more clients.

Impacts on students. The project had an overall positive effect on the students. The students gained experience in applying their academic knowledge to a real-life situation, developed new skills and learned new scientific methods. They also acquired experience and knowledge of how to write a scientific report and gained the required skills to publish their work in professional journals.

Impacts on the Science Shop. The project was a good opportunity for the Science Shop to extend its client base, to include NGO's outside of its usual clients represented by businesses and small enterprises. It also helped to enhance the Science Shop's reputation by proving that the services it offers are of value to all parties involved and demonstrating its ability to bridge the gap between theory and practice, between the University and its clients.

Impacts on community. The project findings provided the grounds to sustain and advocate the fact that mediation represents a means for awareness raising of the significant role of the individual and the community in avoiding and tackling crime and settling its associated conflicts, thus promoting more constructive and less restrictive criminal justice results. Furthermore, the study showed that such a service can be successfully provided by an independent community-based organisation such as the analysed NGO, and that mediation provides a way to bring the community closer to the criminal justice system. Community involvement could bring about a deeper public understanding of crime and therefore promote community support for victims, rehabilitation of offenders and prevention of crime.



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Challenges

Different challenges faced by different project's stakeholders either in terms of opening up of new business opportunities or experiencing new aspects in their activities or overcoming certain difficulties. Thus:

- the NGO wanted to improve the quality of the mediation services they provided to their clients, not for business reasons but out of its responsibility as an organisation working in the social field;
- the students had to surpass the barrier of communicating and working with members of different professional groups, but as the same time were excited to discover the steps of doing real life research;
- the Science Shop decided to extend its area of expertise from the business and industrial sectors to civil society organisations and therefore had to adjust the honorariums in accordance with the financial means of this community sector.

Currently, PINN promotes competitive advantages for all involved parties, through systematic and regular contact between the students, the university, the business community and CSOs and defines itself as a service facility for companies and organisations².

The PINN project had positive achievements for all its partners, as follows:

- the NGO reached the desired objectives regarding the assessment of its clients' satisfaction with their mediation services;
- the student gained valuable experience in applying academic knowledge to a real-life situation and learnt how to write scientific reports and articles;
- the Science Shop strengthened its reputation in the market for services provided for the benefit of community and extended its clients base.

4.4 AUSTRIA: Science Shop Vienna

Wissenschaftsladen Wien is an independent institute founded in 1991 in Vienna, Austria.²⁷ It performs research in response to the needs and demands of non-profit organisations, such as human rights organisations, non-profit service organisations, local authorities and social or environmental initiatives. The Science Shop has a focus on research topics like societal challenges, sustainable ways of living and development of participatory methods. They conduct research projects at the national and international/EU level.

Research questions are either submitted to the Science Shop directly by the NGOs/civil society organisations or developed together with them. Besides research projects, the Science Shop also offers services relating to the organisation of conferences, workshops, round tables and expert advice. If necessary, Wissenschaftsladen Wien cooperates with partners specialising in other disciplines such as natural and technical sciences. Their major source of funding is externally-funded research projects.



²⁷ The information in this text is taken from the Science Shops's website: https://wilawien.ac.at/

Concerning the assessment of impact, one project will be presented.

PROJECT: Student Mothers at Vienna's Universities

The starting point for this project was a single mother student who contacted the Science Shop. Confronted with the special circumstances of single motherhood while studying at university, she was close to giving up her studies. Further feedback from students' unions, university kindergartens, contact groups for single mothers and other experts showed that there was strong interest in evaluating the situation of student mothers.

Thus, a project was started in 1997 analyzing all aspects of the situation of student mothers relating to their daily lives, their studies and future prospects. The project was completed in March 2000.

Besides their own financial involvement, the Science Shops got financial support for this project from the Austrian Federal Chancellery, several Austrian Federal Ministries (Environment, Youth and Family, for Women, for Science, Research and Culture), the Austrian Central Bank and the City of Vienna.

Using different methods including a literature research and an empirical investigation with 19 in-depth, semi-structured qualitative interviews, various insights about the situation of student mothers could be gathered. Results showed that single motherhood and studying combines two ambitious and challenging tasks: Acquiring a higher education on the one hand and raising a child on the other. This can result in an enormous workload, high pressure and stress. However, many student mothers decide to stick to this combined challenge, not giving up their studies. They appreciated the possibility of a flexible work schedule during their studies, an opportunity that wouldn't exist if they gave up their studies and moved into the labour market, at least not to the same degree. In this respect, student life seems well compatible with child care concerning the flexibility when compared to professional life.

A further part of the project was to identify factors that were crucial to the question of to what extent studying and child-care can be combined successfully. These factors include the financial situation of student mothers, their housing situation, the social environment, the engagement of the fathers, the childcare support provided by their families, public provision of childcare, the social climate at different universities and/or institutes and their ways of organising their work.

Impacts

This project had several impacts: First of all, the involved partners increased their knowledge about the situation of single mother students. The results of this foundational research project were published as a book to spread the knowledge beyond the traditional academic environment and help improve wider society's understanding of the situation of single mother students.

Furthermore, university professors became more aware of the special circumstances of single mother students so that they could better understand why an exam might be missed or a paper might be handed in after the deadline.

The results could also directly improve the situation of single mother students at Vienna's universities. The identified success factors could be a starting point for improvements.



4.5 BELGIUM: Science Shop at University of Antwerp

The Antwerp Science Shop was established in 2003 (Fisher et al., 2004) and is a service provided by the University of Antwerp, offering a point of contact for non-profit organisations looking for scientific support in the form of research or advice ²⁸. In turn, their questions generate opportunities for socially relevant dissertation research. The Science Shop itself does not carry out the research, but assists in transforming normal questions into research questions and acts as a mediator between organisations and researchers. The research is predominantly carried out by students as part of their Bachelor or Master thesis, guided by an experienced researcher. If the question needs no research, the Science Shop provides expert advice.

Between 2011 and 2015 more than 55 research projects were carried out by the students participating in Master's programmes. The projects mainly focused on the fields of sociology, law, and culture management.

Antwerp Science Shop is one of the regional branches of the Flemish Network of Science Shops. This network is coordinated by a central unit at the Vrije Universiteit Brussel. The Science Shops are supported by the Science Information and Innovation action plan, a Government of Flanders initiative.

PROJECT: HIV and disclosure to partners - Research on the disclosure process for partners of Flemish gay and bisexual men with HIV²⁹

Antwerp came second in the International Science Shop Prize 2012. The International Prize is a biennial award for the best student-led research project carried out for a social organisation through the Science Shop. In 2012, second prize was awarded to a Master's dissertation (2011) completed by Sara De Bruyn, a University of Antwerp graduate in Sociology. Her dissertation, entitled *HIV and disclosure to partners - Research on the disclosure process for partners of Flemish gay and bisexual men with HIV*, addressed three key taboos: HIV, homosexuality and disclosure (telling others that you are HIV positive). The jury praised the social relevance of this topic as well as the clear and useful results produced by Sara's research.

The thesis looked for answers to questions (Adriaensens, 2012) related to the factors that influence the support of care providers' counseling, the guidelines they use, the impact of the client's counseling on the care providers, and the support they need.

These questions were approached from literature studies and a qualitative study of fifteen primary care providers in Flemish AIDS Reference Centers. The main conclusion was that the counseling takes place in various ways and is inextricably linked to the different contexts, guidelines, support to care providers and the impact of care for the client and the care for public health.

This research offered new insights into the support that care providers had at that time and their future needs. The interviewed respondents pointed out the great added value of a multidisciplinary team approach where discussions are opened up and colleagues can combine their different visions in order to achieve consensus.



²⁸ https://www.uantwerpen.be/en/research-and-innovation/science-for-everyone/science-shop/
²⁹ https://www.uantwerpen.be/images/uantwerpen/container1176/files/Wetenschapswinkel/Publicaties%202
010-2011/Masterproef_SaraDeBruyn.pdf

The research concluded that, specifically for practical purposes, it is essential that care providers of (medical) services are empathic people. It would also be good if emergency workers had more opportunities to exchange experiences through practical exercises. Given the different needs experienced by care providers, the author recommends bringing everyone together for a seminar. Testimonials from clients and different workshops, case discussions and role play could then be undertaken. Moreover, the network could be enlarged/strengthened, which also fits within the national AIDS plan.

PROJECT: Bottlenecks and Obstacles in the Prenatal Assistance to the Young Roma women³⁰

This master's thesis was carried out within the Faculty of Medicine. The Department of Epidemiology and Social Medicine (ESOC) of the University Antwerp (UA) is a multidisciplinary group with specialists in the field of medicine, epidemiology, biostatistics, sociology and economics. The project came about after a call from a civil society organisation (Crossroads Migration) that develops and exchanges information about migration, integration and ethnic-cultural diversity. The project studied health aspects in a perinatal setting by questioning the care providers who come into contact with pregnant Roma women.

The main outcome of the project is a set of *Suggestions for better policy* given by the care providers based on their experiences.

- In order to build trust and easily carry out their work, care providers need to know the language and be accustomed with the cultural background. It is recommended that care providers undertake further training both in terms of culture, language, and medical issues. This additional training should have an overarching interprofessional character and be accessible to doctors, nurses and social assistants.
- There is a need to introduce Roma family supporters or intercultural mediators as is currently done for Turkish and Moroccan families.
- The family is a very important element within the Roma community. That is why it is interesting to involve the mother and/or sister in information and prevention campaigns. These relatives often have a greater influence on Roma young mothers than the consultant physician.
- There is a gap in scientific research on pathology of the Roma. At the time of the project, the medical files containing information on prenatal consultations were lost. Therefore, the report recommended that, for a better understanding of the specific pathology, further research should focus on this aspect.
- Smoking behaviour is a major problem acknowledged by all interviewees. Sensitization and prevention campaigns are recommended to address this issue as the target group is not aware of the harmful impacts of smoking.
- Low levels of education and illiteracy remain stumbling barriers. There is a strong need to combat Roma illiteracy and to improve the language knowledge of the average Roma to achieve the complete integration of this population group.



³⁰https://www.uantwerpen.be/images/uantwerpen/container1176/files/Wetenschapswinkel/Publicaties%202 011-2012/Masterproef%20Hans%20Jacobs.pdf

Impacts

CBR and CBPR projects are undertaken by individual students for their graduation theses. No information is available about the potential impact of the project outcomes. Most of the projects end with interesting recommendations, but there is no information about subsequent implementation of the project results.

Challenges

Each of the two projects has its subject or project specific challenges in terms of, for example, research methodologies, community involvement, etc. The main social challenges were related to

- building trust between care providers and community groups;
- the low levels of education and illiteracy of Roma women;
- lack of the awareness of the harmful impacts of smoking.

4.6 CANADA: Centre for Teaching Excellence, University of Waterloo

The mission of the *University of Waterloo's (UW) Centre For Teaching Excellence (CTE)* is to collaborate with individuals, academic departments, and academic support units to foster capacity and community around teaching and to promote an institutional culture that values effective teaching and meaningful learning. The activities it conducts are driven by an inspiring vision aimed at promoting teaching excellence, innovation, and inquiry³¹.

To *foster teaching excellence* CTE organises workshops and intensive programmes for all kinds of teaching fellows, regardless of their rank, ranging from teaching assistants and postdoctoral fellows to new professors and senior leaders. It also offers consultation to University of Waterloo teaching staff on course design and delivery and works closely with the university's departments and faculties on curriculum renewal and programme design. Moreover, it supports the use of Waterloo LEARN, which is a web-based learning management system³², used by over 2500 courses annually.

To *support innovation in teaching and learning* CTE explores emergent technologies, organises workshops, and provides online resources to discuss and disseminate news to its university community as well as to the wider academic world. It stimulates the use of e-portfolios as an alternative way of assessing student learning. CTE also administers the Learning Innovation and Teaching Enhancement (LITE) Grant programme³³, which finances projects focusing on innovative teaching methods, aimed at promoting sound student learning.

To *cultivate inquiry*, CTE provides a variety of valuable services to teachers and graduates, allowing them to keep up to date with the latest changes in the theory and practice of teaching and learning. Such services include: the LITE Grant, running learning communities and offering the Certificate in

³¹ https://uwaterloo.ca/centre-for-teaching-excellence/about-cte

³² https://uwaterloo.ca/learn-help/

³³https://uwaterloo.ca/centre-for-teaching-excellence/support/teaching-and-learning-research-and-grants/learning-innovation-and-teaching-enhancement-lite-grants

University Teaching (CUT) programme³⁴, and organising the annual University of Waterloo Teaching and Learning Conference³⁵.

The Centre provides research grants to faculty, staff, and students who are interested in conducting research on teaching and learning ³⁶. CTE's staff also work as educational researchers³⁷.

PROJECT: Using CBPR to Examine Technology-Related Distractions in the AHS Classroom

Studies show that the use of ICT devices in the classroom can have serious negative consequences on students learning, teaching, and classroom management; therefore, the university teaching staff deemed it a worthy topic for a research project and CTE received a grant to analyse the issue. The project's main objectives were to investigate the opinions and behaviour of students and instructors from the Faculty of Applied Health Sciences (AHS) in relation to the off-task use of technology in class and to assess the effectiveness of a personal technology-blocking application. The project received a LITE Grant and ran from September 2016 to August 2017.

Several important questions needed to be investigated:

- to establish if AHS students consider technology distraction in class to be a problem;
- to find out if students would consider using the blocking application (Freedom app) in class, should this be given to them free of charge for a one-month trial;
- to determine how students perceive the effectiveness of the blocking application;
- to find out what the instructors' opinions are concerning the use of technology by students in class and to assess if there is a relationship between the classroom size and the technology – related distractions;
- to identify what would be the most effective strategies to minimize technology-related distractions in class.

To achieve its objectives the project acquired the required data by conducting surveys on a sample of 478 undergraduate students and 36 instructors in AHS (representing 20% of the students and 47% of the instructors), organising focus groups (ten students and five instructors), conducting classroom observations and trialing the Freedom app with 11 AHS students.

To promote a student-driven change in technology use in class, five students attending the Community Learning Project course employed the CBPR approach.

The survey results showed that regardless of the class size, students' use of class-related technology was significantly higher than their off-task use. Students also stated that they used off-task technology as means of taking a "mental break" in circumstances such as: the subjects taught in class were either to heavy or too fast-paced; lectures lacked interaction; or when they were trying to make more efficient use of time.



³⁴https://uwaterloo.ca/centre-for-teaching-excellence/support-graduate-students/certificate-university-teaching

³⁵ https://uwaterloo.ca/uw-teaching-and-learning-conference/

 ³⁶ https://uwaterloo.ca/centre-for-teaching-excellence/support/teaching-and-learning-research-and-grants
 ³⁷ https://uwaterloo.ca/centre-for-teaching-excellence/about-cte/staff-research-and-service

Generally, students and instructors agreed that on-task technology-use is good. Instead, off-task technology-use was considered questionable for the user and for others. This opinion was shared by a larger number of instructors than students. The Freedom application proved not to be an effective tool in reducing off-task technology.

Using the input provided by the AHS community, the project team produced an educational video and a toolkit for dealing with technology in class.

Impacts

The project had different impacts for students and instructors:

- Students who attended the Community Learning Project course had the opportunity to learn how to conduct CBPR, and improved their knowledge on how to collect and analyse data and how to engage with the community members;
- Instructors benefited from the toolkit containing a list of strategies and resources designed to minimize technology-related distractions in class.

The project had noticeable impacts on:

- Teaching activities. The educational video and newly developed toolkit have already been and will be used in several undergraduate health courses. The project's Principal Investigators (PIs) are also offering ongoing support and assistance to their colleagues from the AHS and the School of Public Health and Health Systems (SPHHS).
- Learning technologies use. The project results were disseminated to SPHHS teaching staff and contributed to the establishment of a wider approach of using technology in class at the faculty level.

The project findings were also presented at the University of Waterloo Teaching and Learning Conference: Opportunities and New Directions 2017 together with the educational video about technology use in class. They were also the subject of three papers submitted to international peer-reviewed journals on higher education and were presented at the 2018 Teaching and Learning Conference that took place on 26 April in the Science Teaching Complex of UW.

Challenges

The main challenge for this project was to promote a student-driven change in technology use in class and to identify the reasons why they use off-task technology.

4.7 CANADA: Science Shop Accès Savoirs, University of Laval

Science Shop **Accès Savoirs** (AS) was established in 2013 upon the initiative of Professor Florence Piront from the Department of Information and Communication at Université Laval in Quebec, Canada.

AS operates according to the Science Shop model that prioritises the demands and needs of the community and gives students the opportunity to work on real issues identified by non-for-profit organisations (NPOs) in the Quebec region.

AS relies on four fundamental values: democratization of science and knowledge, sharing knowledge, social mix and social responsibility. AS considers that science and knowledge are public goods and therefore must circulate easily and free of charge.

As centres of expertise, universities can play an important role in their community. Depending on the needs and complexity of the NPOs' projects, students of all levels (Bachelor, Master, PhD) may be involved in carrying out the work.

The AS programme's aim is twofold: to enable NPOs to benefit from the expertise of the student community while making students aware of what is happening in their community. The programmes enable students to become agents of change, to learn about knowledge transfer, and creates the framework that allows them to acquire practical experience in a professional context. AS also helps to promote social responsibility and sustainable development values by strengthening the teachers' crucial role in making their students aware of the impact they can have on the quality of life of their community³⁸. In addition, working on a real case is an excellent source of motivation for students. They are eager to apply their knowledge and make sense of their actions.³⁹

The Science Shop acts as a dynamic interface between the NPOs which propose their projects and the teaching staff who agree to integrate those projects into the educational context of their courses. The procedure is as follows³:

- NPOs propose research questions to the AS, which require knowledge, analytical and practical skills they do not possess or are generally difficult to access. The Science Shop then presents them to the academic community;
- the research questions are chosen either by the students or by the teachers as subjects for a term paper/project within an appropriate topic course;
- students, supported by the AS team, carry out the projects within the course framework under the supervision of a teacher and then present the results to the initiating organisations;
- finally, the papers are published under open access on the Science Shop's website to allow the wider community to benefit from the work.

To date the AS team has conducted 151 projects involving 119 participating organisations, 976 students and 47 teachers⁴⁰.

These projects cover a very wide range of topics across 17 domains⁴¹, such as agriculture and food, environment and sustainable development, sociology, anthropology, philosophy and religion or information technology and computer engineering, just to cite a few.

The *Faculté des études supérieures et postdoctorales* (Faculty of Graduate and Postdoctoral Studies), at the time of this study, is currently running 29 projects⁴².



³⁸ https://www.accessavoirs.ulaval.ca/organismes/

³⁹ https://www.accessavoirs.ulaval.ca/enseignants/

⁴⁰ https://www.accessavoirs.ulaval.ca/a-propos-2/

⁴¹ https://www.accessavoirs.ulaval.ca/category/projets-par-disciplines/

⁴² https://www.accessavoirs.ulaval.ca/category/projets-en-cours-h18/
The Science Shop also offers pedagogical resources for teachers and students⁴³. These resources allow:

- teachers to introduce the experiential dimension to their pedagogy and therefore enable their students to practice their theoretical knowledge and provide them with transferable skills for the labour market;
- students to act as consultants with clients and develop essential skills in a work environment.

One of the topics initiated by Professor Florence Piront was to increase the interest of African and Haitian universities in the concept of Science Shops, with the aim of strengthening local capacities for action and reflection and therefore promoting sustainable development at local level⁴⁴. In this context, during 2015 – 2017, AS was involved in the SOHA project ⁴⁵. The SOHA project was an action-research project on open science and cognitive justice promotion in Haiti and several Francophone Sub-Saharian African countries.

The SOHA project was initiated by *l'Association science et bien commun*⁴⁶ (Science and Common Good Association) - a NPO aiming to stimulate vigilance and action for open science, serving the common good. The project was funded by Open and Collaborative Science in Development Network ⁴⁷ - a network of researchers-practitioners working on the role of openness and collaboration in science as a transformative tool for development thinking and practice⁴⁸.

The NPO asked AS to conduct a descriptive statistics analysis for the SOHA project, a request which in turn became the subject of a project conducted by a student within the Faculty of Sciences and Engineering.

The objectives of the project were, among others, to understand the obstacles that students from Haitian and French speaking African universities face in the adoption of open science within different disciplines. The student made a descriptive statistical analysis of the results obtained from a survey conducted with 900 participants from 16 universities in 12 countries. The results of the study were to be used by *l'Association science et bien commun* to develop a roadmap for promoting open science as a collective tool for cognitive justice and empowerment in Haiti and Francophone Africa⁷.

Impacts

The Science Shop had a **positive impact on students** who became accustomed with the concept and practice of social responsibility and acquired valuable skills on how to apply their knowledge for the benefit of a social cause. Moreover, students got to know the community better too.

A major impact of AS on the expansion of the Science Shops' network was its contribution, as part of the SOHA project, to the establishment of a Science Shop in Haiti, the *Boutique des sciences Savoirs*



⁴³ https://www.accessavoirs.ulaval.ca/category/ressources-pedagogiques/

⁴⁴ https://scienceetbiencommun.pressbooks.pub/justicecognitive1/chapter/les-boutiques-des-sciences-et-dessavoirs-au-croisement-entre-universite-et-developpement-local-durable/

⁴⁵ http://projetsoha.org

⁴⁶ https://www.scienceetbiencommun.org/

⁴⁷ https://ocsdnet.org/about-ocsdnet/

⁴⁸https://ecsa.citizen-science.net/working-groups/citizen-science-and-open-science/project-soha-open-science-haiti-francophone-africa

pour tous (SPOT), based at *l'Institut universitaire de formation des cadres – Inufocad* (the University Institute for Staff Training).

SPOT was launched in 2016⁴⁹ and is an innovative project aiming to encourage the development of scientific knowledge and professional practices dealing with the real concerns of citizens in Haiti. Inspired by the AS vision, SPOT relies on a two-way science–society model, based on a bottom–up approach for promoting sustainable development in Haiti.

4.8 CANADA: Office of Community-University Engagement, University of Victoria

The Office of Community-University Engagement (OCUE) was established at the University of Victoria (UVic) in 2015 to provide strategic support and vision to the University around community-university engagement. To achieve these goals OCUE connects with other UVic departments, divisions, institutes, offices and schools to help coordinate, communicate and showcase the vast inventory of community engaged initiatives that are already occurring at UVic⁵⁰.

However, projects for the community and involving the community have been implemented at the University for a long time before the establishment of this coordinating body. In 2016-2017, the OCUE co-sponsored a research project, Community-Engaged Research at the University of Victoria 2009-2015 (Tremblay, 2017). 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 of the project was a brochure with 12 impact case studies that illustrate the impact of community-engaged research occurring at Uvic (Tremblay, 2017a).

PROJECT: The 2060 Project- Low Carbon Energy Pathways for British Columbia and Canada

As Canada and the world begin the transition to low-carbon energy futures and the significant reduction in greenhouse gases emissions, it is imperative that long-term technology explicit models of this transition are created. These long-term visions provide the quantitative and qualitative evidence to assist policy makers, electrical utilities and project developers with the necessary knowledge to ensure the timely and feasible development of energy systems. The project 2060 envisioned a key role in these processes by examining the potential impacts of integration of large-scale energy systems in Canada under various carbon policies and global growth scenarios. The project aimed to produce knowledge that could be used effectively by policymakers, academics, industry and others to shape programmes to reduce greenhouse gas emissions.

The project was initiated through funding provided by the Pacific Institute for Climate Solutions (PICS) and is based within the Institute of Integrated Energy Systems at UVic. The first step of the project was to hire additional students to develop 'high quality personnel' (HQP) and drive forward research efforts. Outreach work and the development of an advisory board helped scope and direct the research. The funding paid for the development of HQP, expansion of research goals and regular collaboration with all major players in the energy, electricity and environmental sectors.



⁴⁹ http://lenouvelliste.com/lenouvelliste/article/160194/Savoirs-pour-tous-SPOT-une-autre-maniere-de-servirla-communaute-haitienne

⁵⁰ https://www.uvic.ca/ocue/about/index.php

The project used modelling and optimisation tools to provide a clear indication of the energy system response under different scenarios and resiliency based analyses. The project aimed to bring a comprehensive understanding of the interactions, intended or otherwise, resulting from political decisions, disruptive technology advances or economic market changes⁵¹.

Besides numerous journal publications (over 15 articles in peer-reviewed journals and many other publications), the project received extensive media coverage. The project developed over ten multimedia products. One of the outputs of the project was Megawatts and Marbles⁵², an interactive educational tool developed to help identify the opportunities and challenges associated with developing affordable, renewable electricity for both sustainable cities and provinces. Students have taken the game to various community groups (City of Victoria, BC Hydro, IdeasFest, Manitoba Hydro, Sierra Club, Renewable Cities, etc.) to provide energy literacy workshops and to better inform the debate around decarbonising the electrical system.

There has been consistent collaboration between the students, researchers and collaborators throughout the project. Each new research avenue was explored in direct consultation with partners, project scope is investigated and regular 'check ins' on research findings occur. Final outreach activities and dissemination were carried out in conjunction with partners.

Impacts

The project increased the stakeholders'/clients' knowledge of how research is done, as stakeholders were actively involved in shaping research tasks, discussing the results and disseminating information about the project (Tremblay, 2017a).

The project/Science Shop helped develop continuing relations between academics and civil society organisations – the project strengthened community-university networks (directly working with government, utilities, private sector and municipalities).

The project influenced the direction of further research in the subject area – the project is in active discussions with the community of utilities and developers across Canada about future research topics. Also, more generally, it is likely to influence the direction of further research, as project results were widely disseminated in academic literature and were used for new theory development.

The project contributed to building community sector capacities. The developed educational tool helped cities and provinces identify the opportunities and challenges associated with developing affordable renewable electricity, and, generally, increasing energy literacy.

The project activity is likely to produce long-term benefits for the community as the project results directly contribute to the sustainable development tasks of the country.

The project research found and promoted new methods, technologies or tools to be implemented by enterprises – this is likely, as the project results are intended to be used, among others, by industry.

Publication of the project results:



⁵¹ https://onlineacademiccommunity.uvic.ca/2060project/approach-2/

⁵² Megawatts and Marbles: The Energy Workshop. http://megawattsandmarbles.com/

- raised awareness of the issue(s) more widely project results were disseminated across the country. Research findings were directly conveyed and utilised in provincial discussions around long-term energy transitions. The project claims improved community awareness of the physics-based realities of proposed renewable energy systems 'solutions'.
- caused alternative policy options to be considered, as the impact on policy was one of the main goals of the project. Student output has helped provincial ministries and independent power producers to develop policy and projects which will enable BC and Canada to transition to a low-carbon future.
- is likely to lead to improvements in an existing policy, programme or service, taking into account project aims and results.
- is likely to lead to new research in the subject area, as the project included research innovations (novel model code development).

Development of student skills, knowledge, attributes towards capacity building. Students were required to publish in academic journals, write website blogs and give presentations to partnering organisations. Through this, they developed the ability to professionally present their academic findings to relevant stakeholders. Also, students were able to take internships and co-op positions with the partner organisations.

4.9 FRANCE: Science Shop Nord - de France in Lille

Boutique de Sciences Nord - de France in Lille (BSNFL) was established in 2015⁵³. The Science Shop is supported by the Group of Universities and institutions *Lille Nord-de France* and Maison Européenne des Sciences de l'Homme et de la Société⁵⁴ and its operating and ethical principles are contained in a charter. BSNFL is a member of the francophone Science Shop network and the Living Knowledge network. It carries out its work in an office with one employee and is governed by a multidisciplinary Scientific and Orientation Council (SOC), made up of researchers and civil society organisations.

The Science Shop's mission is to collect and study NPOs' concerns, to translate them into research questions, to select projects, and to ensure follow-up research in a spirit of co-construction. The goal of co-constructing knowledge to develop innovative and responsible research is a key element of the BSNFL's work. It adopts participatory open research methodologies that focus on the real concerns of civil society and proposes to the stakeholders (citizens, researchers, students) an active citizenship practice in science and technology.

BSNFL is a young Science Shop that started in 2016, connecting:⁵⁵

 NPOs with researchers and students whereby problems of general interest are jointly reformulated into scientific questions. The Science Shop accompanies the NPOs during the entire duration of the research project to collaboratively find a concrete answer to the

 ⁵³ http://www.cue-lillenorddefrance.fr/sites/default/files/boutiques_de_sciences_lille2016.pdf
 ⁵⁴ https://www.meshs.fr/

⁵⁵http://www.cue-lillenorddefrance.fr/sites/default/files/boutique_des_sciences-depliant_4_volets-19x21cm-v2-bd-1.pdf

question. This work provides the NPOs with validated information that can be used to better understand problems and take action;

- Masters students, who are offered the opportunity to supplement their theoretical knowledge with a field internship. The internship topics are assessed according to their feasibility and scientific perspectives. Students are assisted by researchers in helping the NPOs to find scientific answers to their concerns. The internship opportunities can be found on BSNFL' site⁵⁶;
- researchers who supervise and guide the Masters students in their research.

PROJECT: International cooperation projects: Diagnosis of an associative database

This research is a pilot project that resulted from a collaboration between the association *Lianes Cooperation* (LC) and BSNFL. LC is *The regional multi-stakeholder network of international cooperation in Hauts-de-France*⁵⁷, established in 1999 following regional and national meetings of the international cooperation in autumn 1997, which initiated a vast movement of exchanges and collective reflection on the practices of cooperation of the various stakeholders⁵⁸. The network brings together a range of stakeholders involved in international cooperation projects, associations, communities, educational institutions or companies.

To invigorate the network, the LC developed, together with its members, a database of all international cooperation projects in the Hauts-de-France region, involving about 2000 actors. Eager to provide adequate services and respond as best as possible to the needs of its members, LC was interested in investigating the usefulness of its database.

The objective of the project conducted in 2017 was to develop a research process to better identify the needs and expectations of the regional actors of cooperation, through the combined efforts of the Science Shop, a research team (involving a Masters student in Engineering Cooperation Projects and a research professor in Sociology) and LC.

To assess the stakeholders' needs and expectations in connection with the use of the shared database, the research team conducted a survey. The questions were mainly related to the stakeholders' ways of operating the database, and also their knowledge and habits.

The survey conducted with a first sample of the organisations listed in the database showed, among others, that:

- the database was not the stakeholders' first choice as a method for developing and promoting their networking but rather a means to interconnect links and discover each other;
- the stakeholders were not particularly interested in the database and identified other needs.
 The existing data was seen to be partly obsolete or difficult to exploit and therefore its use was limited. Also few actors knew what data was available;



⁵⁶ http://www.cue-lillenorddefrance.fr/?q=culture-patrimoine-societe/boutique-des-sciences

⁵⁷ LC is member of the Regional Multi-Actor Networks - Réseaux Régionaux Multi-Acteurs (RRMA) in France, http://lianescooperation.org/

⁵⁸ https://lianescooperation.org/lianes-cooperation/historique/

- the stakeholders showed a willingness to participate in the improvement of the tool, recognising its usefulness provided that the data was reliable, up-to-date and usable;
- the database would be considered more useful if it met the needs of its users, particularly if it could help to make the activities and achievements of network members more visible, by supporting their actions and making them known;
- the respondents' needs were related to the life of the network (its revival, periodic meetings between actors for sharing their experience) and training for knowledge sharing;
- part of the interviewed associations believed that they could find the necessary expertise in the LC network, and others were looking for new partnerships to expand their actions;
- to reach more people it was deemed useful to create a calendar where the associative structures could promote themselves and the meetings they organise;
- the newsletter, currently offered by LC, was viewed to be a good asset for knowledge sharing.

Impacts

The real impact of the pilot project on the LC network cannot be practically assessed due to the short time elapsed since its completion. Instead, its results invite its actors to contribute to the definition and implementation of the best methodology to improve the database of the LC network, and to define in a participatory way its future uses. Thus:

- A participatory construction of the database would make it possible to select relevant indicators valued by all actors. This implies a collective construction of the database tool, starting with the diversified needs of the actors and followed by a constructive workshop involving the interviewed persons and interested stakeholders to improve the database.
- The actors need to be involved and see their difficulties lightened by the network rather than just be expected to contribute to the network's outreach by providing data.
- Updating the database should be one of the next actions to be carried out by LC to allow an inventory of international cooperation in the region to be established.

Challenges

The main challenge was to conceive an exhaustive questionnaire, covering the diversity of the stakeholders' characteristics (size, field of activity, area of intervention, needs, expectations etc.), in order to properly redesign the database, and make it effective.

4.10 FRANCE: Science Shop at University of Lyon

The Science Shop (Boutique des Sciences) of the University of Lyon was established in 2007 to answer specific questions raised by CSOs organisations in a scientific manner. The Science Shop aims to connect the research community with civil society, allowing citizens to receive professional answers to their concerns related to societal issues, including health, environment and technology. General interest issues raised by citizens are examined and translated by a scientific committee into research questions to be solved by students. Depending on the nature of the problem being investigated, the study may result in an academic report, an action plan, or a production of prototypes.



The common formats used by the Science Shop for providing community-based research are internships, challenge/hackathons and tutored projects.

- Within *internships*, master students are selected to perform field research for a period of four to six months, in close collaboration with the concerned CSO organisation, under the supervision of a scientific researcher and of his tutor. The study is carried out during the second semester and consists of a bibliographic research on the topic, followed by a scientific methodology for gathering the necessary data to perform the analysis. It concludes with an academic report coupled with a synthesis document.
- The challenges/hackathons are collaborative events that involve multidisciplinary teams of students together with appropriate professionals and civil society representatives. The teams are gathered for a period ranging from two days to a week and tasked with coming up with concrete solutions to a specific problem. The events end with a demonstration of each team's prototype in front of an expert jury.
- Tutored projects represent practical cases raised by groups of citizens that are transformed in scientific topics presented to the students at the beginning of the semester and incorporated into the university curriculum. These projects can last from a few weeks to one academic year⁵⁹.

One of the programmes with regional impact that includes internship projects, is EcoAttitude – a Laboratory of associative research created by URCPIE AuRA. The URCPIE AuRA is an association that brings together seven Permanent Centers for Environmental Initiatives (CPIE - Centre Permanent d'Initiatives pour l'Environnement) spread throughout the Auvergne-Rhône-Alpes region. EcoAttitude is in fact an "action research programme" that started in 2008 with the aim of monitoring and modifying the pedagogical practices and methods used by environmental educators, in order to produce behavioural changes in their trainees.

PROJECT: Does support for change have a place in the evolution of environmental education and sustainable development (EESD) professions?

The project was carried out by a Master's student for six months within the association URCPIE AuRA, with the support of the Science Shop (Jeannin, 2017). The project analysed environmental educators' practices and their impacts on trained groups, by seeking to provide answers to questions addressed by URCPIE AuRA to the Science Shop: "How can environment and sustainable development educators support the emergence and strengthening of groups involved in environmental and sustainable development innovations? and "Can these groups be turned into 'active minorities'?". The aim of the study was to map the existing links between trainers and trainees, to identify levers for developing the impact of environmental education training, particularly in terms of self-sufficiency.

To provide the framework in which each URCPIE AuRA member participated in the Eco-Attitude programme, as well as for assessing the overall impacts of this participation and for measuring the potential for disseminating the knowledge acquired, the study relied on a field survey (questionnaires and individual interviews).



⁵⁹ http://boutiquedessciences.universite-lyon.fr/boutique-des-sciences-/

The study revealed that EESD promotes creativity and innovation and provides citizens with new skills such as critical thinking or ethical and political reflection, and thus helps citizens to respond to new constraints such as adaptation to climate change or to cope with energy issues. Moreover, EESD helps people reflect on their past and current values, guides them to work on their resistance to change and assists them with adapting previous perceptions to new knowledge. This adjustment is in fact the critical issue EEDD professionals have to act on, by proposing practical tools, by giving meaning to citizens' actions, by supporting them in their efforts, and by facilitating mutual knowledge exchange.

The results of the study showed that the EESD profession is subjected to change and therefore the EESD professionals themselves need to be supported in this professional change. To sustain this evolution, further reflection and experimentation are needed. Partnership with research in the human sciences and the establishment of experimental laboratories are relevant actions allowing concepts to be tested on the ground and learnt.

Therefore, the Eco-Attitude programme can have a strong impact on the whole field of EESD because it participates in a broader reflection on the evolution of EESD professions and their teaching methods.

Impacts

Despite the fact the Science Shop Lyon is a young one, and no formal assessment of its influence on the community it serves is available, the impact of its activities rooted in community–based research, can however be inferred from the results of the various projects in which it has been involved. Since its establishment, the Science Shop has increased its activity portfolio, been involved in 33 internships projects⁶⁰ and from 2017 diversified its activities to accommodate two challenges/hackathons⁶¹ and one tutored project⁶². These developments demonstrate the community's awareness of, and trust in the Science Shop's services and the credibility and usefulness of the results it provides to its community.

Challenges

The main challenge, shared by most associations, was the need to formalise a way to increase volunteering opportunities within their structures and, more broadly, to stimulate the citizen engagement.

⁶⁰ http://boutiquedessciences.universite-lyon.fr/stages/

⁶¹ http://boutiquedessciences.universite-lyon.fr/challenges/

⁶² http://boutiquedessciences.universite-lyon.fr/projets-tutores/

4.11 GERMANY: Bonn Science Shop

Founded in 1984, Bonn Science Shop has not only been active for more than 30 years but has become one of the largest Science Shops in the world over this time.⁶³

The impact Bonn Science Shop aims to achieve is fundamentally set in its scope: Key societal challenges are tackled by the Science Shops by involving citizens in the research process.

The Science Shop's first project was a study on the education of environmental advisors to support unemployed academics in finding jobs in environmental-related jobs. As a spin-off to this project, they started to collate job ads in newspapers that the project participants might be interested in. Demand for this service grew and subsequently, a weekly magazine of job ads for graduates of humanities and social services was published. Later, a further publication for jobs in education, culture and social services was launched. Those magazines have become a backbone of the Science Shop's financing. In the early 2000s, when unemployment in Germany was at a record high, the magazines had around 11,500 subscribers. The publications are of relevance in terms of concrete impacts. The main aim of the magazines is to support the matching process in the job market for graduates from different subjects. Hence, it leads to concrete outcomes for the subscribers of the magazines.

PROJECT: Serious Game about Renewable Energy Technologies for Girls (2015 - 2017)

In cooperation with Technische Universität Dresden and the game studio The Good Evil, Bonn Science Shop has developed a serious computer game to encourage girls to take up occupations that are considered "male" occupations with a strong technical focus. Different career choices between men and women are considered to be a main reason for the gender pay gap, the negative premium for women in the labour market. The reason behind this is that a majority of women move to occupational fields that are lower paid, e.g. in the healthcare and education sector, compared to high-skilled technical professions, which are dominated by men. By raising awareness of such technical professions and their career paths among young girls in schools, the game SERENA (Serious Game about Renewable Energy Technologies for Girls) can be a step towards more equal career choices between men and women. Choosing a serious game for this can increase the impact of the project as compared to other initiatives in this field in several ways. Firstly, pupils aged between 12 and 16, who are the target group for this project, might be more receptive to a game than to more traditional ways of presenting the topic. That might directly increase the impact it has on them. Secondly, a computer game can make use of effects of scale as it is non-rivalry in its use and an unlimited number of recipients can play the game at the same time. Thirdly, the game can have a long-lasting effect as it can be used over a long period of time. While it might be technically outdated after some time, decreasing its attractiveness, the cycle of use is still much longer than one-off programmes.

While there are very good reasons for organising face-to-face activities such as workshops on this topic, the use of a serious game in this context shows how the choice of method can influence the impact of

⁶³ For an extensive case study on the Bonn Science Shop, see Deliverable 2.2 (Garrison 2018). Parts of the text in this description of Bonn Science Shop are directly taken from Deliverable 2.2 (Garrison 2018). The information used for this case study is taken from an interview that has been undertaken in the process of creating Deliverable 2.2. Further information is taken from the Science Shops's website: https://www.wilabonn.de/en/



an initiative. While for many other fields of applications computer games might not be the method of choice, it can be a good fit to maximise impact in this field.

Impacts

Bonn Science Shop Bonn is also active in educational activities. Here, direct impact evaluation plays an important role in their work. All of their educational activities (e.g. workshops, training) are formally evaluated via surveys among the participants to constantly improve their offer. For bigger actions, longer interviews with participants are used to support the results of the structured surveys and offer more in-depth insights. For educational materials developed for schools or other educational bodies, they also seek feedback from teachers and pupils.

In addition to its regular publishing and education activities, the main focus of Bonn Science Shop's research is its work on specific projects.

In some of these projects, formal evaluation is undertaken with project partners, funding bodies and stakeholders concerning the success of the implementation or potential continuation actions.

The impact of their projects can also be seen indirectly in the number of further research requests they receive. For example, a project on the sustainable development of business parks led to further requests for support relating to this subject. Similar developments have been observed in other projects.

In general, Bonn Science Shop has witnessed a significant growth in their impact in recent years. Citizen science and participatory research is becoming increasingly popular in Germany as well as in an international context. As one of the most prominent stakeholders in this field, Bonn Science Shop is confronted with a growing number of project and consultancy requests by different organisations, including universities and other public organisations, either to collaborate or to assist with establishing similar structures on their own.

4.12 GERMANY: District Future - Urban Lab, Karlsruhe Institute of Technology,⁶⁴

In 2012, the Karlsruhe Institute of Technology (KIT) founded the research and development (R&D) project District Future - Urban Lab. The idea behind the project was an R&D approach towards the development of a whole city district.

The logic behind this is the following: By not concentrating on individual, closed projects but linking numerous approaches that are interrelated and cover the environment of a complete district, it is possible to achieve far more extensive impact on cross-cutting issues such as energy concepts, mobile concepts, life cycle concepts or social and economic life in their community.

The project is hosted by the Karlsruhe Institute of Technology but includes other stakeholders from various backgrounds and institutions. These include researchers from other institutions, politicians, civil society organisations and citizens. Their backgrounds cover various subjects including architecture, health, sustainability, education or environmental issues.



⁶⁴ http://www.quartierzukunft.de/en/

In terms of the impact a Science Shops can have, the approach of District Future - Urban Lab is highly notable and might serve as an example for other initiatives as well. District Future - Urban Lab combines two approaches to the Science Shop concept to create an immersive, interrelated approach. By bringing together people from various fields that are of relevance to the central topic of the initiative - urban development - it is possible to create a deep-acting effect and and achieve broader impact than individual initiatives could have.

The extensive approach is further backed by a third dimension: The project involves a broad range of different methodological approaches, including workshops, repair cafes, citizen meetings, environmental experiments, festivals and conferences.

PROJECT: Sustainability Experiment "Beds and Bees"

In the project Beds and Bees started in 2016, beds to grow vegetables and beehives are being built at various places in the district Oststadt of Karlsruhe. The beds and beehives are built by residents of the district with professional assistance. Once set up, the residents are able to cultivate them on their own. So far, one bed and one beehive has been set up and another bed is planned that is specifically planned for people with disabilities. Participants of the project work in two teams. One team is responsible for cultivating the beds, the other for settling bees in the district.

The project has an impact on several levels: Firstly, citizens involved in the project gain knowledge about beekeeping and cultivating beds. Secondly, they gain practical, hands-on experience rather than just theoretical knowledge. Thirdly, citizens are actively involved in the development of their district. Fourthly, there is a concrete infrastructure created during the project through the installation of beds and beehives that can shape the district more fundamentally and in a longer run than a project without such a physical outcome might do.

Impacts

The impact of the Science Shop can be seen on two different levels. One is its role as a pilot for future projects with similar goals. Serving as a future best-practice example for other projects is an explicit goal of District Future - Urban Lab. Whether this will really be the case depends on how successful the Science Shop is over the coming years and how effectively it communicates externally to make a wide audience aware of it. While this remains a question for future evaluation, the goal of serving as an international best-practice example as a long-term impact of the project is comprehensible: Urban areas have become bigger over the last decades, more and more people inhabit relatively dense areas.

Challenges

At the same time, new possibilities and challenges arise in relation to major topics such as climate change or digital transformation. Such core topics demand an immersive approach to deal with them. Begining this on the district-level and involving different groups of persons can be a starting point for such a model.



4.13 GERMANY: Science Shop Hannover

Wissenschaftsladen Hannover e.V. was founded in 1986 and is based in Hannover.⁶⁵ The Science Shop is an independent non-profit organisation. Its main sources of funding are membership fees and donations. The projects of Wissenschaftsladen Hannover have a clear focus in terms of topics and geography, namely the field of ecological research and the region of Hannover.

The main objective of Science Shop Hannover is to bring together citizen and academic knowledge and provide ecological consultancy. To achieve this, the Science Shop mediates different interests and stakeholders in four fields:

- Explanatory Models: Concrete possibilities of how and why. This is mainly done by providing success stories and best practice examples.
- People: Bringing skills together and promoting communities.
- Knowledge: Compiled by experts and lay people, constructive and solution-oriented.
- Equity Options: The "Markets of Opportunities" show assets and projects with considerable opportunities.

The projects are developed by the Science Shop and are conducted in collaboration with network partners. Concerning the assessment of impact, one project is highlighted below.

PROJECT: Environmental Consulting

Wissenschaftsladen Hannover provides advice on household waste disposal, recycling and energy savings. The Science Shops team has been visiting private households for 16 years and gives helpful tips on waste prevention, waste separation and how to save energy in the home.

For example, the Science Shop provides waste management consultancy in multi-family houses and large residential complexes. They are particularly concerned about container sites where there are significant problems with waste separation. These are locations where waste bags or containers for waste paper or packaging are filled so incorrectly that they are not collected. Materials for recycling are only picked up free of charge if they are sorted correctly.

The energy savings consultancy that is offered encompasses four areas. Firstly, a power consumption assessment is undertaken. This shows whether a household is currently above or below the average power consumption. The second area is lighting and alternatives. The basic idea is to provide advice on the use of more economical alternatives available after the ban on incandescent lamps in the EU. Depending on the place of use, it is about the right light color in Kelvin, the light intensity in lumens and of course the saved watts and Euros. Thirdly, advice is given on "secret" electricity consumption: many people are unaware that standby modes, heating, aquarium or garden pumps are all power guzzlers. Calculation models on how many watts, how many hours, how many days a year cause which consumption is therefore valuable information for many. Fourthly, the consultancy includes "new purchase advice". The differences between A, A + to A +++ refrigerators, TVs, dryers or heating pumps



⁶⁵ http://www.wissenschaftsladen-hannover.de/

are presented to the clients. Finally, potential savings are identified, which often lead to surprising insights.

Impacts

The project has several impacts: first of all, the project increases the citizens' knowledge of waste management and energy savings, not just theoretically but also with practical examples. They learn about correct waste separation and how to reduce their energy consumption. With improved knowledge about waste separation, the probability of waste being collected is increased, resulting in better and more recycling.

The energy consultancy helps citizens to save energy. Besides the ecological impact, households can save money by reducing their energy consumption.

The longer-term impact of both aspects - waste management and energy savings – is a positive effect on the environment. Better recycling means more materials can be reused and lower energy usage results in less carbon dioxide being released into the atmosphere.

4.14 GERMANY: Science Shop Potsdam

Wissenschaftsladen Potsdam e.V. is a Science Shops based in Potsdam, Germany. It was founded in 2011 as an independent non-profit organisation and is active in applied research in natural sciences, engineering and science with and for society. The Science Shop is run by volunteers and also provides a physical space where citizens can collaborate on science-related projects developed by the participants themselves, including diverse approaches like technical work in a Fablab or educationally-oriented work with modern technology like a 3D-printer. ⁶⁶

Impacts

Wissenschaftsladen Potsdam has a different approach towards the research process than many other Science Shops analysed within the framework of this report. In general, the majority of Science Shops in Europe are university-centred. This often means that they use participatory methods and involve citizens in the research process. The general process, however, is strongly influenced by the university background. Based on civil society requests, research questions are formulated and answered by scientists (alongside citizens) in research projects.

Most German Science Shops are independent institutes and follow a different process. This is true also for Wissenschaftsladen Potsdam. Their aim is not to find answers to pre-defined research questions but they set a stronger focus on the participatory aspect. In their repair cafes, anyone can bring broken items that are fixed together. The FabLab and its materials and equipment can also be used by anyone. Activities do not necessarily have to fulfill a classical research focus but can also serve an educational purpose by teaching novices how to use new kinds of technology.



⁶⁶ For an extensive case study on the Wissenschaftsladen Potsdam, see Deliverable 2.2 (Garrison 2018). Parts of the text in this description of Wissenschaftsladen Potsdam are directly taken from Deliverable 2.2 (Garrison 2018). The information used for this case study is taken from an interview that has been undertaken in the process of creating Deliverable 2.2.

Therefore, impact is not measured by the number of implemented projects or the effects specific projects have had on the community but rather by the number of people involved and their degree of involvement. These are the key figures for the Science Shop which show whether they are fulfilling their scope of offering research-related activities to everyone who is interested.

As such, Wissenschaftsladen Potsdam has a considerable impact. They have been operational for seven years now, and their offerings have grown steadily over time. They have become a considerable pillar of their local community and have inspired volunteers in a nearby community to start working on the establishment of a similar type of Science Shop.

Wissenschaftsladen Potsdam does not formally evaluate the impact of its activities, partly due to limited time and resources and the difficulty of defining what "successful impact" actually means. Besides the obvious success metric of remaining active, the inclusion of stakeholders from different societal groups and being an essential part of the community is what is most important to them.

Success is evaluated in terms of new ideas that spring from the collaboration of people with different backgrounds. Besides the creation of new research questions and projects, this can ultimately also lead to the creation of new business ideas and jobs, as they have experienced in the past.

4.15 HUNGARY: Science Shop at Environmental Social Science Research Group

The Science Shop at the Environmental Social Science Research Group (ESSRG) was established in 2004 and operates as a Hungarian contact point for the Living Knowledge and Science Café Networks, which promotes public dialogues around socially relevant scientific issues. It is also a member and supporter of the European Citizen Science Association (ECSA)⁶⁷.

ESSRG is a small research and development enterprise, a company working mainly on environmental and social issues. Fellows of ESSRG have their professional roots in various disciplines (agrienvironmental engineering, ecological economics, rural and environmental sociology) and are active in different global and European scientific networks. ESSRG has developed a special expertise on the biodiversity and nature conservation science-policy interface, conducting policy analysis, stakeholder engagement, and participatory planning and valuation⁶⁸.

The Science Shop at ESSRG aims to build a complex and established structure of local cooperation among the university, students, the NGO sector, local authorities, and members of the community so that locally available resources are effectively utilized to improve the well-being of the community in Gödöllő, Hungary. In order to reach this aim, the Science Shops undertakes various community and stakeholder engagement activities by involving local people, particularly marginalised communities, as co-researchers. It uses action research methods and community development, participatory planning, conflict management and mediation competencies⁶⁹.

PROJECT: Forgotten citizens of Europe: Participatory Action Research for Local Human Rights

This project was a part of the project Public Engagement with Research and Research Engagement with Society (PERARES), which received funding from the European Community's Seventh Framework



⁶⁷ https://www.essrg.hu/en/services/

⁶⁸ https://www.essrg.hu

⁶⁹ https://www.essrg.hu/en/services/

Programme (FP7/2007-2013) under grant agreement no. 244264. PERARES aimed to strengthen interaction in formulating research agendas between researchers and civil society organisations (CSOs). Partners from Hungary, Spain and Ireland piloted and assessed a range of forms of agenda-setting dialogues between researchers and CSOs on the topic of Roma minority/traveller's (Málovics et al., 2012).

One part of the project conducted by the Science Shop at ESSRG was aimed at exploring local human rights problems and the experiences of the Roma communities in Szeged in Southern Hungary. During the pilot phase of research, the following research objectives were formulated:

- {Content level} What are the most pressing human rights dimensions (housing, food, healthy environment, education) of marginalization in case of the Roma communities in Szeged?
- {Process level} How it is possible to facilitate the positive development of the research process as well as the personal and group performance of the participants? How it is possible to support the organizational sustainability of the research group?
- {Outcome level} How it is possible to establish local consensus around an extra-curricular afternoon schooling programme for marginalised Roma families?
- {Output level} What are the most important social conditions for extra-curricular afternoon schooling? How do different stakeholders understand these preconditions? How do they envision the ideal institution? What are the most typical organisational issues (location, age groups, pedagogical programme, motivation for participation, preventing dropout) to tackle?

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.

Participants of the research involved an academic group (including Roma students) with special expertise on the social aspects of environmental problems, a local group of a national eco-political civil organisation, and members of the Roma community as experts familiar with the conditions and the problems of the local Roma population.

The research started with the formation of the research group and by studying existing literature on participatory research and the situation of the Roma population. Fieldwork was based on the semistructured interview research method. Interviews were conducted with about two dozen people. The interviews were made in pairs (sometimes in threes, including at least one experienced interviewer) with notes taken that were later recorded in interview summaries with a defined format.

In the second phase, the researchers processed the available information broken down into thematic groups based on the interviews, and evaluated the data they received in the context of civil rights. The results were discussed in a forum consisting of the interview participants, which allowed research/project ideas for the upcoming phase of the work to be identified. The forum also contributed to further enhancing mutual trust among the participants.

In the third phase, a second forum was organised with the aim of selecting one or two projects that would be realised together. The research team presented five ideas for discussion that had come up



in the interviews or during the first forum, and the participants of the second forum chose two options. Finally, one project idea – the establishment of an alternative school for Roma children was selected.

Impacts

The evaluation of the project showed that the participatory research in itself does not allow the researchers to design a detailed and exact research scheme in the beginning, as the research questions are formed and re-defined through the process.

Regarding involvement, the participants had real opportunity to contribute to the project's content. Moreover, during the project implementation, trust-based relationships with stakeholders were built. Having researchers embedded in the local community, their "civic roles", personal relations and continuous presence provided access to resources.

Beyond the inclusion of their voices in the research design, students received practical research training, and were subsequently given other research contracts in the wider community. Students were provided with opportunities to gather on-site and practical experience at local NGOs that will provide advantages for them in the labour market. In addition, they were encouraged to participate in, and actively contribute, to local community initiatives through their engagement activities.

Through active participation, the community had an opportunity to select relevant actions to help them improve their situation. The open talks within the community also helped to show the practical usefulness of research.

The longer-term impacts of the project are based on the continuing relations (network) between the stakeholders and establishment of the alternative school for the Roma community, which will ultimately improve the Roma minority's quality of life and integration into the wider community. Roma children will be able to improve their education and as a consequence their preparedness to enter the labour market.

4.16 IRELAND: Access & Civic Engagement Office, Dublin Institute of Technology

Dublin Institute of Technology (DIT) is one of the largest higher education institutions in Ireland. DIT is an academic environment that merges the quality of a traditional university with career-focused learning, being engaged with and within the community to contribute to technological, economic, social and cultural progress⁷⁰.

DIT has a strong legacy of civic, public and business engagement and is committed to access to education for all, coupled with the provision of high quality student development and success through the implementation of community-based learning in its programmes⁷¹.

In 1999, DIT established the Access & Civic Engagement (ACE) Office with the aim of supporting individuals, as well as communities experiencing educational disadvantages in successfully dealing with the socio-economic barriers preventing their access to higher education. Thus, DIT develops inclusive

⁷⁰ http://www.dit.ie/about/profile/missionstatement/

⁷¹ https://arrow.dit.ie/comlink/

programmes to support students from disadvantaged schools and from economically disadvantaged backgrounds in applying to higher education and provides post–entry support⁷².

ACE Office's role is to coordinate DIT's civic engagement programmes and activities, by establishing strong partnerships with academic staff, DIT students and a wide range of community and education partners⁷³. It coordinates activities such as: community-based research and learning, access entry routes, engagement outreach activities, local engagement programmes in the Grangegorman area and research and policy and practice-impact activities.

The *Programme for Students Learning with Communities (SLWC)* at DIT was set up in 2008 with the support of funding provided by the Higher Education Authority's (HEA) Strategic Innovation Fund (SIF). Its aim is to support staff and students in developing and engaging in CBL or service-learning. The programme creates local, national and international links with communities and voluntary organisations, educational institutions, and industry⁷⁴.

Two full-time coordinating staff were appointed at that time for three years to develop the programme. SLWC is based in the Directorate of Student Services, as part of the DIT ACE Office (McIlrath et al., 2014). SLWC's role is to coordinate community-based research within DIT, resulting from questions and concerns expressed by underserved community groups and organisations (e.g. NGOs, charities)⁷⁵. Questions are developed into research ideas, classified by discipline, and presented to students and academic staff via the SLWC website (www.dit.ie/ace/SLWC) and periodic e-mail updates. Individual students, under the guidance of their supervisor, can apply to undertake research in response to the proposed community ideas, or, alternately, professors can decide to work with groups of students on research questions from one or more community partners. SLWC staff facilitate a meeting between the community, academic and student partners to discuss the subject in more detail and agree a suitable approach. The research project can take the form of a product concept or a design, or a more traditional format, such as a thesis or research report (McIlrath et al., 2014). SLWC, also known as a Science Shop is part of the European Living Knowledge Network of Science Shops⁷⁶.

During the first academic year 2008/09 of the SLWC Programme (Gamble and Bates, 2011), undergraduate and postgraduate students participating in 31 modules, from all six faculties in DIT, were engaged in community projects. Moreover, at the end of the academic year, 20 additional modules were planned to accommodate CBL or CBR and two major interdisciplinary projects were developed. An evaluation of the overall SLWC programme in its first year of operation was undertaken. Gamble and Bates (2011) present the context and the findings of this evaluation, carried out to reveal both the strengths and weaknesses of the Programme, to identify areas for potential improvement, and to provide an initial insight into some of the implications for the community and for the students.

Due to the programme being in its first year, its broad social consequences could not be assessed. Such an assessment is a complex dynamic process involving lasting relationships with community partners, and long-running projects which have evolved over time. Instead, post-project questionnaires

⁷² http://www.dit.ie/ace/access/

⁷³ http://www.dit.ie/ace/about/

⁷⁴ http://www.dit.ie/ace/studentslearningwithcommunities/

⁷⁵http://www.dit.ie/ace/studentslearningwithcommunities/caniseecurrentideasfromcommunitiesforprojectsre search/

⁷⁶ http://www.dit.ie/ace/studentslearningwithcommunities/usefullinks/

completed by community partners provided an overview of the extent to which each individual project met its objectives.

Impacts

The effects the SLWC Programme and the ACE Office had on the community since 2011 can be appraised from individual analyses of their activities presented in articles, book chapters or research papers⁷⁷.

The evaluation showed the crucial role of having a central office to sustain and coordinate CBL and CBR activities throughout the institute. The staff of the central office made possible a better understanding of CBL and CBR requirements and acknowledges the importance of developing social insight to all partners. The involvement of the ACE office in European funded projects acts as a source of research funding and a hub for research. As the office's activity has strengthened, it has also become a contact point for community groups wishing to access the resources of the institution. Thus, as a result of collaborative projects between community groups and DIT staff and students, the community footprint is becoming visible in classroom teaching and research and is therefore having a direct effect on the Higher Education agenda and the formation of future professionals.

In addition, bringing the community and voluntary sector into formal education can have a direct impact on the students, for whom this sector could become their professional life environment.

The impact of DIT ACE on the community is summarised in the DIT Self Evaluation Report 2017 (submitted to HEA). Thus, since 2008:

- ACE has interacted with 120 community partners⁷⁸ to facilitate greater engagement in higher education;
- over 6,000 students within DIT have completed a Students Learning With Community (SLWC) component of their programme of study and a further 1,000 students volunteer on a variety of causes; the students in DIT have been engaged in collaborative projects with communities undertaking over 140 research projects based on community partners' questions (O'Reilly and Bates, 2014). These projects covered a large spectrum of topics with different degrees of difficulty and were undertaken by PhD, graduate and undergraduate students. Examples of CBR projects include: designing an alternative computer input device for people with disabilities; investigating supports needed by community and adult learners to access Higher Education; comparing the relative effectiveness of different methods of testing for alcohol in breath and urine and researching opportunities to reinvigorate the local community through tourism.
- ACE has facilitated the collaboration of DIT with 29 schools through the Delivering Equality of Opportunity in Schools (DEIS) Programme, and with a consortium made up of 29 organisations
 through the Area Based Childhood (ABC) Programme targeting the Grangegorman area and designed to address socio-economic disadvantage and gaps in services, by offering quality



⁷⁷https://arrow.dit.ie/comlinkart/?utm_source=arrow.dit.ie%2Fcomlinkart%2F2&utm_medium=PDF&utm_cam paign=PDFCoverPages

⁷⁸ Strategic Dialogue Cycle 4, DIT Self Evaluation Report - Submitted to Higher Education Authority, May 2017 available at http://hea.ie/assets/uploads/2017/04/Dublin-IT-Strategic-Dialogue-Cycle-4-Self-Evaluation-Report.pdf

supports from early years of childhood to assist children in their personal and professional development. As lead agency, DIT ACE managed to raise about 1 million € for the ABC Programme from the Department of Children and Youth Affairs (DCYA) and Atlantic Philanthropies throughout the duration of the project.

 striving to provide life-long learning opportunities, DIT has also established close partnerships with industry and community groups. Table 1 provides several examples of such partnerships coupled with the number of students involved.

Partner	Student number
Irish Business and Employers Confederation (IBEC)	250
Marketing Institute of Ireland	83
Ericsson and ICT Ireland	20
Institute of Advertising Practitioners in Ireland	27
Society of Chartered Surveyors Ireland	250
Musgrave	115
Irish Air Corps	40
Irish Software Association	21
Engineers Ireland	51
Sherkin Island Development Society	33
Simon Communities	57

Table 2 Examples of Life-Long Learning Partnerships

The partnerships highlighted above range from short CPD programmes to Masters programmes, providing opportunities for skills improvement in many different sectors. Intel, Institute of Advertising Practitioners, Musgrave are examples of partner organisations with whom DIT has developed specially designed programmes for employees wishing either to enhance their skills for their current positions or to develop their capacity to advance to higher ranking positions involving greater responsibilities. To increase access to lifelong learning, the range of part-time Masters provision on offer has been expanded.

It could be considered that DIT served the community offering life-long learning opportunities and increased the academics' interest in community-based research by supporting the relations between academics and civil society organisations.

Challenges

The findings of the evaluation showed that the Science Shop was facing challenges common to all CBL and CBR practitioners, particularly at the beginning of their activity, namely the need to: involve students in the structures and early processes of project planning and design; develop project



assessment procedures starting with pre-project and ending with post-project evaluation forms; promote the social and personal dimension of students' learning and awareness raising about the implications of their profession's role in society; and improve the quality and depth of student engagement with communities to enhance the community's potential to positively engage with the students and the college.

4.17 IRELAND: University of College Cork, Community-Academic Research Links

Community-Academic Research Links (CARL)⁷⁹ is an initiative run by the University of College Cork (UCC) in Ireland, which provides independent participatory research support to civil society organisations, e.g. community and voluntary groups, in the region. CARL was established in 2006 and began undertaking community project work in 2010. It is based on the Science Shop model. Research is undertaken by students in collaboration with the community partners across a wide range of academic disciplines as part of their dissertations.

Each year, local community organisations are invited to submit project proposals, which are reviewed by an advisory group. If accepted, the proposal is posted on the CARL database and students are invited to select the project as part of their undergraduate or postgraduate research projects for the coming year. Meetings are then set up with the community organisation, the student, the supervisor and the CARL coordinator to agree the scope of the project and sign a research agreement. Students undertake a literature review relevant to the topic, and then, depending on the nature of the question, the research team may decide on further primary research: qualitative or quantitative. This is then carried out by the student in partnership with the organisation, or if the project is too large, possibly by other student(s) in a subsequent student intake for CARL projects. The student summarises the findings of the research into a user-friendly report and this is finalised in conjunction with the community partner and a series of recommendations or action points proposed.

The community and voluntary organisations are asked to cover student expenses outside of the normal expenses usually incurred by students in undertaking their final dissertation. In certain circumstances, CARL may be able to contribute equipment.

PROJECT: Respite care services for families caring for a person with an intellectual disability: Decision making, experience and models of respite

This Science Shop project (Coll and Scully, 2011), was carried out in 2011 by two UCC students as part of their Masters in Social Work programme on behalf of the non-profit organisation Brothers of Charity, Clare, which runs a service called Home Share Clare⁸⁰. Home Share offers a family-based respite option for families of persons living with disabilities whereby host families welcome children and adults with disabilities into their homes as an alternative to traditional group home settings. Home Share Clare was looking to further develop their respite service but before doing this, wanted to evaluate their current provision to ensure it was meeting the needs of those using the service.



⁷⁹ https://www.ucc.ie/en/scishop/

⁸⁰ http://www.brothersofcharityclare.ie/home-share-clare/

- to identify the reasons why carers of persons with disabilities use respite services and gain further understanding of the feelings experienced regarding respite when it is used initially;
- to evaluate carers' individual experiences of using community based residential respite care and family-based respite care, outlining similarities and differences encountered with both models of respite;
- to highlight the factors that would contribute to a better service provision of respite care by Home Share Clare and other respite services in the area.

The students undertook a literature review of existing literature in the area of respite care services for people with intellectual disabilities in Ireland followed by semi-structured interviews with full-time carers of adults or children with intellectual disabilities. Recommendations for service providers and policy makers were developed based on the key findings of the study.

The students received an award for Outstanding Community Engagement⁸¹ for their Science Shops project at an event on 5 December 2016 to celebrate the beginning of CARL's 50th student-community project.

Impacts

The students produced a piece of research that was much appreciated by the community organisation and helped develop good relations between the university and the organisation. Participation in the project also gave the students a greater understanding and interest in the subject.

The Science Shops report contained recommendations that Home Share Clare could use to inform the development of their respite services.

Following the completion of the report, the participating student researchers subsequently presented their findings and recommendations at two national conferences, helping to inform and raise further awareness about the subject.

The project also increased the partner's capacity to get project funding as the results were used to inform a successful funding application by Home Share Clare which secured funding of €30,000 for the continuation of the Home Share initiative.

The project findings were also shared with relevant policy makers and used to inform policy recommendations. The research was referred to by the Health Service Executive in Ireland in a 2012 report on alternatives to institutional respite called *Respite/Residential Care with Host Families in Community Settings*⁸². This was a report delivered by a working group established by the National Director, Integrated Services Directorate, HSE, to undertake an overview of models of respite and residential care with host families in community settings, nationally, and to determine the viability of these models of service delivery for future development for people with an intellectual disability.



 ⁸¹ https://www.ucc.ie/en/scishop/news/carl50---celebrating-our-50th-student-community-project.html
 ⁸² http://www.fedvol.ie/_fileupload/Next%20Steps/Homesharingrreport%202012.pdf

Home Share Clare was also featured in a TV news item broadcast by RTE, Ireland's public service broadcaster on 27 July 2012. In 2016, the students also won an award for Outstanding Community Engagement with their Science Shop project, resulting in additional publicity.

4.18 LITHUANIA: Social Innovation Institute Science Shop

The Institute of Social Innovations Science Shop⁸³ is based in Vilnius, Lithuania at the Institute of Social Innovations (SII). It is a relatively young Science Shops (the first in Lithuania), set up in 2013 as a non-profit organisation to provide a research service for Lithuanian NGO's and communities with a focus on social sciences. To date, it has conducted four projects. The Science Shop only deals with one to two research projects a year. Research projects are often undertaken by intern students from various universities. The Science Shop has no core funding and costs are subsumed in the overall running and staff costs of the SII or are partially covered by NGOs.

PROJECT: Supply and export opportunities of innovative publishing products for blind and seeing children in four European countries: Italy, the Netherlands, Sweden and Germany

The project was undertaken for a Lithuanian non-profit publisher of books for both sight-impaired and seeing children that was interested in learning from practices in other countries but had no capacity or ability to do this. The Science Shop conducted a literature analysis and a series of interviews with Lithuanian and foreign experts on publishing books for sight-impaired children. The aims were to review the impact of books in Braille, as well as to identify other publishers of interest and their practices.

The research revealed that the NGO's concept (publishing books for both blind/sight-impaired and seeing children, i.e. books containing Braille, tactile and regular illustrations) is new, because the countries included in the research do not have this kind of books. Thus, as a result of the research, the NGO decided to use available technologies (via a collaboration with a publishing house that has machines for relief printing) to produce this kind of books in Lithuania and in other countries. The NGO used the results of the study to apply for support from various foundations and inform project applications. Also, during the research, a contact list of publishers in other countries was collated, which is of potential use in the future. The study conducted by the Science Shops helped to motivate the NGO to start publishing these types of books and develop its activities through project funding. Giving access to new books to both sight-impaired and seeing children has subsequently had a wider societal impact too.

PROJECT: Development of eco awareness in Lithuania

This project was conducted for the Baltic Environmental Forum Lithuania and involved a study to investigate the discrepancy between personal attitudes to the environment and actual behaviour. The research included a literature analysis, an analysis of secondary data, and semi-structured interviews. The Science Shop developed recommendations to inform the organisation's publicity material and educational activities.

The potential impact of the research is related to the use of the research findings, which the NGO used to inform its communication campaigns and messages. The research process involved long discussions



⁸³ http://www.sii.lt/mokslo-krautuve.htm

with the NGO on the interpretation and the implications of the findings as well as practical recommendations. However, there is no information available on what extent the recommendations were actually taken into account by the NGO.

PROJECT: Psychological support for families who have lost a baby and prenatal care personnel in Lithuanian medical institutions: search for innovative tools

This is a project that has had the most visible impact out of all of the projects undertaken by SII to date. The project included interviews with women that have lost babies and doctors that deal with such situations. The request came from two psychotherapists, who were running training for medical personnel and providing psychological consultations for families who have lost a baby. They subsequently used the findings of the study to inform the psychological support provided to both women and doctors, as well as training courses on this topic. After the study, some hospitals introduced psychotherapist positions; it would be too much to claim that it was a direct result of this research, but rather a result of wider activities of which the research was a part.

PROJECT: Attitudes of young people towards corruption

The research was conducted for the National Anticorruption Association. It involved an internet-based survey of students from various higher education institutions in Lithuania. Respondents were asked about their attitudes towards and experiences with corruption, as well as possible actions and programmes that could help to promote awareness of, and intolerance towards, corruption.

The National Anticorruption Association used the research findings to inform the development of their training courses, other anti-corruption activities and programmes, and also intends to use the results in applications for new project funding.

Impacts

In all projects, clients take part in the design of the study: discussing the research question, designing questionnaires, etc., thus the Science Shop increases the clients' knowledge of how research is done.

The project/Science Shop helped develop continuing relations between academics and civil society organisations, because the relationship continues after the projects are done; the organisations often approach the Science Shop for consultancy or potential collaborations.

The project/Science Shop increased the partners' capacity to get project funding, because partners' organisations use the research data to inform funding applications.

The projects help to improve the community's quality of life(health, environment, education, wealth) and produce long term benefits for the community indirectly through improved and more targeted work of the organisations involved.

Project results (not the publication of them, but their use by the clients) lead to improvements in existing policies, programmes or services, because the results of all the projects are used to improve programmes or services provided by the NGOs.

The projects helped the development of the Science Shop involved. As the Science Shop at SII is young, each project helps to strengthen it and build its reputation.



of the Science Shop's projects.

4.19 LITHUANIA: Science Shop, Vilnius College of Technologies and Design

Vilnius College of Technologies and Design Science Shop (*mokslo dirbtuvės*, or "science workshop") was started in 2016 within the framework of EnRRICH project. To date, the shop has implemented at least seven projects with community organisations.⁸⁴

The projects conducted by the Science Shops are of an applied nature, related to construction and environmental design and engineering, which is the focus of the college. Nevertheless, the projects also have to include a research aspect: the Science Shops tries to select projects that are not purely applied, but have a research element in them. Another requirement for the projects is a clearly defined prospective use of the results of the studies.

The projects are primarily initiated by the Science Shops, whereby teachers involved in the initiative contact possible clients i.e. community organisations working in their field of expertise. The projects are implemented by groups of students, led by a teacher. The community organisations are involved in the projects in a number of ways, mostly at the stage of formulating the research question, and later when they are requested to provide information or relevant contacts. The Science Shops is run with minimum resources: teachers receive a small remuneration; expenses needed for project development itself (e.g. materials to build a physical model) are covered by the client.

PROJECTS

Design of public space in a building plot. Commissioned by the community in part of the city of Vilnius. The aim was to define the possibilities of designing a public space to meet the needs of the community. Project results consisted of an analysis of territorial planning documents; a feasibility study of the design of the public space in the building plot; design proposals.

Feasibility study of modernisation of an apartment building. Commissioned by the resident association of an apartment building in Vilnius. Project results: a feasibility study (preliminary data of the assessment of the condition of the building), including a review of the construction characteristics in the area, a survey of inhabitants, measurement of humidity and noise levels, an assessment of micro-cracks, thermal images, description of problematic places of the building, and recommendations for improving energy efficiency.

Measurement of noise level in a school. Commissioned by a secondary school in Vilnius. Project results: measurement data on the noise level in the school building, comparison of the data with officially prescribed noise levels, recommendations on measures to decrease noise levels in classes for preprimary education.

Optimisation of lighting system. Commissioned by a nursing home in Vilnius. Project results: a plan for optimisation of the lighting system in the nursing home, corresponding calculations and drawings.



⁸⁴http://www.vtdko.lt/index.php/studentu-isanalizuotos-problemos/2016-m; http://www.vtdko.lt/index.php/studentu-isanalizuotos-problemos/2017-m

Impacts

The projects increase the stakeholders'/clients' knowledge of how research is done, but to a limited degree. The clients take part in formulating the research question and keep track of the project, but the research is too technical for them to be involved themselves.

The projects help to motivate students undertaking the projects, because they can apply their knowledge in a real-life context.

Many of the Science Shop's projects were requested with a view to using the results in funding applications for reconstruction work, thus they serve as a preliminary stage for clients in search for funding.

The Science Shop results in improvements to the community's quality of life (health, environment, education, wealth) – all of the projects are meant to improve the quality of life through improvement of people's physical living or working conditions; the actual results though will depend on whether the funding applications are successful and the work can be carried out.

The Science Shop activity is likely to produce long-term benefits for the community through the improvement of life and work conditions. The Science Shops is considered by the mother organisation as a tool to implement the higher education institution's 'third mission'.

4.20 NEW ZEALAND: Curious Minds Participatory Science Platform

The Curious Minds Participatory Science Platform is a New Zealand initiative that supports collaborative, community projects that bring together local citizens and scientists to investigate a locally-important question or problem. It was set up in 2015 and is financed by the Ministry of Business, Innovation and Employment. A pilot is running in three regions: South Auckland, Taranaki and Otago. Each region has a Pilot Area Lead, responsible for managing the initiative.⁸⁵

The Participatory Science Platform (PSP) is a part of the New Zealand Government's ten-year national strategic plan for Science in Society – A Nation of Curious Minds. The overall objective of the strategic plan is to "encourage and support all New Zealanders to engage with science and technology".

The specific objectives of the PSP are to:

- engage students, kura, schools, Māori collectives and organisations, businesses and community-based organisations with science professionals to carry out collaborative research projects that have scientific value, pedagogical rigour and resonate with the community;
- offer researchers opportunities to become involved in locally relevant lines of enquiry, where high-quality scientific outputs can be created through harnessing local knowledge and the contributions of citizens;
- offer inspiring and relevant learning and development opportunities for science and technology teachers and students;

⁸⁵ https://www.curiousminds.nz/funding/participatory-science-platform/

 engage learners and participants beyond the school/kura community to reach parents, whānau (extended families) and wider communities.

The focus of the projects is participatory science, a method of undertaking scientific research where volunteers can be meaningfully involved in the development and progression of locally relevant research projects with science and technology professionals.

The PSP builds on the popularity of citizen science but goes beyond the idea of scientists crowdsourcing their data and builds a true partnership between the scientists and the broader community.

Each year, an open call for proposals is held in which either community organisations or their science partner may apply for a grant to partially fund a research project. Community organisations include clusters, such as students/young people, schools, kura (Māori-language immersion schools), Māori collectives, businesses, industry, and environmental or cultural-based organisations.

Funding is allocated to projects that best meet defined assessment criteria. Around six or more are funded in each Pilot Area each year. Community partners must be fully integrated into the research project, including becoming engaged in guiding the research questions, collecting the data and disseminating the results.

The PSP is open to research in any field, however, the majority of projects relate to environmental and conservation issues. Topics covered to date include conservation, environment, ecology, biology, agriculture/food, health and information technology.

People engaged in the projects include:

- students, kura (Māori-language immersion schools), schools, Māori collectives and organisations, and a wider range of community-based organisations;
- science and technology professionals at universities, research institutes and businesses;
- local authorities and other bodies.

Completed projects can be found at https://www.curiousminds.nz/projects/?fund=participatory-science-platform.

PROJECT: Healthy Homes, Healthy Futures

The project *Healthy Homes, Healthy Futures Project* (September 2015-December 2015) aimed to investigate whether factors such as temperature, humidity and age of homes affect the types of mould and amount of mould in our home? This project was initiated by a school science teacher who noticed that many of his students coughed a lot and thought it might be linked to mould. Students were involved in collecting mould samples from their homes with equipment provided by a local research institute, Landcare Research, that also analysed the collected samples. Students first met with scientists at Landcare Research to learn how to collect test swab samples. They also received iButton sensors to measure and record indoor temperature and humidity levels. Samples using five separate swabs were taken from 22 houses in the local area.



The results showed⁸⁶:

- all of the homes had the right temperature and humidity for mould growth;
- 80% of the homes were mouldy;
- 14 different types of mould across the homes in forms likely to cause harm;
- three types of yeasts with the potential to cause disease;
- three bacteria with antibacterial resistance.

The results were featured in the media and local musicians and artists helped the students to design T-shirts with the slogan "Don't hesitate to ventilate" and to produce a music song and video with tips on how to keep houses well ventilated and healthy and raise wider awareness about the issue⁸⁷. The project involved a range of partners such as the Landcare Research Institute, Nirvana Healthcare, the University of Otago (Wellington), Auckland Council and local healthcare and housing organisations.⁸⁸

The primary school received additional funding to refine their investigation regarding mould in local homes. The company that donated the swabs and other consumables for the first investigation has also agreed to build a child-friendly, professional lab to continue testing homes for the next 5 to 10 years. The results of the project also led community leaders to request building warrants of fitness for rental homes in South Auckland.

PROJECT: What lives in the South Taranaki reef?⁸⁹

What lives in the South Taranaki reef (October 2015 - December 2016) is a project in which citizens helped to survey and document the rich marine life on a local reef. The project was led by the South Taranaki Underwater Club together with marine scientists and involved members of the local diving club, schools, biologists, engineers, iwi (Maori tribes), fishermen and other community groups. The scientists helped community members undertake a range of survey methods, such as benthic surveys (looking at organisms living on the reef e.g anemones), hook and line surveys (predatory fish), collection of plankton, Secchi disk (water transparency), and the use of the hydrophone (to record the underwater soundscape). A prototype underwater video camera was also installed on the reef.

A key aspect of the project has been educational and involved local school pupils, who have undertaken boat trips to the reef to conduct experiments as well as classroom sessions with the project's marine biologists in which they learnt how to analyse their own results as well as those collected through other survey methods.

The findings have contributed to increasing marine knowledge around offshore reefs and their importance in the ecosystem both within the community as well as further afield. The project has catalogued a diverse range of species previously unknown to many people in the community. In addition, the collected data has been added to an international database of ocean life as well as a

⁸⁶ https://www.sciencelearn.org.nz/resources/1146-healthy-homes-healthy-futures

⁸⁷ https://www.youtube.com/watch?v=I97_GidsQy0

⁸⁸ https://www.curiousminds.nz/stories/mould-in-your-home-worse-than-ugly/

⁸⁹ https://www.curiousminds.nz/stories/what-lives-in-the-south-taranaki-reef/

national online citizen science database 'NatureWatch NZ'. A number of other projects have also linked up with the project and the project collaborates with specialist marine experts around New Zealand.

The Reef Life project won a Taranaki Regional Environmental Award for environmental action in the community in 2016. Furthermore, in 2017, the project received a national award, the Ministry for the Environment's Green Ribbon award for 'protecting our coasts and oceans'. The project results were also used in a submission to the Taranaki Regional Council to get the reef recognised as having 'outstanding value' in the Coastal Plan.⁹⁰ The project was also invited to give a presentation at the Parliament's Education and Science Select Committee in 2017.

Impacts

Due to the participatory and collaborative nature of the projects, citizens are involved in conducting the research alongside scientists in all of the projects supported by the Participatory Science Platform. Hands-on participation in the project therefore increases the participants' knowledge of how research is conducted and scientific methodologies.

The projects also help to develop continuing relations between academics and civil society organisations.

Many of the projects include a range of community partners working closely with scientists, partnerships that in some cases continue beyond the end of the projects. The Taranaki reef project led to collaborations with other projects and has joined a larger group 'Wild for Taranaki', which consists of around 27 groups involved in conservation work. The collection of data also continues (see the Taranaki Reef Facebook page⁹¹). In the Healthy Homes project, the success of the project resulted in the school gaining additional funding to continue the project.

In some cases, the projects also influence the direction of future research on the subject. For example, baseline data that is generated is often used to inform other research projects. Data is sometimes added to international databases too, as in the case of the Taranaki reef project.

One of the objectives of the PSP is to 'offer inspiring and relevant learning and development opportunities for science and technology teachers and students'. Many of the projects involve local schools and therefore have an educational impact in terms of improving pupils' knowledge of the issue being investigated as well as scientific processes.

Project results are disseminated to broader audiences in various ways e.g. through pop-up public exhibitions or via traditional and social media, which help to increase public awareness of the issue. In the Healthy Homes project, a song was produced by the school as a fun and engaging way to disseminate messages about the importance of ventilation in homes. For the Taranaki Reef project, presentations have been given to local clubs, there was a four-month exhibition at a museum in Patea along with workshops as well as displays in schools⁹². The project also received nationwide attention in the form of local and national media coverage.



⁹⁰ https://business.taranaki.info/Grants-Funding/Curious-Minds-Stories-2017.pdf

⁹¹ https://www.facebook.com/projectreeflife/

⁹² https://www.projectreeflife.org/about

In addition to increasing awareness amongst local communities, many of the environmental projects also result in increased ownership of the issues and volunteers becoming engaged in the protection of their local environment beyond the end of the project.

The examples also highlight how projects are helping to inform policy making. For example, the Taranaki project results have been used to inform the Coastal Plan with the aim of getting the reef recognized as 'outstanding'. The Healthy Homes project resulted in community leaders requesting building warrants of fitness for rental homes in South Auckland.

As a pilot initiative, the success of the projects each year is helping to develop the project further and therefore contributing to the overall sustainability of the Participatory Science Platform.

4.21 ROMANIA: InterMEDIU Science Shop, University of Iasi

The InterMEDIU Information, Consultancy and ODL Department, Technical University of Iasi (InterMEDIU TUI), was founded in April 1999, as a non-profit, independent department (Science Shop) of the Technical University of Iasi/Faculty of Industrial Chemistry. It was set up as a result of a collaboration with the University of Groningen within the MATRA programme, financed by the Dutch Ministry of Foreign Affairs. InterMEDIU TUI has also been involved in further European projects such as INTERACTS, TRAMS and ISSNET. The main focus of its research projects are environmental local and regional issues.

PROJECT: Evaluation of the quality of drinking water supplied in the city of lasi

This project was the first to be carried out immediately by InterMEDIU TUI upon its establishment. Information has been taken from a European project INTERACTS report (Teodosiu and Teleman, 2003). It presents three case studies, developed by two Romanian Science Shops in community-based research projects, and highlights the importance of collaborative research, the impact and benefits of Science Shop research projects on NGOs, universities as well as on Science Shops themselves.

During the 1990s, an issue of great concern to the citizens of the city of Iasi in Romania was the quality of drinking water. After 1960, due to the rapid industrialisation of the city, coupled with population growth, water demand for both industrial and human use increased considerably, generating frequent prolonged daily interruptions of the drinking water supply, combined with a decrease in its quality. As a result, new sources of drinking water supplies had to be identified and developed that could meet quantity and quality requirements.

In 1999, a community consultation process was carried out in relation to the quality and quantity of drinking water supplied from different sources. The community consultation consisted of a survey, which generated a good response: a total of 2584 completed questionnaires were received. Following the consultation, representatives of a NGO partner, the Dutch partners of the MATRA programme and the staff of the Environmental Engineering Department within Technical University of lasi, InterMEDIU TUI, launched a six month project, which consisted of a research study aimed at assessing the problems related to the quality of the drinking water, which were causing concern amongst the entire community in lasi.

The main objective of the study was to assess the correlation of the water sources quality with the quality of water produced by the regional Water Works Company (WWC) taking into consideration the



opinions and expectations of the citizens as well as media articles that were suggesting poor water quality.

To achieve the project objectives, InterMEDIU TUI relied on the experience, work and support of several organisations and individuals such as the NGO "Academic Organisation for Environmental Engineering and Sustainable Development"; the Chemistry Science Shop co-ordinator at the University of Groningen, The Netherlands; one representative of the Dutch NGO Green Grid Consultancy; and ten students from the Faculty of Industrial Chemistry, specialising in Environmental Engineering. All the costs were covered by a MATRA project ("Science Shops in Romanian Moldova", granted by the Dutch Ministry of Foreign Affairs, 1998). The lab research investigated the issues raised by the citizens concerning the existing situation in the treatment plants (quality indicators and their variation versus the national and international standards, water treatment technologies, and treatment efficiency) involving experienced researchers and students, using TUI's facilities.

The findings of the study showed that the drinking water distributed by the WWC met the national water quality standards. However, the study drew attention to the fact that during heavy rainy seasons and floods, the drinking water quality indicators rose far above the thresholds limit values. Additionally, the study highlighted the existence of some potentially carcinogenic pollutants in one of the surface water sources used for drinking water and recommended the need to upgrade the treatment technologies at WWC.

The outputs of the project listed by INTERACTS report were:

- a large public debate that involved local NGOs, the Environmental Protection Agency, university staff from several faculties, representatives of other Romanian Science Shops, WWC, the Institute of Hygiene, and research institutes;
- press release and articles in the local newspapers, participation in a TV debate;
- four papers published in peer-reviewed journals and three diploma theses.

The initial project did not plan an assessment of the impacts, but information about the impacts of the project was collected and reported in one of its reports. The win-win project *"Evaluation of the quality of drinking water supplied in the city of lasi"* had different impacts on different stakeholders but, as a whole, the project increased the stakeholders' knowledge about university researchers' potential contribution to solving environmental problems.

Impacts

The short-term impacts of the project could be summarised as follows: the project increased the stakeholders' knowledge about the potential of university researchers' potential contribution to solving environmental problems. In this way the Science Shop intermediated increased cooperation and collaboration between universities and civil society organizations as representatives of the community. In addition, the project increased the interest of academics and students in community-based participatory research and solving community concerns related to the environment.

Through the research project "Evaluation of the quality of drinking water supplied in the city of Iasi", InterMEDIU TUI had the opportunity to promote and disseminate its research activities, to raise community awareness about the quality of drinking water and to gain it's trust.



The researcher groups identified new research topics on other community concerns related to their quality of life. The project also resulted in a 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 project had also long-term impacts on the different community stakeholders:

Impacts on the community

The assessment made by INTERACTS concluded that the project produced a long-term positive impact for the community as a result of the potential improvement to the quality of drinking water and the reduction of the risk of occurrence of hazardous chemical compounds in the treated water. It also resulted in gaining the trust of the community with regards to the research done by a Science Shop and provided reliable information about the quality of drinking water in lasi.

The project opened up public debate about drinking water quality, involving CSOs, academics, research institutions, governmental organisations, water companies and the media. It also resulted in invitations from NGOs to get involved in two additional projects regarding water quality.

The NGO project partner has become a permanent presence in public debates and seminars organised by the InterMEDIU TUI, capitalising on information resulting from the project to promote public involvement in environment protection, to consolidate citizen trust and to engage in new partnerships with other organisations.

Impacts on university/Science Shop's researchers

InterMEDIU TUI gained recognition of its research group at university and national levels. By dealing with community needs, the participating students also developed new research skills learning how to apply social inquiry techniques and how to put their technical knowledge into practice. They also acquired new knowledge about research methodologies and project management. They also improved their communication skills and were able to use the experience they had gained in other projects. Through the research project, the Science Shop gained working experience with international partners and skills in addressing/approaching community problems.

The University also benefited from the project outcomes developing new curricula, engaging students in voluntary research and cooperating with community organisations. The faculty staff acquired an indepth understanding of methods and ways to involve and coordinate students in teamwork and interdisciplinary research activities.

Impacts on enterprises

A long-term collaboration with the regional WWC was created by providing reliable information that was used to inform upgrades and improvements to the efficiency of the drinking water treatment plants. For the WWC, the project outputs highlighted a need to improve and modernise their drinking water treatment facilities. The project report also highlighted the need to incorporate the research findings into local development strategies related to drinking water quality.



Challenges

At the time of the project, different challenges in conducting research with and for community were identified for the different stakeholders:

- for NGOs: weaknesses of the functional organisational structure and the lack of appropriate funding;
- for the Universities: poor communication with the civil society/community;
- for the Science Shop: despite being officially recognised, the InterMEDIU Science Shop activity was not financially supported by the host University and students' involvement was not rewarded through credits.

At present, the situation is not that different and, for this reason, many of the Romanian Science Shops are not active or continue to exist only through few small projects. The authors of this report consider that one challenge, not mentioned in the INTERACTS report, could be related to the decrease in public environmental protection in Romania over the last decade, the main field of research of most Romanian Science Shops.

The InterMEDIU TUI project has resulted in benefits for all of its stakeholders, namely:

- the NGO fulfilled its stated objectives concerning citizens' awareness of, and engagement in, solving the environmental problems of their community;
- the student gained knowledge of how to write a non-technical report for a non-specialised public audience, a skill of particular use to an environmental engineer;
- the Science Shops successfully delivered environmental research and consultancy to community and provided the student with an opportunity to work on real-life environmental problems.

4.22 ROMANIA: Lab Worm, Sapientia Hungarian University of Transylvania

Sapientia Science Shop (Labworm) is hosted by the Faculty of Economics, Socio-Human Sciences and Engineering, Miercurea Ciuc of the Sapientia Hungarian University of Transylvania. It was created in 2012 and mentored by InterMEDIU UPB Science Shop during the EU-funded PERARES project.

The organisation is involved in community-based research mainly at local and regional level in the field of health and environmental science.

The main methodology used currently is case-based research and reversed science cafés on health and environmental topics. The research topics are closely related to local environmental issues and questions are collected from the community. The participation of the students who undertake the research is coordinated by the Bioengineering Department's researchers/staff.

Each year, Sapientia Science Shop (Labworm) organises a regional competition for lower and upper secondary school pupils in the university lab. In 2018 the 7th edition of the Labworm competition was held in which teams of grade 7–8, and 9–12 pupils took over the lab of the Faculty of Economics, Socio-Human Sciences and Engineering to compete against one another in the fields of biology and chemistry.

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Periodically, the Science Shop organises meetings with different stakeholders: policy makers, different institutions involved in a specific topic, civil society, and students with the aim of identifying community health and environmental aspects that could be transformed into research questions.

Labworm only has a few staff and the research is carried out by senior university students as a part of work for their graduation theses, supervised by the Science Shop researchers. The Science Shop projects are conducted as community-based research and, depending on the topic, can involve citizens. Although, members of the community are not allowed access to the research laboratories, due to the nature of the research, the research activity carried out in response to citizens' questions proved to be an effective and successful way to answer questions posed by the community. To raise public awareness, the Science Shop has focussed on educational activities for children and training sessions and workshops for adults.

Experts from different fields (environmental protection: chemical and microbial pollution, health aspects of environmental pollution) are also involved in the process of solving the research questions.

The city of Miercurea Ciuc is located in an area where the natural water quality (mineral water microbiological assay) and the quality of the food that comes from local farms are of concern to local people. Health issues related to water quality represent a topic which affects the whole community, and the community is therefore considered to be a full partner in the Science Shop process. Some of the most successful Science Shop projects undertaken in response to community questions and supported, at different stages, by local citizens, have been: "Microbiological assay of mineral springs from Ciuc basin", "Chemical and microbiological assay of springs (wells) in villages from the Ciuc basin", "Microbiological assay of cow milk", "Microbial biopreparates for sustainable agriculture" and "Chemical and microbiological air pollution in the Ciuc basin".

The research projects often conclude with recommendations or solutions to the questions raised by civil society. The success of the research is evaluated through discussion with the relevant stakeholder.

PROJECT "Is it safe to eat snow?" 93

In 2017, one of most recent projects carried out by the research group concerned snow pollution. The researchers collected snow in Miercurea Ciuc, Romania during the months of January and February. They took the snow samples and placed them in sterile containers and waited to see when bacteria and mould would grow on the samples. After the first day, five bacteria per millimeter were counted for the snow collected in January, whereas the bacteria quadrupled after the first day for snow picked up in February. The professor behind the study, Istvan Mathe, came up with the idea when he saw his own children eating snow.

The conclusion of the research was that it is safe to eat snow that is a half a day old, but when it got to two days old, it was no longer safe to eat. In addition, the research concluded that snow eaten in the colder months was safer than in the warmer months.

In February 2018, a few days after the project "Is it safe to eat snow?" was completed and a summary of the results was published on the university website, the news spread around the world reaching as far as Hong Kong, the USA, the UK and New Zealand.



⁹³ http://torontosun.com/health/is-it-safe-to-eat-snow-yes-but-only-for-so-long-study/wcm/234a187f-3308-4a80-84b4-cc325d3aa84e (and other news links around the world)

Impacts

The project "Is it safe to eat snow?" proved that information can reach the community groups faster through the media than via scientific papers and can have considerable international impact when the results are presented using plain language that everybody can understand.

The LabWorm is having a significant impact on the small community of Miercurea Ciuc and its surroundings through their students and the children that are periodically involved in hands-on science activities.

Challenges

The main barriers in communicating with the community come mainly from the social status, lack of interest and their inability to think in a scientific way. Science Shop Labworm believes that, to achieve effective public engagement and improve understanding, CBR and CBPR conceptual models should be presented to the community on a regular basis in the media, in papers, at events.

4.23 ROMANIA: InterMEDIU Bucharest Science Shop, University Politehnica of Bucharest

InterMEDIU Bucharest⁹⁴ is a Science Shop at the University Politehnica of Bucharest (UPB) that was founded in 2002 with financial support from the Matra project, supported by the Dutch Ministry of Foreign Affairs. InterMEDIU's members are teaching staff mainly from the Faculty of Applied Chemistry and Material Science and students. The members are involved in different projects depending of their competencies and availabilities. The main aims of the Science Shop are collaboration with different community groups in environmental protection and education projects, and supporting civil society needs for information mainly on topics relating to environmental protection and chemistry. Through community-based learning (CBL) InterMEDIU also brings together the community of teachers and children with the academic learning. Through education and research projects, InterMEDIU supports the development of environmental knowledge for teachers, problem-based learning for students, and the tackling of local problems with local knowledge. InterMEDIU aims to promote partnerships between universities and civil society groups, with a view to ensuring sustainable development at local, national and regional level, to develop and consolidate the network of Romanian Science Shops, and to promote scientific consultancy services for not-for-profit organisations.

InterMEDIU Bucharest offers information and consultancy on environmental issues and occupational safety to citizens, NGOs and institutions. InterMEDIU's activity is focused on education and developing scientific interest amongst different age categories.

The goals of InterMEDIU Science Shop are: to increase students' awareness of the role of science in society and to improve students/graduates' skills to tackle multidisciplinary topics and their problemsolving abilities; to communicate advanced science to society; to train and raise awareness of environmental subjects at all levels and among different target groups (schools, university, post graduate programmes, NGOs etc.).



⁹⁴ intermediu.pub.ro

Some examples of research projects carried out by InterMEDIU Bucharest are:

- JICA (Japanese International Cooperation Agency) grant for the organisation of an "Environmental Management in Romania" symposium (2004) which was aimed at raising public awareness of environmental issues;
- JICA grant for the publication of "Toxicological Sheets for Domestic Chemicals" developed by InterMEDIU's students (2006);
- JICA project in collaboration with Tokushima University "Elemental characterization of airborne particulate matter collected in Bucharest and Tokushima" (2006)
- Exploring the Ground Fostering Scientific Understanding in Primary Schools (EFSUPS project -EU FP6 SAS6-CT-2006- 042894) (2006-2008);
- Public Engagement with Research and Research Engagement with Society (PERARES project EU FP7 SiS-CT-2010- 244264 (2010 – 2014)
- A research project to assess the nitrates pollution of subsurface water in Cernica village (2009). (Ilfov County). This research was in response to questions received from the village inhabitants concerning the water quality in the village wells/underground water. The research was undertaken as a Master's thesis and was supported by Michigan State University (THREB project), Hach-Lange Romania, and Cernica City Hall. The findings were published in a paper written for the Journal of Romanian Water Association.
- A research project on the lability of potentially toxic elements in soils affected by smelting activities in the Zlatna area (2009-2012). The research was undertaken as a PhD thesis and was financially supported by Michigan State University (THREB project). Three papers were also published in ISI indexed journals.

Impacts

The impact of InterMEDIU Science Shop activities on the community is demonstrated by the involvement and participation of the young pupils and their teachers during the Science Fairs, the symposium "Education for a Clean environment", as well as the requests that are received from school communities to be involved in similar kinds of activities.

In 2003, in recognition of its efforts and experience, InterMEDIU was requested by "Casa Corpului Didactic" Bucharest to set up a training programme on environment protection for high school teachers. The course was certified and financed by the Ministry of Education and Research.

During the running of educational projects, InterMEDIU staff have developed contacts with more than 300 teachers and educators, from kindergartens to high schools, interested in self-development and project-based collaboration.

In addition, through the dissemination of the results of research projects carried out in the Cernica village and Zlatna area, InterMEDIU helped to raise awareness among the local community on the harmful effects of groundwater pollution containing nitrates and of the potentially toxic elements in soils affected by smelting activities.



Challenges

The stability of the research team and the continuity of both scientific staff and community partnership represent some of the main challenges met by InterMEDIU.

4.24 THE NETHERLANDS: Beta Wetenschapswinkel, University of Groningen

The Bèta Science Shop is one of the five Science Shops at the University of Groningen. It is a combination of the former Chemistry, Biology, Physics and Medicine Science Shops (operational until 2008), and therefore also conducts research in various fields of the science. The idea of the Bèta Science Shop is that clients, mainly civil society organisations, can ask questions that are answered by students in the form of a bachelor's or master's thesis or an article.

Most of the Science Shop's work is done as student projects, often in the later years of the student's studies, when the student has gained a good knowledge of his discipline. For the scientific value of the project, it does not matter if the research question comes from inside or from outside of the university. However, the educational value of working on projects from outside, compared with that of projects originating from within the university, is considered much higher. The student develops extra competences, like project management, oral and written communication with a non-expert audience, translation of a societal problem into a scientific problem and translating the results back into the societal problem context. They are thus better prepared for a job outside of the scientific community.

PROJECT: The sound of high winds

The research started in 2002 after Dutch locals living in a residential area close to the Dutch-German border complained of a louder than expected sound during the night (van den Berg, 2004). The source of the noise nuisance was a wind farm situated across the German border. The Physics Science Shop had just published a report explaining the possible discrepancy between the calculated and the real noise emission levels due to changes in the wind profile. The Dutch residents, united in a neighbourhood group, asked the Physics Science Shop to investigate the consequences of this discrepancy by undertaking sound measurements. Under the coordination of van den Berg G.P, the researchers initiated an investigation, that was performed near the Rhede wind farm close to the Dutch – German border and involved taking measurements of the wind turbine immission level in different conditions of stability and wind velocity.

The research concluded that there are some factors related to the wind profile, which had not been taken into account during the design stage. In the last two decades, the height of wind turbines has increased, exceeding the altitude of 100m. The main cause for the high noise level perceived by residents is the fact that wind speeds at night can, at a height of 100m, be substantially higher than expected. For acoustic purposes prediction of the wind speed at rotor height is based on the wind speed at the reference height (10 m) in a neutral atmosphere. Through extrapolation of the vertical wind speed at greater heights are higher than predicted from the logarithmic profile. When the night cools down, the wind speed near the ground is really low, and the wind speed at the height of the hub is higher than expected for the logarithmic wind profile. Consequently, the wind turbine produces a stronger noise than expected for the logarithmic profile, at the reference height.


Since the assessment of the noise produced is done usually by the noise producer, the researcher recommended that the noise exposure measuring procedure be applied by an independent expert. Also, noise measurements are usually done during daytime, when the wind profile is similar to the standard one, and the discrepancy between prediction and practice decreases. Controlling the sound production thus requires a new strategy for managing wind turbines during daytime and at night.

As a final conclusion, wind turbine noise is an important phenomenon that depends on changes in the wind after sunset and should be taken into consideration for tall modern wind turbines. Considering the multitude of future planned wind farms, if the sound issue is not recognised and solved it will hamper the expansion of wind farms on land in the Netherlands.

The project *Sound of wind turbines* was one of many other projects investigating noise pollution produced by wind turbines and made possible to regulate for the noise indicator a lower night limit (than the day limit) in 2011 (Nieuwenhuizen and Köhl, 2015). Currently, it is reported that in the Netherlands, the uncertainties associated with data measurements and calculation methods are not taken into account by the existing standards. Also, no distinction between different area types is made.

PROJECT: Bat gets green light

In the interests of public safety, in 2009, the municipality of Assen wanted to install street lighting in a recreational area surrounding the canal, with as little disruption to the local habitat as possible. Using artificial light at night may have negative effects on animals, as they live in dark conditions. As humans can easily see with green light at night, green LED lighting seemed to be the best choice⁹⁵. In order to reduce energy consumption and light pollution, municipalities replaced white fluorescent lamps in street lights with green LED lamps.

Little research has been made about the effects of different colours of light on animals and the question was whether an effect, positive or negative, of the type of lighting on the behaviour of fauna can be proved. In this study, this question focused on the possible disrupting effects on the foraging behaviour of water bats by green LED lamps compared to white lamps and an unlit situation.

Different colours of light have different effects on different animal species. For birds living near oil platforms, blue-green light has been found to be least disruptive to their orientation on the earth's magnetic field, compared to red and white light.

Not much is known about the effects of lighting on the behaviour of bats. A bat is able to see four to five times better than a human being in the dark. The retina of a bat is sensitive at very low light intensity. At high light intensity (daylight), vision is probably reduced by overstimulation of the rods in the retina.

The effects of street lighting on the foraging behaviour and the flight path of the water bat were investigated in a field experiment along the canal in Assen. In the late summer of 2009, an Ecology student counted the number of Daubenton's Bats that passed a canal in Assen at night. The canal is an important flight route and foraging environment for various species of bats. During August-mid-September 2009 three types of lighting were successively applied in the trial area: 1) white PLL 24W, 2) no lighting (control), 3) Innolumis Green led 14W. In each type of lighting, the passage of water bats



⁹⁵ https://www.rug.nl/news/2010/03/pbvleermuisled?lang=en

was counted for about five days. On each of these days, measurements of the light intensity, the presence of insects and the weather conditions were also made.

The project report describes the research method and results.⁹⁶ It concludes that the effects of the type of lighting along the canal in Assen on the presence of the water bat in the illuminated area relative to the dark area are not significant. There is an indication that the light intensity has a positive effect on the relative presence of the water bat. The number of passages of the water bat was greater with PLL 24W lamps than in the unlit situation, while the number of passages at Innolumis Green 14W lamps was only slightly larger than in the unlit situation. It is not clear whether this is caused by the colour or the intensity of the light. There is no connection with the number of prey insects. This indication means that the Innolumis Green 14W lamps seem to be an improvement over the PLL 24W lamps when minimal environmental influence of light is aimed. The project identified the lamps having the least impact on the bat population.

Impacts

The CBR projects developed by the Beta Science Shop represent an approach to addressing technical issues in the field of chemistry, biology, physics and medicine. Most of the research topics undertaken by Beta Science Shop are focused on scientific issues whose solutions could be used for improving the quality of environment, the health of citizens and the life in the community.

The impact on students consists of gaining experience in doing research, in making contacts outside of the university and working with community groups.

Trust of citizens and authorities in Beta Science Shops research outcomes will grow. By raising public awareness, the beneficiaries or potential clients will be more open to the scientific approach.

The former Chemistry Science Shop (currently part of Beta Science Shop) contributed to the establishment of Science Shops in eight Romanian universities between 1998 and 2002 and coordinated a number of research projects mainly relating to water quality.

4.25 THE NETHERLANDS: Science Shop Language, Culture and Communication at the University of Groningen

The Science Shop Language, Culture and Communication is one of five Science Shops at the University of Groningen⁹⁷. The Science Shop Languages (as it was called in the beginning) was set up in 1986 by the board of the Faculty of Arts and today employs two half-time paid coordinators⁹⁸. It performs societal-focused research on questions from non-profit organisations related to knowledge in the arts disciplines. This process consists of work placement and research assessments, mostly produced by students interested in writing a thesis or doing an internship with societal impact⁹⁹.



⁹⁶ https://www.rug.nl/research/portal/files/14538023/RapportBeta2010-3.pdf

⁹⁷ University of Groningen website, available at: https://www.rug.nl/society-business/science-shops/over-de-wetenschapswinkels/

⁹⁸ Existing RRI tools and successful participatory community-based research case studies report, SciShops.eu project deliverables, available at: https://www.scishops.eu

⁹⁹ The Science Shop Language, Culture and Communication website, available at: https://www.rug.nl/societybusiness/science-shops/taal-cultuur-en-communicatie/

The Science Shop operates by using following approach (den Toonder et al, 2017):

- societal organisations or community groups approach the Science Shop with research questions;
- the Science Shop looks for appropriate students and supervisors;
- the students work in partnership with the societal organisations on the research;
- the results are discussed with the partners and sometimes transformed into practical solutions;
- all research is made available for others through open access.

The Science Shop Language, Culture and Communication works mainly on themes such as health communication, minorities and multilingualism, language learning, dyslexia, communication and poor literacy¹⁰⁰. Three of the Science Shop's latest projects are briefly presented below.

PROJECT: Serbian heritage language schools in the Netherlands through the eyes of the parents

The topic of this research was the problem that (immigrant) languages often disappear within two or three generations, and the negative consequences of a shift in language on a child's social, cognitive, and emotional development (Palmen, 2016). In 2015-2016 this research examined how a small community, the Serbs in the Netherlands, attempts to pass on its heritage language to younger generations through heritage language schools.

The study drew from three community-based Serbian heritage language schools in the Netherlands. Questionnaires were sent to the parents of children attending the schools in order to gain an overall picture of participants' opinions. In order to gather more qualitative data, interviews were organised with parents (individually or in groups) at each Serbian school. Parents who participated in the study cited many reasons for sending their children to Serbian schools. Parents hope that it would increase their children's academic skills and career opportunities and report that a Serbian school has helped them to pass on their Serbian language and culture. However, Serbian schools do have their limits. Lack of resources and financial aid force the schools to operate on a voluntary basis, which threatens the quality of education they can provide.

This study provided an opportunity for parents to share their views on the importance of having Serbian schools and maintaining one's heritage language.

PROJECT: Shared Literature: Cultural transfer in and through reading groups

This project (den Toonder et al, 2017) focused on the interactive dimension in cultural production by examining the theory of cultural transfer in relation to its practice in reading groups, and was aimed at improving tools to support successful cultural transfer in these groups.

The project was based on a community-based research approach, whereby the Science Shops collaborated with several public partners: Stichting Senia, an organisation of volunteers operating on a national level, which unites readers with a common cultural interest in reading groups, and two



¹⁰⁰ Ibidem

groups of public libraries, consisting of 20 libraries in total. Together they set up a research project addressing different aspects of the process from inside reading groups.

Together, the academic researchers and public partners developed a joint research proposal, which was submitted within the framework of an Added Value Research Grant, offered by the Dutch organisation for scientific research (NWO) to support collaboration between researchers and non-academic partners and promote the societal impact of academic research. The project was awarded the grant, and was carried out in 2014 and 2015.

Non-academic partners were involved throughout the entire process and participated in several meetings to discuss expectations, the research design, practical issues, results and the collaboration itself. When a MA course in 'shared literature' began, 20 students from various programmes within the Faculty of Arts were involved in research. During the research process, the students were in close contact with the organisations involved, providing them with the opportunity to observe reading groups and refine the questionnaires and documents. This approach also resulted in very high response rates (ranging from 30 per cent up to 100 per cent), and reading group members were keen to participate.

The project offered the researchers direct access to a large and motivated reader audience and the possibility to carry out fieldwork on an extensive scale. The collaboration also proved fruitful to the public partners, as the theoretical framework developed on a literary-critical level could be translated by the partners into a practical tool to assist in the selection of titles and the improvement of reading guides.

The results of project implied that readers who are focused on reflection and interpretation of literature play an important role in cultural transfer, which can be assisted by the use of reading guides. The partnership has enabled a better understanding of the readership's wishes and expectations. The collaboration between scholars and non-academic partners proved fruitful in co-creating knowledge that can be used in further research and to improve services to reading groups.

The research outputs were widely presented in various forms to accommodate the interests of all parties involved. The students presented their results orally to project partners and feedback from the partners gave opportunity to refine conclusions and recommendations. The Science Shop published all of the final case studies through an open-source website and everyone involved in the research was informed of this by email or newsletter. In addition to these detailed studies, a short easy-to-read book was prepared. A final symposium was also organised for a broader audience of professionals and volunteers from public libraries and the Senia organisation. At this symposium, the students chaired group discussions to generate ideas for practical implementation. Received suggestions have already been fed into the new reading guides for the next season.

The last stage of dissemination was a presentation to the reading groups at a workshop held during Senia's annual Readers Day in November 2015. The students also presented the results to an academic audience at a PhD seminar and in a published article.

One of the important conclusions within the academic domain concerns the theory of cultural transfer, which, to date, has largely overlooked the active role of the reader in the process and should therefore be revised. The input of readers reflecting on the suitability and benefits of the reading guides, with particular attention to the discussion questions, has resulted in a different understanding of reading



practices, which has helped the researchers to reconsider and further develop their understanding of cultural transfer.

PROJECT: What do you have to know about feedback to learn a language effectively

The aim of this project was to provide language learners with knowledge about feedback, to take control of their learning process and to learn the Dutch language more effectively (Berghuis, 2017).

The project focuses on adult refugees learning Dutch who want to know more about feedback and the importance of it for second language learning. The participating language learners all attended ten language meetings where they received weekly feedback on their written assignments. The language meetings were organised by three students and designed to give the language learners an opportunity to practice Dutch as they often find it difficult to get in contact with Dutch people. Apart from the language meetings, the language learners also attended Dutch classes at the Language Centre of the RUG and at Humanitas Groningen. The language learners were exposed to feedback through these classes and, therefore, knowing more about feedback could help them in these language meetings too.

Apart from communication during the language meetings, every week the language learners wrote a short text on which they received written feedback. During these communicative language meetings, the language learners filled out a feedback questionnaire. This questionnaire was to find out more about the language learners' views on feedback. The questionnaire gave some insight into how the language learners would like to receive feedback and what kind of feedback they thought was most effective for second language learning.

Later a presentation was given to a group of Syrian and Iranian language learners. During the presentation, the language learners were given information about different forms of feedback and also some tips on how to deal with feedback themselves. The final tip they received was that they should not take feedback personally and that they should remember that the feedback is designed to help them improve themselves.

During the project, the three students learned about the Communicative Approach, which focuses on the communication (content and language) rather than the traditional grammar translation method.

The Language Centre was interested to receive information about informal language learning and to inform language learners about the different possibilities that exist when it comes to learning a language without a teacher. Therefore, a 150-200 words article is planned to be written about how students can ask for effective feedback so that they continue learning the language on their own. The article will be published on the portal of the Language Centre so that other language learners have access to the advice too.

Impacts

First of all, the project is perfect opportunity for students to gain more knowledge and skills related to their subject of studies and research implementation. Also, they gained valuable experience in the presentation of scientific results and article writing.

Researchers received better access to research participants and experience in co-creation of knowledge with community members. Moreover, they discovered some gaps between theory and

These projects were beneficial to the non-academic partners (Serbian heritage language schools and public libraries) as well. They enlarged their knowledge and received valuable suggestions on how to improve their services.

Cooperation between academic and non-academic partners as part of the project resulted in the creation of a mutual project that gained external funding. The collaboration also created mutual trust between the partners that helped in conducting the research and finding ways to implement new ideas.

Wide dissemination of the project results in oral and written form informed partners and the wider public about the findings. An open access approach to publications also helps to raise awareness to a broader public. Moreover, open access to the publications in English enables the results to potentially reach a worldwide audience.

4.26 THE NETHERLANDS: Science Shop, Wageningen University & Research (WUR)

WUR Science shop was established within WUR in 1985 to provide a connection between civil society organisations and the knowledge and research expertise of WUR. The Science Shop's mission is to support the NPOs 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."¹⁰¹

To accomplish its mission, the Science Shop assists any NPOs to find the answer to a research question, if they do not have financial resources to pay the research. The research questions it receives cover the entire domain of expertise stated in the Science Shop's mission and involves a comprehensive range of CSO's, acting at local, regional, national and international levels¹⁰².

WUR Science Shop collaborates with all WUR departments making a link between Dutch civil society and researchers.

Since its establishment, WUR Science Shop has been involved in many research projects trying to solve issues affecting both small and large communities. The projects cover several regions of the Netherlands and involve an impressive number of researchers - coordinators and students. Most of the projects' budgets are between of $\leq 10\ 000 - \leq 30\ 000$. WUR has funds available for carrying out a definite number of Science Shop projects and is able to subsidise projects with high costs.

The projects respond to questions concerning scientific issues, land management, urban planning, as well as environmental quality, farming and business plans for commercial organisations. It is reported that, WUR Science shop collects around 120 research questions per year, around 20% of which become

¹⁰¹ https://www.wur.nl/en/Education-Programmes/science-shop.htm

¹⁰² Introduction and promotion of Problem Oriented Education and Research at the University of Zululand, South Africa, Beyond the walls of the University of Zululand, 2008

research projects that are carried out as part of collaborations involving researchers, society and students¹⁰³.

PROJECT: Ravenstein: De Heus animal feed factory¹⁰⁴

The project *De Heus animal feed factory* (2007) focused on environmental quality (Essers et al., 2007). The Science Shop of WUR conducted research to investigate citizens' concerns related to the smell and possible health risks from dust emissions, released into the atmosphere by De Heus, an animal feed factory close to the town of Ravenstein. The study was commissioned by Stichting Belangengroep Stad (SBS), a community-based organisation (CBO). The CBO's concerns were exacerbated due to a request submitted by De Heus for an environmental permit to more than double its production capacity and to start processing primary materials such as blood, animal and fish meal, which would lead to higher levels of air pollution. The Science Shop's task was to determine how much the factory was contributing to air pollution in the area as well as the health risks caused by those air pollutants, with the aim of providing scientific evidence to inform legal decisions relating to whether or not to issue a new environmental permit. The findings of the scientific study, carried out under the assumption that the factory's stack height would increase from 38 to 55 meters, concluded that increasing the stack's height reduces the odour nuisance below the maximum regional limits and the EU air quality standard for the annual average PM10 concentration is not exceeded. A second assumption considered a possible increase in the factory's production capacity by 62.5%. The results of the research under the second assumption confirmed citizens' worries: increasing the chimney height would not enable dust limits to be met if the production were to increase by 62.5%. The study did not give a solution but warned the citizens about the negative impact that the factory could have if it increased its capacity. The long-term impact is not explicitly stated, but the research carried out by the Science Shop clearly had, besides its scientific value, a social impact on the community.

PROJECT: Ons Buiten

A good example of urban development research (2006) in the Netherlands was the *Ons Buiten project* that proved the benefits of gardens to the community (van der Hoeven and Stobbelaar, 2007). 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 developed in 1928 in Voordorp situated close to Utrecht. Ons Buiten was on a list of community gardens designated to be transformed into a housing area. In this context, WUR 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 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



¹⁰³ Straver, G., 2007. *The Science Shop of Wageningen University and Research Centre*, The Netherlands. Presentation at Obihiro University, Japan. 17 December 2007

¹⁰⁴ http://library.wur.nl/WebQuery/wurpubs/fulltext/120713

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. The annual plans developed by the project contain both short (year) and long term (10 year) plans and outline the planned activities to be undertaken to achieve the goals. Twice a year, the steering committee meets to monitor and evaluate the activities.

The project results had an obvious impact on the community, by considerably contributing to reducing the risk of the garden being transformed into a building area. The study carried out by the Science Shop provided strong reasons to the local council for why the garden should be maintained and, as such, helped to strengthen the role of the Board of the Ons Buiten community garden within its community.

PROJECT: Vereniging Kleine Kernen

Vereniging Kleine Kernen (VKK) is an independent organisation that represents small villages/communities in the Eastern part of the province of Gelderland. It was given a mandate by the national government to represent villages in the entire province, and for each village to set up its own council. VKK was faced with the challenging task of advising each village on how to reorganise and create a council. To engage as many villages as possible, VKK contacted the WUR Science Shop to ask for assistance with developing a business plan and recommendations for all the parties involved. One of the most relevant impacts the WUR Science Shop project had on VKK was that the organisation expanded significantly, assisting most of the small villages in the province of Gelderland that had previously not been included. Furthermore, the project resulted in further collaborations with the Science Shop, related to providing better services to the small village communities. In addition, a student who participated in the research was hired by VKK, thus demonstrating the benefits of career-oriented education.

Since its establishment, WUR Science Shop's reputation has grown considerably, The Science Shop now receives more research questions than it can manage and no longer has to advertise its services. Most of the research studies carried out by the Science Shop are interdisciplinary and as a result of the success of its work and the trust generated within the community, many organisations return with new research requests. WUR Science Shop is a member of the Living Knowledge network.

4.27 UNITED KINGDOM: Queen's University Belfast Science Shop

Queen's University Belfast Science Shop¹⁰⁵ is a university-based Science Shops that was set up in 1989. It is part of a joint collaboration with the University of Ulster, known as The Science Shop, which has delivered around 2,500 projects and worked with over 650 community groups across Northern Ireland since it began.

The Science Shop works across all university faculties and students undertake Science Shop projects as part of their degree programmes, supervised by University academic staff, through course-based research projects and dissertations.



¹⁰⁵ http://www.qub.ac.uk/sites/ScienceShop/

The Science Shop is funded by the Department of Employment and Learning through their Higher Education Innovation Fund, which encourages higher education to build links with the community and business. If students incur additional expenses through carrying out a project, the community organisation is asked to make a contribution towards expenses if this is possible.

Community organisations and voluntary sector organisations across Northern Ireland are invited to submit research requests to the Science Shop, which works together with the organisations to develop them into research projects. A list of ready-made dissertation topics across a range of disciplines is then offered to students as projects to undertake as part of their degree programmes.

PROJECT: Dementia care services

In 2010/2011, a team of Social Policy students at Queen's University Belfast undertook a Science Shop project for Springfield Charitable Association¹⁰⁶.

Based in West Belfast, Springfield Charitable Association runs a day centre which is used by older people with dementia or those at risk of developing it in the future. They offer activities such as gardening and fitness classes and organise day trips. They had been considering ways of expanding this service and were interested in investigating ways to achieve this, particularly by looking at other models and their associated costs. The Science Shop has an established relationship with the Springfield Charitable Association and has supported them over the years with pieces of student research looking at a range of issues around dementia.

The objective of the Science Shop project was to examine models of dementia care services both across the UK and elsewhere and the costs associated with such services.

As part of the project, students carried out research gathering up to date information on dementia statistics within Northern Ireland and making recommendations for models of good practice in dementia care elsewhere.

Impacts

The Science Shop project resulted in concrete findings that could be used by the Association to further develop services for those suffering from dementia.

The project has also increased the partners' capacity to get project funding. Springfield Charitable Association utilized the results of the research as part of a successful bid to the Big Lottery Fund to gain funding to develop its services and activities.

The participating students also gained valuable skills and experience undertaking the research.

Following this Science Shop project, the university has developed a continuing relationship with Spring Charitable Association and has subsequently undertaken further projects for them. The project has therefore helped develop continuing relations between academia and civil society. For example, in 2012, a nutrition student undertook a Science Shop project consisting of *A review of the evidence regarding the role of diet in preventing or delaying the onset of dementia* for the Association, which subsequently won a prize in the 2012 Science Shop Awards¹⁰⁷.



¹⁰⁶ https://www.qub.ac.uk/sites/ScienceShop/FileStore/Filetoupload,259705,en.pdf

¹⁰⁷ https://www.qub.ac.uk/News/Archive/2012PressReleases/12-2012Pressreleases/#d.en.358838

4.28 UNITED KINGDOM: Ulster University Science Shop

Ulster University Science Shop¹⁰⁸ is a university-based Science Shops that was set up in 1989. It is part of a joint collaboration with the Queen's University Belfast, known as The Science Shop, which has delivered around 2,500 projects and worked with over 650 community groups across Northern Ireland since it began.

Students who engage in Science Shop activities come from a variety of disciplines across the university, such as architecture, communications, social policy, geography, business and management, law, environmental health, health and computing. Projects are undertaken by the students as a module paper, a team project or a dissertation.

Community organisations and voluntary sector organisations across Northern Ireland are invited to submit research requests to the Science Shop, which works together with the organisations to develop them into research projects. Most projects involve an environmental, community, health or social issues. A list of ready-made topics across a range of disciplines is then offered to students as projects to undertake as part of their degree programmes.

The Science Shop is funded by the Department of Employment and Learning through their Higher Education Innovation Fund, which encourages higher education to build links with the community and business. If students incur additional expenses through carrying out a project, the community organisation is asked to make a contribution towards expenses if this is possible.

PROJECT: Giants Reading Programme

In 2011, a team of three interactive media arts students from Ulster University undertook a Science Shop project for the Giants Community Foundation.

The Giants Community Foundation¹⁰⁹ is a charitable non-profit organisation with links to the Belfast Giants professional ice hockey team. It was set up in 2008 with the mission of "Integrating – Sport, Lives and Leisure." It runs a number of activities and programmes for young people aimed at supporting integration and cohesion within and between communities in Northern Ireland.

Players from the Giants ice hockey team were asked what they wanted to do in the community and the idea came up to start a reading programme where the players would go out and read to children throughout Northern Ireland. Figures showed that one in five pupils in Northern Ireland were still leaving primary school with poor literacy and numeracy skills. However, the Giants Community Foundation realised that they had no suitable reading material available and got in touch with the Science Shop at Ulster University to help.

As part of the project, a team of students from Ulster University worked with the Giants Community Foundation to develop an interactive programme called the Giants Reading Programme¹¹⁰. Its aim was to teach children about cultural diversity and healthy eating supported by tailor made story books and interactive resources to encourage children and their parents to enjoy reading together.



¹⁰⁸ http://ulster.scienceshop.org/home/default.asp

¹⁰⁹ https://belfastgiants.com/2010/10/28/giants-community-foundation/

¹¹⁰ https://belfastgiants.com/2011/11/01/tesco-belfast-giants-team-up-for-literacy-programme-2/

One of the students, working closely with the Foundation, produced two illustrated books for key stage one children (five to seven year olds) exploring friendships and healthy eating. The other two students created an interactive website which provided both animated versions and an audio soundtrack of the books. 'Lollipops for Breakfast?' had a healthy eating message, and 'Just Like Me!' was a story about making different types of friends. The books were published with the help of the Giants' main sponsor, Tesco supermarket.

The Giants Reading Programme was launched in 2011 and run in 40 primary schools and libraries across Northern Ireland, reaching 1500 children. The programme was run in partnership with Belfast Giants ice hockey team, Libraries Northern Ireland, the Northern Ireland Education Minister, and supported by Tesco supermarket (business sponsor). ¹¹¹

As part of the programme, Belfast Giants ice hockey players visited schools to read to the pupils. The pupils also made puppets of the characters in the books and participated in a quiz to reinforce the messages in the book.

This Science Shop project won second prize in the 2010/2011 Science Shop Awards¹¹².

Impacts

The Giants Community Foundation was extremely satisfied with the high quality of the resources produced and the students' involvement meant that the reading programme could be delivered more easily and quickly.

The participating students also gained valuable skills and experience working on a real-life initiative.

The Science Shop project resulted in concrete resources that could be used as part of the Giants Reading programme, which had educational improvement goals. It subsequently reached 40 primary schools and 1500 children contributing to increasing the children's awareness of the importance of healthy eating and making different types of friends.

The launch of the reading programme gained a certain amount of media coverage too raising broader awareness of the programme and literacy issues in Northern Ireland e.g.

4.29 UNITED KINGDOM: Interchange, University of Liverpool

Interchange is a Science Shop, a registered charity based at the University of Liverpool in the UK, which has been running since 1993. It has developed a close partnership with Department of Sociology, Social Policy & Criminology with the aim of facilitating knowledge exchange through community-based learning. Interchange acts as a broker¹¹³ between Voluntary Community Organisations (VCOs) who have research and/or work project needs, and students at the University of Liverpool, who wish to conduct applied social research as part of their degrees. These project opportunities are embedded in the curriculum where they are supervised and assessed for academic credit¹¹⁴.



¹¹¹https://www.lisburntoday.co.uk/news/new-reading-programme-1-3652894

¹¹² https://www.ulster.ac.uk/news/2011/december/science-shop-success-for-ulster-students

¹¹³ https://www.liverpool.ac.uk/interchange/about/

¹¹⁴https://www.liverpool.ac.uk/media/livacuk/sociology-social-policy-and-

criminology/docs/Annual,Report,2013,.pdf

Interchange undertakes on average 25 projects a year. The concept behind Interchange was originally conceived by two academics, from the University of Liverpool and Liverpool Hope University, who were interested in the potential of community-based learning. Based on the Science Shop model, Interchange initially engaged a small number of Masters students to undertake collaborative projects for a number of local community organisations across the Greater Merseyside area¹¹⁵.

PROJECT: Women's Enterprising Breakthrough Centre

Women's Enterprising Breakthrough Centre¹¹⁶(WEB) was set up by local women in 1993¹¹⁷ in response to their needs to have somewhere to go for mutual support. WEB is a registered charity, located in a socially and economically disadvantaged area of Bidston – considered to be one of the most poverty-stricken wards on the Wirral, which is confronted with high unemployment rates and also has the highest rate of child poverty in the country.

WEB provides valuable educational and training services to women in the Wirral area aimed at promoting the good health and wellbeing of women in the north of Birkenhead and neighbouring districts. To build women's confidence and self-esteem, WEB is cautiously assisting them on various issues relating to their needs and at their own pace. To this end, the Centre creates opportunities for women to develop their personal skills and increase their chances of a better life.

In order to assess the services, they provide from user's and other agencies' perspectives and to inform future strategic planning, in 2005 WEB initiated a piece of research via the Science Shops. The research was conducted by an Interchange student in Sociology and Criminology from the University of Liverpool who chose to undertake the research as her final year dissertation.

To achieve the research objectives, the student used the triangulation methodology, including qualitative, as well as quantitative data. The method allowed her to accurately obtain information from both service users and other local agencies.

Impacts

The study showed that:

- larger premises were needed to facilitate the improvement to WEB's services;
- both service users and personnel working for other agencies agreed that the positive aspects needing to be highlighted were the caring and understanding attitudes of staff and the volunteers at WEB, as well as the location and accessibility of the Centre.

The main conclusion of the research was that WEB's services should continue to grow and that no other centre in the Wirral area was able to replace its services.

According to the new Development Officer of WEB, the research proved to be a useful tool for:

- finding information out about the service users of the centre;



¹¹⁵https://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

¹¹⁶ https://www.liverpool.ac.uk/interchange/about/diverse-community-projects/

¹¹⁷ http://www.webmerseyside.org/about-us

- preparing presentations on the Centre's day-to-day services for delegates in the voluntary and statutory sectors, such as for the European Anti-Poverty network meeting which was attended by 20 representatives from all EU member states including Eastern Europe;
- developing a qualitative survey of the emotional progression of the Centre service users.

The research recommendations also proved to have a positive impact on WEB development and expansion. Thus WEB:

- is actively involved in additional fundraising events to help finance and run the centre;
- has grown from a small support network of local women into a vital community-based organisation that supports women, men and children. Due to its increased work with men and boys, the centre also changed their legal charitable name in 2010 from Women's Enterprising Breakthrough to WEB Merseyside;
- is currently involved in promoting its profile by strategically placing the Centre in different networks including the Health and Social Care Partnership and the Wirral Community and Voluntary sector network. Recently WEB has been invited to be a stakeholder representative on gender issues, helping to inform the diversity policy for the Council⁴.

Interchange has also continued its partnership with the Department of Sociology, Social Policy and Criminology within the University of Liverpool and organised high quality student placements with the region's third sector, generating a positive impact on all parties involved¹¹⁸. Thus:

- students are provided with valuable opportunities to add quality work experience to their CVs, by conducting real life projects such as field research, feasibility studies or project coordination for NGOs in different sectors, e.g., Health & Social Care, Housing, Family.
- organisations are put in contact with highly motivated and skilled individuals, with strong technical abilities, real commitment and innovative approaches, to assist them in a specific project, provide training or advise on the challenges they face.

4.30 UNITED STATES OF AMERICA: Center for Child Environmental Health Risks Research, University of Washington

The University of Washington Center for Child Environmental Health Risks Research (CHC) is a multidisciplinary research programme created in 1998 aimed at achieving a better understanding of the biochemical, molecular and exposure mechanisms characterising the children's vulnerability to pesticides, their impacts and potential risks posed on the normal development and learning of children.

The programme operates in the Institute for Risk Analysis and Risk Communication within the School of Public Health and Community Medicine at the University of Washington. The CHC research programme covers basic mechanistic studies of toxicity, exposure assessment, risk assessment, and community based participatory research (CBPR).

To study children's environmental health, researchers from the University of Washington and the Fred Hutchinson Cancer Research Center follow a research approach that relies upon a community-based



¹¹⁸ https://www.liverpool.ac.uk/sociology-social-policy-and-criminology/interchange/

participatory model for working in the lab, in the field, and in the community to understand the mechanisms that define children's susceptibility to environmental exposures.

The CHC relies on two laboratory-based research projects, two field-based projects, and four facility cores (Neurobehavioral Assessment, Exposure Assessment, Risk Characterization and Risk Communication). This research is driven by questions arising from the community and scientific findings on pesticide toxicity and exposure can be directly integrated into risk assessment models, conceived for children's health protection¹¹⁹. The research projects analyze a multitude of mechanisms that influence the children's vulnerability to the damaging effects of pesticide, and include impact exposure modeling, life-course approach¹²⁰, field-based and laboratory-based research.

PROJECT: Community-Based Participatory Research Project

CHC was involved in a major CBPR project that initially ran from 2003 to 2008 and was subsequently extended until 2010. The main objectives of the project were¹²¹:

- to intervene to reduce children's exposure to pesticides, including the development of a culturally appropriate intervention to break the take-home pathway; and
- to foster partnerships between academic researchers and the community in which information requested by the community and basic research deficiencies/gaps are translated into studies that address the health needs of both.

CHC's approach to CBPR was based on the assumption that the community should be perceived as a larger geographical area in which all of the stakeholders needed to be involved. Therefore, to foster fundamental, as well as applied research, CHC involved participants from various institutions, schools, and different departments and clinics (e.g., a local farmworkers' union, local farm workers' clinics, the local Department of Agriculture, State Department of Health, Department of Labor and Industries, U.S. Environmental Protection Agency (EPA) district 10, Washington Growers' League, farmworker advocates, farmworkers, health care providers, legal representatives, local newspapers, a Spanish-speaking radio station, and university extension offices).

To bring about a substantial impact on the community, namely to achieve pesticide intervention with reduced childhood pesticide exposures, the center collaborated with a predominantly Hispanic farmworker community in 16 small towns and eight labor camps within the Yakima Valley of Washington state. Formally, the partnership consisted of 18 members of the community advisory board (CAB) assisted by a project coordinator hired from the community.

The CAB played an important role in the CBPR project from the start, being involved in different activities, such as: data collection design, providing information on pesticide exposure to local residents, the publication and dissemination of results (Israel et al, 2005).

¹²¹ https://cfpub.epa.gov/ncer_abstracts/index.cfm/fuseaction/display.highlight/abstract/8059



¹¹⁹ https://cfpub.epa.gov/ncer_abstracts/index.cfm/fuseaction/display.abstractDetail/abstract/8038/report/0 ¹²⁰ The life course approach also known as life-course perspective, or life-course theory it is an approach for analyzing people's life, by stressing the relevance of time, context, process, and meaning on human development and family life. (https://en.wikipedia.org/wiki/Life_course_approach)

A key factor in the success of the project was the hiring of local community members as staff, acting as project participants. As only a few of the hired community members had previous experience in research and interventions, special training sessions were organised.

The local staff were involved in all stages of the project and actively helped in various tasks ranging from feedback provision on study protocols and data collection instruments to providing concrete solutions on different implementation issues. The local staff operated as a daily interface between the project and the community, bridging the gaps between researchers, community partners, intervention participants, and the wider community.

The community partners together with the local staff played an important role in the design and application of data collection instruments. Their involvement in meetings and focus group interviews brought about perspectives that were not initially considered by the researchers, such as the cultural appropriateness of language and methods, and therefore contributed to a more complete data collection. The concerned communities were provided with better written materials that lead to their improved understanding of the socio-economic, political and the household environments. The hiring and training of local community members as data collectors had a significant impact on the data quality and its validity, and contributed to strengthening trust between the data collectors and the respondents.

Impacts

The overall impact the project had on its stakeholders was the valuable insight gained on how to conduct CBPR, in acquiring the appropriate skills and knowledge to overcome challenges and the benefits of using the CBPR approach for children's environmental health research. Thus, the CBPR project:

- addressed a major concern of the local community by bringing together partners with various knowledge, expertise and skills;
- facilitated the promotion of the quality and viability of the research through the use of the local participants' knowledge of the benefits of using CBPR;
- increased the chances of overcoming the community's lack of trust in research by directly involving local community members in the research;
- contributed to improving the health and well-being of the involved communities.

Challenges

During the project some challenges have been identified:

to comply with the key CBPR principle of equity, the issue of determining how and with what to compensate community partners for their involvement needed to be addressed. The approach had to take into account the level of involvement (e.g., yearly, monthly or weekly meetings), and the type of organisation (e.g. members from the agricultural industry and health care systems, farmworkers, community-based organisations). Besides providing financial resources and covering travel expenses, the funding also covered providing technical assistance and training, the hiring of local community members, providing health information.



- the need to overcome communication barriers between members of CBPR partnerships, due either to different languages (English or Spanish) or different styles (scientific or colloquial) of conveying information, had to be tackled.
- lack of training and experience of the researchers and community partners in conducting CBPR in the initial stages of the project.

4.31 UNITED STATES OF AMERICA: Oregon Clinical and Translational Research Institute, Oregon Health & Science University

Oregon Health & Science University (OHSU) houses the Oregon Clinical and Translational Research Institute (OCTRI), funded in 2006 by the National Institutes' of Health National Center for Research Resources to create an academic home for clinical and translational research.

OCTRI¹²² is part of a national consortium established in 2006 when the National Center for Research Resources awarded 12 academic health centers with the Clinical and Translational Science Awards (CTSAs). Currently, the consortium has expanded to 61 institutions that work together as a national consortium. CTSA institutions share a common vision to improve human health by transforming the research and training environment to enhance the efficiency and quality of clinical and translational research.

One of the Institute's key programmes of OCTRI is Community Research and Engagement, which seeks to work collaboratively with community organisations and researchers to study how best to improve the health of the public. OCTRI provided assistance to both the community and academic partners to attain this research funding.

PROJECT: Harvest Fiesta

Funding received for this project supported local Hispanic families who wanted to grow a home garden by providing resources, materials, volunteer support, and a social network that included meetings, an end of growing season fiesta and ongoing contact with the health promoters¹²³. Families enrolled in the project shared and learned about nutrition and new opportunities for physical exercise, which resulted in community building. The specific objectives of the Harvest Fiesta Project were:

- to pilot a peer network supporting the establishment of home gardens (growing healthful produce) among Hispanic families;
- to analyse the vegetable intake among participants before and after their garden is implemented; and
- to build community self-sufficiency through neighbourhood and household gardening, in ways that honour and utilise traditional skills and Hispanic culture.

The study had funding to sustain 40 farm families, which were enrolled on a first come first served basis. Community meetings were held nearly every month starting in March of each growing season

¹²² http://www.ohsu.edu/xd/research/centers-institutes/octri/about/index.cfm

¹²³ A health promoter is s person that analyse and understand the local behaviour and/or practices, being part of medical team and coordinating the communication and education campaigns on different themes in order to support the medical activities (https://msf.lu/en/job-profiles/health-promoters)

to provide project materials, such as seeds, and to share gardening tips, such as how to choose plants, compost, organic approaches for pest control, preparing the land, maintaining the garden and harvesting the vegetables. Popular education techniques were used for these sessions. A final community meeting (Harvest Fiesta) was held in October, where families prepared dishes with food grown in their gardens and the group celebrated what it had learned and grown.

The community group organised all of the study meetings and interactions with the participating families. The OHSU group developed educational materials about the harms of pesticides and how best to avoid them while still controlling insects. The community group translated and adapted those materials for appropriate grade level, plain language and health literacy. Both the OHSU and community groups conducted the key informant interviews, four of which were conducted in the autumn of 2009 and six of which were done in the autumn of 2010 using two open-ended questions (#1 What has the gardening project meant for you and your family? and #2 How has the education programme on pesticides, insects and ground cover been helpful to the programme?). The OHSU team also developed databases for the study data and conducted data analyses, while the community group worked on translating text responses from Spanish into English and entering data into the databases designed for this purpose.

Thirty-eight families enrolled in the study in the spring and completed the pre-gardening survey. Four more families enrolled in the summer but did not complete the pre-gardening survey. A total of 42 families were enrolled in the 2009 gardening season, although two families dropped out prior to completion of the post-questionnaire. Participants were asked questions both before and after the gardening season about their family's vegetable consumption, worry about food running out, and skipping meals. the frequency of adult vegetable intake of "several times a day" increased from 18.2 to 84.8%, and frequency of children's vegetable intake of "several times a day" increased from 24.0 to 64.0%.

This study is important because it succeeded in enrolling and following 38 underserved families who actively participated in an organic community gardening project over two growing seasons. The findings of the study indicate that the community gardening project resulted in many health benefits, including a nearly four-fold increase in vegetable intake among adults and a three-fold increase among children. In addition, many families expressed satisfaction with knowing the vegetables they grew in their gardens were pesticide free, the process of having a garden carried on traditions they learned from family in Mexico, and the economic benefits of not having to spend money on food.

Though it was predicted that vegetable intake would increase as a result of the gardening project, it was a surprise to learn about the importance of the project on family relationships. Several individuals reported that the gardening efforts contributed to a sense of togetherness within the family or as a place to spend quality family time building relationships. Over 69% of children worked in the garden alongside their parents.

Clearly family traditions are strong among this Hispanic population, even though many participants had lived in the US for a decade or more. It was similarly surprising to learn about the mental health benefits of the gardening project. Families enrolled in this study were agricultural workers who were either working in fields or packing warehouses for long hours, but found the community gardening activities were a good way to pass time, and bring relaxation, enjoyment, or reduce stress.



Community members who attended the group meetings reported that having people come from OHSU made them feel they were important and listened to. Though nearly 40 families were enrolled, attendance at the community meetings was lower than expected.

Impacts

Based on participants' opinions on project benefits expressed in the post-survey answers, the impacts on the families involved in the project were related to economic benefits ("When we had vegetables we would just go and cut them outside and eat them."; "We saved money we ate good and I also could save some vegetables for the winter. I freezed some and also dried some."), to health benefits ('Eating fresh, natural, and healthy"; "We did more exercise and we ate healthier."); to education and getting knowledge about gardening, soil and pesticide use ("We now use natural fertilizer that my husband makes—we have been composting"); and to the importance of family tradition.

Challenges

During a CBPR project that involves participation of various community groups one of the main challenges is the completion of the full project cycle by the enrolled individuals. During this project all the families enrolled during spring completed the pre-gardening survey.

In conclusion, a community gardening programme can reduce food insecurity, improve vegetable intake and strengthen family relationships.



5 Science Shops' impacts on communities and challenges

This chapter presents the impacts identified in the case studies from chapter 4, as well as the challenges encountered by the Science Shops in running their projects.

5.1 Impacts on communities

A major shortcoming common to most of the analysed projects is the absence of an impact evaluation. There are several important reasons why impact evaluation should be taken into account when initiating or developing a new project. Impact evaluation enables Science Shops to:

- provide funders with tangible proof of the effectiveness of their investment;
- inform citizens about the effectiveness, relevance and efficiency of the project's operations, and therefore gain their trust and support;
- show their openness to independent verification, and thus become perceived as more esteemed and reliable as research organisations.

The impact evaluation contained within this report has been conducted by analysing between one to four projects carried out by each of the Science Shops between 1997 - 2017. All of the information used to carry out the impact evaluation was exclusively gathered through desk research.

An analysis of the impact of Science Shops and similar initiatives before 2003 was presented by the EU funded project INTERACTS. The INTERACTS consortium developed an inventory (included in seven National Case Studies Reports) of the impacts generated from the direct co-operation between NGOs, universities and Science Shops in Denmark, the United Kingdom, Germany, Austria, Spain, and Romania.¹²⁴ More recent work on the impact of Science Shops on the community have not been identified.

While performing this research, several challenges were encountered relating to the information that is publicly available:

- Not all of the analysed Science Shops have a website of their own or, for those that do, most do not provide detailed information about their research projects and associated impacts on the involved stakeholders.
- Only a few of the investigated Science Shops provide detailed publicly available information about their past or current activities and/or projects, e.g. in reports. This means that the impacts on their communities cannot be assessed.
- For the most of the projects that involved Master thesis research no information was found about their evaluation after they had been completed.

To evaluate the impact the Science Shops have had on the community, an adapted version of the "Postproject evaluation" questionnaire of D9.1 deliverable of the PERARES project (*Evaluation Guidelines and Instruments*) (Smith Kaiser et al, 2013) was used (Annex 1). The adapted checklist is found in Annex 1 of this report.



¹²⁴ https://wilawien.ac.at/interacts/reports.html

To analyse the achieved impacts of each Science Shop, the post evaluation questionnaire (see Annex 1) was completed by the contributors to this deliverable for each analysed Science Shop and the answers were collated and analysed. In most cases nearly enough information was available to identify or to infer the direct and indirect impacts, while extremely little data has been found on the long-term impacts.

The results of the investigation are presented in the following table that shows the impacts on all types of stakeholders for each analysed Science Shop and project.

Country/Science Shop		
	Stakeholders ¹²⁵	Impacts
Projects		
- AUSTRALIA: Shopfront, Univ	versity of Technology	 organisations report new knowledge;
Sydney		 some students go on to work for the organisation;
Alfalfa House	NFO	- many organisations continue to work with UTS and come
		back with subsequent projects;
Sailors with DisABILITIES	NFO	 sometimes leads to new research;
		- recommendations often used in funding applications;
Research of Poverty Issues and	Community Centre	- stakeholders report satisfaction;
Research on Closure of		- Mums 4 Refugees' animation "made a real and positive
Women's Refuges		contribution to the debate over immigration detention";
		- helps to raise awareness of issues more widely in the
Designing refugee stories	Advocacy Group	public sphere;
		- many projects have led to strong partnerships;
		- Science Shop increased the stakeholders'/clients'
		knowledge of how research is done:
		- long term impacts reported by UTS Shopfront through its
		projects include: changes in public policy law reform new
		community services
Research on Closure of Women's Refuges Designing refugee stories	Closure of es ee stories Advocacy Group	 Mums 4 Refugees' animation "made a real and positive contribution to the debate over immigration detention"; helps to raise awareness of issues more widely in the public sphere; many projects have led to strong partnerships; Science Shop increased the stakeholders'/clients' knowledge of how research is done; long term impacts reported by UTS Shopfront through its projects include: changes in public policy, law reform, new community services.

¹²⁵ Science Shops' researchers are considered to be as community stakeholders in all the projects.

AUSTRIA: Institute of Social Science, Research, Education		- increased the stakeholders' knowledge concerning the				
and Information		cardiovascular diseases;				
		 influenced the direction of further research in the subject 				
Evaluation of a series of	NGO	area;				
lectures on precaution against		 raised awareness of Turkish women concerning heart 				
neart disease for Turkish		diseases and dietary habits;				
migrant women in Tirol		 young graduate medical students acquired new 				
		knowledge and skills in conducting interviews and				
		designing a survey questionnaire;				
		- the Science Shop enhanced its area of expertise and				
		strengthened its reputation for services provided in the				
		fields of research, society and culture;				
		- the research led to two new projects;				
		- the project facilitated enlargement of the collaboration				
		with other projects/similar organisations.				
ALISTRIA: Patenschaftsmodell	(Sponsorship model)	- the project/Science Shop increased the stakeholders'				
Innsbruck	(oponsoromp model)	knowledge of how research is done:				
		- the NGO gained enhanced visibility, and thus increased its				
Analysis on Customer	NGO	chances of attracting more clients:				
Satisfaction of the Aggrieved in		- the students gained experience in applying their academic				
Mediation in Penal Matters		knowledge to a real-life situation, developed new skills				
		and learned new scientific methods;				
		- the Science Shop extended its client base, including new				
		clients represented by businesses and small enterprises;				
		- community involvement brought about a deeper public				
		understanding of crime and therefore promoted				
		community support for victims, rehabilitation of offenders				
		and prevention of crime.				
AUSTRIA: Wissenschaftsladen W	lien	- the involved partners increased their knowledge about				
Student Methors at Vienna's	CRO	the situation of single mother students;				
Universities	СВО	- the book published to disseminate the project results				
Universities		helped improve wider society's understanding of the				
		situation of single mother students;				
		- university protessors became more aware of the special				
		circumstances of single mother students so that they				
		could better understand why an exam might be missed or				
		a paper might be handed in after the deddine;				
		- the situation of single mother students at vienna's				
		universities was improved.				
BELGIUM: Science Shop at Unive	ersity of Antwerp	- the students gained knowledge through the undertaken				
		CBR and CBPR projects for their graduation theses. Roth				
HIV and disclosure to partners -	СВО	projects made valuable recommendations. but no				
Research on the disclosure		information was found about their implementation.				
process for partners of Flemish		····				
gay and bisexual men with HIV						
Bottlenecks and Obstacles in						
the Prenatal Assistance to the						
Young Koma women						



CANADA: Centre for Teaching Waterloo Using CBPR to Examine Technology-Related Distractions in the AHS Classroom CANADA: Accès Savoirs, Univers Descriptive Statistics Analysis for the SOHA project	Excellence, University of Students Instructors ity of Laval NPO Students	 students who attended the Community Learning Project course had the opportunity to conduct CBPR, and improved their knowledge of how to collect and analyse data and how to deal with the community members; using the toolkit, the instructors learnt how to improve classroom management; a wider approach of using technology in class at the faculty level was established. positive impact on students who became accustomed with the concept and practice of social responsibility and acquired valuable skills on how to apply their knowledge for the benefit of a social cause; the expansion of the Science Shops' network, by establishing a Science Shop in Haiti, the Boutique des sciences Savoirs pour tous (SPOT).
CANADA: Office of Community University of Victoria PROJECT: The 2060 Project- Low Carbon Energy Pathways for British Columbia and Canada	-University Engagement, Network (researchers)	 the project increased the stakeholders'/clients' knowledge of how research is done, as stakeholders were actively involved in shaping research tasks, discussing the results and disseminating information about the project; the project helped develop continuing relations between academics and civil society organisations; the project strengthened community-university networks (directly working with government, utilities, private sector and municipalities); the project influenced the direction of further research in the subject, as it included research innovations (novel model code development) and was in active discussions with the community of utilities and developers across the Canada about future research topics; the project contributed to building community sector capacities and developing educational tools for helping cities and provinces identify the opportunities and challenges associated with developing affordable renewable electricity; increased energy literacy; developed student skills, knowledge, attributes towards capacity building.
FRANCE: Boutique de Sciences N International cooperation projects: Diagnosis of an associative database	lord - de France in Lille Network (multi stakeholders)	 the updated database allowed an inventory of international cooperation in the region to be established; promoted international cooperation in the region.
FRANCE:, Boutique des Sciences Does support for change have a place in the evolution of environmental education and sustainable development (EESD) professions? Case of Eco-Attitude	, University of Lyon Students Association	 the Eco-Attitude programme had a strong impact on the whole field of EESD because it participated in a broader reflection on the evolution of EESD professions and their teaching methods; increased the community's awareness of, and trust in the Science Shop's services and the credibility and usefulness of the results provided to the community.



GERMANY: Bonn Science Shop Serious Game about Renewable	Citizens (12-16 years old	 the impact of their projects can be seen indirectly in the number of further research requests they receive, by a growing number of project and consultancy requests by 			
Energy Technologies for Girls (SERENA)	girls)	different organisations, including universities and other public organisations.			
GERMANY: District Future - Urba of Technology, Sustainability Experiment "Beds and Bees" GERMANY: Science Shop Hannov Environmental Consulting	n Lab, Karlsruhe Institute Community organisation ver Citizens	 the citizens involved in the project gained knowledge about beekeeping and cultivating beds; the citizens become actively involved in the development of their district; a long-term impact is assured by the development of a concrete infrastructure created during the project through the installation of beds and beehives. the ongoing project increases citizens' knowledge of waste management and energy savings; ecological impact through energy saving. 			
GERMANY: Science Shop Potsda	m	- with Fabl ab and comparable approaches, there is an			
FabLab	Citizens	 educational impact on the participants; citizens learn how to use different machines and materials. 			
HUNGARY: Science Shop at Envi Research Group Forgotten citizens of Europe	ronmental Social Science Community groups	 students gained knowledge and received practical research training trust-based relationships with stakeholders were built. 			
IRELAND: Access & Civic Eng Institute of Technology Programme for Students Learning with Communities	agement Office, Dublin Students	 during the first year of SLWC operation, undergraduate and postgraduate students from all 6 faculties in DIT including 31 modules, were involved in learning with communities; developed life-long learning opportunities and increased the academics' interest in community-based research by supporting relationships between academics and civil society organisations; this project facilitated enlargement of the collaboration with other projects/similar organisations. 			
IRELAND: University of Colle Academic Research Links Respite care services for families caring for a person with an intellectual disability: Decision making, experience and models of respite	ege Cork, Community- Students	 students became engaged with the topic; findings were presented at two conferences; developed good relationships with the CSO; findings were referred to in a Health Service Executive report; Home Share Clare was successful in securing funding of €30,000 for the continuation of the project; provided recommendations to Home Share that they could use to inform the development of their respite services; project received an Award which was communicated to the media. 			



LITHUANIA: Social Innovation In Supply and export opportunities	stitute Science Shop NGO	 increase of client's knowledge on how research is done; the relationship continues after the projects are done; organisations keep addressing the Science Shops for
of innovative publishing products for blind and seeing children in four European countries: Italy, the Netherlands, Sweden and Germany		 consultations or potential collaborations; community organisations indicated that they use research data in applications for funding; results of all projects are used to improve programmes or services.
Development of eco awareness in Lithuania	NGO	 since it is a young Science Shop, each project helps to strengthen it; as a result of Science Shops projects, the NGO that runs it
Psychological support for families who have lost a baby and prenatal care personnel in Lithuanian medical institutions: search for innovative tools	professionals	got involved in other larger projects.
Attitudes of young people towards corruption	NGO	
LITHUANIA Science Shop, Vilnius and Design Design of public space in a	s College of Technologies	 the projects help to motivate students, since they can apply their knowledge to real life problems; the projects are intended to improve the quality of life through the eventual improvement of physical living or
building plot. Feasibility study of modernisation of an apartment building	Resident association	 working conditions; long-term impact on the community through the potential improvement of life and work conditions. The science shop is considered as a tool to implement the 'third mission' of higher education institutions.
Measurement of noise level in the school	School	
Optimisation of lighting system	Nursing home	
NEW ZEALAND: Curious Mino Platform	ls Participatory Science	 researchers became involved in locally relevant lines of enquiry, where high-quality scientific outputs can be created through harnessing local knowledge and the
Healthy Homes, Healthy Futures	Students Māori collectives and organisations Schools CBOs	 contributions of citizens; the direction of future research has been influenced; the environmental projects also result in increased ownership of the issues and volunteers becoming engaged in the protection of their local environment beyond the end of the project.



what lives in the south Taranaki reef?	Citizens Marine scientists Members of the local diving club, schools, biologists, engineers, iwi (Maori tribes), fishermen and other CBOs.	 completed projects contribute to the overall sustainability of the Participatory Science Platform; due to the participatory nature of the projects, citizens are involved in conducting the research and learn about the research process; interesting findings generated. Interest demonstrated via commitment from researchers; data generated is being used to inform other research projects (e.g. baseline data). Data is sometimes added to international databases too; many projects have led to strong partnership and continuing relationships between academics and civil society organisations; many of the environmental projects have led to increased local awareness about issues and volunteers / citizens becoming actively involved in tackling the issues. A popup exhibition showcased the results of one environmental project; many projects led to wider communities becoming engaged beyond the immediate participants in the project; the reef project has led to collaborations with other projects.
ROMANIA: InterMEDIU Science S Evaluation of the quality of drinking water supplied in the city of lasi	Shop, University of Iasi Local community Students NGO Water authorities	 the stakeholders' knowledge about the potential of university researchers solving environmental problems was increased; cooperation and collaboration between universities and civil society organisations increased; the interest of academics and students in community- based participatory research and solving community concerns related to the environment increased; the University promoted and disseminated its research activities, to raise community awareness about the quality of drinking water and to gain its trust; a long-term collaboration with the regional water company was created; the University also benefited from the project outcomes developing new curricula, engaging students in voluntary research and cooperating with community organisations the NGO project partner has become a permanent presence in public debates and seminars organised by InterMEDIU TUI.
ROMANIA: Lab Worm, Sapientia Transylvania Is it safe to eat snow?	Hungarian University of Citizens Students	 the project results were picked up by the media and disseminated around the globe; the number of research questions received increased; dissemination of outcomes contributed to raising public awareness and local authorities' involvement in resolving the problems.



ROMANIA: InterMEDIU Buchares Politehnica of Bucharest The lability of potentially toxic elements in soils affected by smelting activities in the Zlatna area	t Science Shop, University Students Small communities	 increased awareness amongst the local community of the harmful effects of groundwater pollution with nitrates and of the potentially toxic elements in soils affected by smelter activities; during the educational projects, InterMEDIU staff developed contacts with more than 300 teachers and educators interested in self-development and project-based cooperation; the number of educational events at national level increased as a result of demand from teachers.
THE NETHERLANDS: Bèta Weter of Groningen The sound of high winds Bat gets green light	Students Authorities	 the projects increased the stakeholders' knowledge of how research is done by involving them in consultations with researchers; the project helped develop continuing relations between academics and civil society organisations and was followed by a series of studies; resulted in improved collaboration between the Science Shop and all WUR departments; the Science Shop's prestige has grown and now receives more recearch quortiens than it can manage;
		 the project increased the academics' interest in community-based (participatory) research.
Serbian heritage language schools in the Netherlands through the eyes of the parents	CBO (Serbian origin)	 researchers gamed valuable data and could publish scientific papers; project "Shared Literature: Cultural transfer in and trough reading groups" was written by both sides and received subsequent funding; all described projects enlarged scientific knowledge and one of them had impact on the theoretical changes;
Shared Literature: Cultural transfer in and through reading groups	CBO (adult refugees	 participating civil society organisations, language centres, ethnic schools improved their services; the projects related to reading guides led to the development of relations between researchers and
about feedback to learn a language effectively	learning Dutch)	 libraries, readers clubs, etc.; coordinators, researchers and students in the Science Shop's projects received good experience in CBPR and improved their skills and knowledge.
THE NETHERLANDS: Science Sho & Research Ravenstein: De Heus animal feed factory	o, Wageningen University CBO	 due to the trust generated within the community, many organisations return with new research requests. the Science Shop provided strong reasons to the local council for why the garden should be maintained and, as such helped to strengthen the role of the Board of the Ons Buiten community garden within its community.
Ons Buiten	NGO Citizens	 a student who participated in the research was hired by the NGO. the project resulted in the expansion of the participating NGO (VKK) which engaged most of the small villages in the
Vereniging Kleine Kernen	NGO	province of Gelderland that had previously not been included.



		 further collaborations between the NGOs and the Science Shop related to providing better services to the small village communities.
UNITED KINGDOM: Queen's U Shop	niversity Belfast Science	 the Science Shop's project resulted in concrete findings that could be used by the Association to further develop services for those suffering from dementia.
Dementia care services	NGO	 the project has also increased the partners' capacity to get project funding. Springfield Charitable Association utilized the results of the research as part of a successful bid to the Big Lottery Fund to gain funding to develop its services and activities. the participating students also gained valuable skills and experience undertaking the research. QUB has an ongoing relationship with Springfield Charitable Association and has subsequently undertaken a number of projects for them relating to dementia.
UNITED KINGDOM: Ulster Unive	rsity Science Shop	 the participating students gained valuable skills and experience working on a real-life initiative;
Giants Reading Programme	NGO	 resulted in a concrete output that was used as part of a literacy programme, which had educational improvement goals; it subsequently reached 40 primary schools and 1500 children contributing to increasing the children's awareness of the importance of healthy eating and making different types of friends; project gained media coverage resulting in wider awareness of the initiative.
UNITED KINGDOM: Interchange,	, University of Liverpool	- the project increased the stakeholders' knowledge of how
Women's Enterprising Breakthrough Centre	NGO	undertaken by students who conducted applied social research as part of their degrees;
Interchange Research	NGO	 to grow, being in fact the best outcome for the Wirral area, a socially and economically disadvantaged area; a positive impact on WEB development and expansion (is actively involved in additional fundraising events to help finance and run the centre; has grown from a small support network of local women into a vital community-based organisation that supports women, men and children, etc).
UNITED STATES OF AMERI	CA: Center for Child	 improved the community's trust in research by directly involving local community members in the research;
Community-Based Participatory Research Project	Community groups	 contributed to improving the health and well-being of the involved communities; researchers gained experience in conducting CBPR. the project staff gained experience in data collection design, communicating information on pesticide exposure to local residents, publishing and disseminating results,
		developing business plans for commercial organisations.



UNITED STATES OF AMERICA: Oregon Clinical and		 families enrolled in the project acquired knowledge,
Translational Research Institute, Oregon Health & Science		learning about nutrition and new opportunities for
University		physical exercise, which resulted in community building; built community self-sufficiency through neighbourhood
Harvest Fiesta	Community groups Children	 and household gardening; the families involved in the project got economic and health benefits; the project helped to strengthen family relationships.

Table 2. Identified impacts

The analysis of the results of the post evaluation questionnaire shows that the Science Shops which provided a rate of over 50% of positive answers have also mentioned positive impacts/changes produced by their projects/ activities on one or more of its stakeholders. From these cases, the following percentages for the corresponding impacts/ changes were registered:

- 74.2% increased the stakeholders' knowledge of how research is done;
- 58.1% increased the researchers' interest in the subject;
- 74.2% helped to develop ongoing relationships between academics and civil society organisations;
- 54.8% influenced the direction of further research in the subject area;
- 71% served the community for the quality of life improvement (health, environment, education, wealth); and
- 51.6% showed the prospect to produce long-term benefits for the community.

Most of the answers related to long-term impact were mainly inferred and the percentage of affirmative answers was between 9 and 14%. It can be speculated that one of the reasons for the reduced number of positive responses is the lack of data about long-term impact. Another possible reason could be the research topic was very specific and the community group was very small. In the case of the most recently established Science Shops, the time lag between research completion and its effects on community is too short.

Only two out of 31 Science Shops developed projects that encouraged new methods, technologies or tools to be implemented by enterprises. Most of the assessed projects have had social impacts related to health, quality of life, education, special community groups, and quite a few had technical impacts.

Some of the most notable effects on the community were increasing stakeholders' knowledge about the addressed topic (including students, university, and researchers), developing relationships between the Science Shops and the community, and increasing the quality of life.

Some interesting results can be observed for the selected Science Shops in Table 3. For example, the selected non-European country initiatives showed a 100% rate of affirmative answers about increasing the stakeholders' knowledge of how research is done. For the same question, the rate of the affirmative answer for European Science Shops was about 67%.

With regard to long-term impact, the European Science Shops are facilitating further collaborations with other projects/similar organisations in 50% of the cases.



	Europe		Beyond Europe	
	affirmative answers		affirmative answers	
Impact	out of 24		out of 7	
	Science	%	Similar	%
The project/Science Shop increased the	Shops		Initiatives	
stakeholders'/clients' knowledge of how research	16	66 7	7	100.0
is done	10	00.7	,	100.0
The project/Science Shep increased the				
researchers' interest in the subject	18	75.0	4	57.1
The project / Science Chen increased the academics'				
interact in community based (nerticinatory)	11	1E Q	2	20 G
research	11	43.0	2	20.0
The president (Crience Char halond develop				
The project/Science Shop helped develop	22		C	0F 7
civil society organisations	25	95.8	0	05.7
The project/Science Shop influenced the direction	10	66 7	-	74.4
of further research in the subject area	16	66.7	5	/1.4
The project/Science Shop increased the partners'	7	29.2	1	14.3
capacity to get project funding				
The project/Science Shop increased stakeholders'				
awareness on the topic and their capacity to raise				
comments/concerns about the project, and/or	7	29.2	2	28.6
request any additional information/ continuation				
of the project				
The project/Science Shop helps to improve the				
quality of life of the community (health.	22	91.7	6	85.7
environment, education, wealth)		• =		
The project/Science Shop activity is likely to				
produce long-term benefits for the community	16	66.7	4	57.1
The project/Science Shop research found and				
promoted new methods, technologies or tools to	5	20.8	3	42.9
be implemented by enterprises				
Long-term impact				
The project/Science Shop led to the development	9	37.5	2	28.6
of new research collaborations				
Publication of the project/Science Shop results	4.0	<u> </u>	2	42.0
raised awareness of the issue(s) more widely	10	41.7	3	42.9
Publication of the project/Science Shop results	-	22.2		44.5
caused alternative policy options to be considered	5	20.8	1	14.3



Publication of the project/Science Shop results led to improvements to an existing policy, programme or service	13	54.2	2	28.6
Publication of the project/Science Shop results led to new research in the subject area	3	12.5	1	14.3
This project/Science Shop helped the development of the Science Shops involved	12	50.0	3	42.9
This project/Science Shop facilitated further collaborations collaboration with other projects/similar organisations	12	50.0	1	14.3

 Table 3. Results of the assessment

5.2 Challenges

One of the main goals of CBPR is to ensure that the research organisations and the community are carrying out participatory research and are equally engaged in a genuine partnership. Achieving this aim is a difficult task caused by the difference between internal and external stakeholders' cultures, understanding, education, experience with research, resources, etc., as well as by the difference between traditional and participatory research. During the assessment of the selected Science Shops' projects, a number of challenges were identified, which were grouped into three categories: social, organisational and procedural, and funding related challenges. These were collected and presented below.

Social related challenges:

- adaptation of the agreement with the members of the Muslim (Turkish) community not directly participating in the project (Hodjas) with the aim of identifying general cultural differences (2)¹²⁶;
- the need of the internal stakeholders (students) to surpass the barrier of communicating and working with members of different professional groups (3);
- overcoming communication barriers between members of CBPR partnerships, due either to different languages (e.g., English or Spanish) or different styles (scientific or colloquial) of conveying information, had to be tackled (30);
- building trust between care providers and community groups (5);
- the low levels of education and illiteracy of the Roma women (4);
- lack of awareness of the harmful impacts of unhealthy habits (smoking) among among Roma women (4);
- promoting a student-driven change in technology use in class and identifying the reasons why they use off-task technology (6);
- stimulating citizen engagement (10);

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¹²⁶ The number in brackets represents the position of the Case Study in Chapter 4.

- promoting the social and personal dimension of students' learning and awareness raising about the implications of their profession's role in society (16);
- improving the quality and depth of student engagement with communities to enhance the community's potential to positively engage with the students and the college (16);
- increasing the interest of the community groups in research (22);
- the need for training and to improve the experience of the researchers and community partners in conducting CBPR in the initial stages of the project (30).

Organisational and procedural related challenges:

- adaptation and improvement of the quality of the mediation services for different stakeholders (3);
- expanding the area of expertise and type of stakeholders involved (3);
- adaptation of the questionnaires to the different characteristics, such as size, field of activity, area of intervention etc., of the surveyed community group (9);
- formalising a way to increase volunteering opportunities (10);
- the need to involve students in the structures and early processes of project planning and design (16);
- development of the project assessment procedures starting with pre-project and ending with post-project evaluation forms (16);
- improvement of the communication with the civil society/community (21,22).

Funding related challenges:

- the need for non-university-based Science Shops to overcome funding barriers for social research projects in a market dominated by academic competitors (2);
- the need to compensate community partners for their involvement (30).

Most of the collected challenges are social related, associated with communication, awareness, engagement, culture and language differences. Regarding the organisational and procedural related challenges, these are mainly related to the need to involve more stakeholders and partners, as well as developing project evaluation procedures using pre- and post-project evaluation forms.



6 Conclusions

An overall observation is that, in order to be able to effectively evaluate impacts, specific CBR/CBPR evaluation tools need to be further developed and used by Science Shops. Impact evaluation tools would be very useful in the field of CBR/CBPR. However, given that the type of expected impact varies according to the field of research, impact specific challenges might be encountered and the research outcomes may not be able to be compared using the same tool. Based on this investigation of the impact of the Science Shops on the community, strategies could be developed to facilitate the expansion of the Science Shops ecosystem and to contribute to an increase in research activities undertaken for the benefit of community.

The analysis of the 31 Science Shops identifies specific impacts on the community generated by the projects they have carried out. The identified impacts on both internal stakeholders (students and the Science Shops) and external stakeholders (different types of organisations, individuals, community groups, authorities, enterprises, etc.) are of great importance for evaluating research efficiency.

While most Science Shops do not conduct direct impact analysis, several impacts can be inferred from public information about specific projects. These include the following impacts on the main stakeholders.

Internal Stakeholders

STUDENTS

- For students, research projects represent an opportunity to work on a real-life problem. They acquire new knowledge and skills in conducting interviews, designing survey questionnaires.
 Some students even find jobs based on this research experience.
- By conducting Science Shop projects, some students become accustomed with the concept and practice of social responsibility and acquire valuable skills on how to apply their knowledge for the benefit of a social cause.
- Students are encouraged to publish their research results and to participate at conferences that help them to build their professional reputation.

SCIENCE SHOPS

- for some Science Shops, subsequent research topics are influenced by the research outcomes;
- dissemination of the project outputs helps to raise public awareness about the issues and can lead to local authorities taking action to resolve the identified problems;
- experienced Science Shops contribute to the expansion of the Science Shop network by establishing new Science Shops;
- successful completion of a project leads to an increase in research requests;
- long-term impacts have been reported for some projects (e.g. changes in public policy, legislation or in new community services);



 the interest of academics and students in community-based participatory research and solving community concerns related to the environment increases after receiving questions from the community concerning the quality of the environment.

External Stakeholders

- Community groups, community-based organisations and not-for profit organisations are the most frequent "clients" of the Science Shops. The projects also lead to new collaborations between Science Shops and other organisations or networks of organisations.
- One of the most important impacts is that that communities become aware of the benefits of research and therefore increase their trust in research and interest in participating in the research process.
- Due to the participatory nature of the projects, citizens are often involved in conducting the research and learning about the research process.
- Many of the environmental projects have led to increased local awareness about issues and volunteers/citizens becoming actively involved in tackling the problems. As a result, stakeholders' knowledge about the potential of university researchers solving environmental problems increases.
- The relationship between the Science Shop and stakeholders continues after completion of the projects with organisations returning to the Science Shops for consultations or new collaborations.

The above impacts are common to most of the Science Shops analysed and cover all types of Science Shops and research topics.



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Annex

Questionnaire for Projects and Science Shops assessment¹²⁷

Impacts	Yes	Νο	lf yes, how
The project/Science Shop increased the stakeholders'/clients' knowledge of how research is done			
The project/Science Shop increased the researchers' interest for the subject			
The project/Science Shop increased the academics' interest in community- based (participatory) research			
The project/Science Shop helped develop continuing relations between academics and civil society organisations			
The project/Science Shop influenced the direction of further research in the subject area			
The project/Science Shop increased the partners' capacity to get project funding			
The project/Science Shop increased stakeholders' awareness on the topic and their capacity to raised comments/concerns about the project, and/or request any additional information/ continuation of the project			
The project/Science Shop serve the community for the quality of life improvement (health, environment, education, wealth)			
The project/Science Shop activity is likely to produce long-term benefits for the community			
The project/Science Shop research found and promoted new methods, technologies or tools to be implemented by enterprises			
Longer-term impacts		L	
The project/Science Shop led to the development of new research collaborations			
Publication of the project/Science Shop results raised awareness of the issue(s) more widely			

¹²⁷ adapted after http://www.livingknowledge.org/fileadmin/Dateien-Living-Knowledge/Library/Project_reports/PERARES_EValuation_Guidelines_and_Instruments_D9.1.pdf



Publication of the project/Science Shop results caused alternative policy options to be considered		
Publication of the project/Science Shop results led to improvements to an existing policy, programme or service		
Publication of the project/Science Shop results led to new research in the subject area		
This project/Science Shop helped the development of the Science Shops involved		
This project/Science Shop facilitated further collaborations collaboration with other projects/similar organisations		

