



SciShops

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

D6.3

Knowledge transfer assessment 1



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Executive summary

Transfer of knowledge from Science Shops to the community is a key challenge for implementing community based participatory research (CBPR) activities within the SciShops.eu project. The aim of this report is to outline the different strategies and initiatives of the new Science Shops established in the framework of the project to transfer knowledge to their communities. New Science Shops undertook a series of initiatives and facilitated research activities for the benefit of the community and an interactive and productive research design has been made to break real-life problems down, translate them into research questions and answer and/or develop solutions in co-creation between the Science Shop's staff and the community.

In this regard, the report outlines knowledge transfer actions carried out for the new Science Shops and how they have developed an interactive research with the community. The report will be updated with new information, based on running activities, in the next iteration (D 6.5 Knowledge transfer assessment 2).

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1 Introduction in the context of SciShops.eu

SciShops.eu (Enhancing the Responsible and Sustainable Expansion of the Science Shops Ecosystem in Europe) is a Horizon 2020 project on participatory research and innovation via Science Shops that involves in total 18 institutions from 13 European countries. The overall goal of SciShops.eu project is to enlarge community based participatory research and innovation by building on and expanding the capacity of Science Shops in Europe and beyond. The project relates to exploring how different institutions (e.g. small-, medium- and large enterprises; research institutes; non-governmental organisations; non-profit organisations, universities) can develop and establish sustainable Science Shops. SciShops.eu aims to engage local stakeholders and actively integrate them in community-based research activities of Science Shops. The project runs from September 2017 until February 2020.

The overall aim of WP6 is to establish new science shops and twin them with experienced ones for effective knowledge exchange. At least 10 new sustainable Science Shops within different types of organizations will be established, knowledge transfer activities have been implemented as well as mutual learning events for sharing lessons learned from Science Shops staff have been organized. The aim of this Deliverable is to outline the knowledge transfer activities carried out by the new science shops created in the framework of this project.

2 Knowledge Transfer from the new Science Shops to the Community

2.1. Bay Zoltán Science Shop (BZN)

Knowledge Transfer to the Community and feedback from parties

Bay Zoltán Science Shop built collaboration with other divisions within its mother organization, Bay Zoltán Nonprofit Ltd. (BZN). Based on this collaboration, new research ideas were identified and collaboration opportunities were mapped outside the organization.

The first knowledge transfer action was carried out in collaboration with the Smart System Division of BZN. BZN personnel worked with the aim to reduce and management of food waste. Their findings were used in an educational activity carried out by Bay Zoltán Science Shop. 3rd grade students of the Széchenyi István Primary School of Budakeszi participated in the pilot activity. In the frame of a class, children learnt about how to avoid wasting food, why it is bad for our society, what actions can be done in their homes. They studied about appropriate food storage and different expiry dates. Classes were built in an informal manner, focusing on discussion, games and thought provoking.

It is certain that children in that age can influence the behaviour of their families. This activity helped to communicate research results to the community and to reach impact within the society.

Work will be continued in other schools as well.

2.2. CPR-IJS Science Shop

Knowledge Transfer to the Community and feedback from parties

Upon its inception in autumn 2018, the JSI (CPR-IJS) Science shop undertook a series of initiatives and facilitated research activities for the benefit of the community.

The first initiative within the CPR-JSI has been provided by civil initiatives aimed at placing a high-voltage transmission line (from Beričevo to Divača) at a safe distance from residential settlements, schools and kindergartens. This included the involvement of interested inhabitants in the process of spatial planning of the transmission line.

Representatives of the civil initiatives in question approached us on the basis of a negative experience in the involvement of the public and civil society in the process of the spatial planning of the Beričevo-Divača transmission line; the project is currently at a standstill due to the pressure of the civil initiatives and the media.

Knowledge transfer has been performed through three workshops; in the first two workshops the problem was thoroughly analysed, while at the third meeting the idea of developing a decision analysis model has been initiated and discussed. It is expected that the work on the decision analysis model will gather all interested parties, including decision-makers, for the purpose of finding a solution for the problem of siting the transmission line Beričevo-Divača.

Additionally, in December 2018, an NGO “Društvo Prihodnost” (transl. Society of Future associated with Greenpeace) approached CPR-IJS with a question about a carbon footprint of the one-time use of packaging containers/materials (PET bottles, PE shopping bags). The results are to be used in establishing an efficient communication with the community on how to successfully reduce the use of a single use packaging as well as to promote the re-use of more sustainable packaging means.

Knowledge transfer was ongoing throughout the research since the NGO Društvo Prihodnost personnel actively participated in the research: they collaborated in the creation of the concept for calculations, assisted in data collection, in the process of selection of emission factors etc. In the future several workshops are planned to be organized with the partnership organizations in order to spread the word in a more efficient manner.

2.3. KPMG Science Shop

Knowledge Transfer to the Community and feedback from parties

Upon its inception in autumn 2018, the KPMG Science shop undertook a series of initiatives and facilitated research activities for the benefit of the community. Specifically, in December 2018, the KPMG Science Shop made a synergy with the with Mathematics for Industry Network to tackle a specific research question created by Vasiliko Terminal Services (VTS), a marine services company in Cyprus undertaking berthing and unberthing vessels operations. The research question dealt with investigating efficient ways of berthing and unberthing vessels within the Vasiliko Port and the impact on fuel consumption, aiming to achieve the most optimal solution on fuel reduction.

Knowledge transfer was ongoing throughout the research since VTS personnel took part in the research: They assisted in the data analysis of results and modelling vessel optimal trajectories. Predominantly it was a mathematical research and the creation of a model. All parties involved were extremely satisfied with the work undertaken and upon presentation of the preliminary results of the research, VTS consented in conducting further research to refine them and create a versatile model that can reduce the company's carbon footprint and make savings from fuel consumption.

Despite being in a niche sector, the results of the research may prove useful for such companies all around Europe. The modelling methodologies, the parameters assumed and the assumptions used are of interest when investigating such topics. Locally, the area where the Vasiliko Port is situated is environmentally challenged, therefore it can be argued that a positive impact on the environment is anticipated.

2.4. Leiden Science Shop

Knowledge Transfer to the Community and feedback from parties

The Leiden Science Shop was created to bring together, serve and make knowledge transfer possible, the stakeholders who are close to research through the Citizen Science Lab and the ones with no access to research, such as rural communities. It manages to transfer knowledge in four EU countries by engaging local stakeholders like schools, NGOs and businesses, as well as Local Authorities who are financial supporting the initiatives.

Currently, various initiatives are taking place, mainly dealing with stakeholder engagement, research question mining and refinement and matching stakeholders with experts. The Leiden Citizen Science Lab aspires to be an incubator and hub to co-create successful and sustainable citizen science projects, to Connect scientists and non-scientists and to address urgent scientific and societal issues. It supports with expertise and funding to first pilot/prototyping stage, with the goal to become a sustainable project delivering new scientific results. Finally, it brings people together from different backgrounds who are active in citizen science or a certain topic.

2.5. SYNYO Science Shop (ScienceShop.at)

Knowledge Transfer to the Community and feedback from parties

Since its establishment, ScienceShop.at is working closely together with the national AAL, IoT and Open Knowledge community and seeks to collaborate with further stakeholders in the field of emerging technologies. The science shop has established synergies with existing networks and initiatives, e.g. the Citizen Science Network Austria, the Citizen Science platform SPOTTERON as well as the Open Knowledge Maps foundation.

The knowledge transfer between science and the Active Assisted Living (AAL) community was, among others, fostered via the co-creation event “Aging well in a digital world” which took place in November 2018 and has set strong focus on challenges in context of the digital divide & social inclusion. Furthermore, the “Idea Lab Mauerbach” co-creation event took place in September 2018 and was strongly focusing on human-machine interaction. As a result of this co-creation meeting SMARAGD – a project focusing on smart aggregation and visualization of health data – was started.

The science shop has also established synergies with the Embedded Lab Vienna for IoT & Security (ELVIS), which is specifically tackling challenges at the brink of IoT & Society by reaching out to younger users of IoT-technologies. Considering the civil society - perspective by following a CBPR approach in this context will deem useful, specifically to bring technology closer to society. SYNYO has recently established endeavors in the field of IoT-awareness and will heavily synergize with the running project IoThink. An initial stakeholder meeting with ELVIS was held in January 2019, in order to discuss further steps for collaboration and opportunities to reach out to identified communities.

2.6. UNIBS Science Shop

Knowledge Transfer to the Community and feedback from parties

The science shop at University of Brescia (WatShop, <https://www.watshop.it>) was presented to citizens and stakeholders during several events occurring in 2018 and at the beginning of 2019. While raising the interest in the environmental theme that WatShop is addressing, those presentations aimed at emphasizing the potential benefits of Community-based Participatory Research. The feedback of the parties so far has been very positive, according to the expression of interest in the activities of the science shop received from several associations, including the municipality of Brescia, the local manager of the water services and some local social enterprises and citizen associations.

The pilot project dealing with the management efficiency of water services was requested by an association of municipalities and is being developed in cooperation also with external experts. Knowledge transfer occurred mainly at the beginning of the project to decide which methodology could be adopted and will occur more intensively in the final step of the research, when dealing with communication and dissemination activities. During the initial step of the project, even if not directly linked to the project, an informal public meeting was organized on the cost of the water. The event was hosted by Urban Center, a dissemination and participative initiative of the municipality managing some rooms in the town center. Citizens and stakeholders participated to the meeting and expressed their positive feedback at the end of the event.

A second event was organized for the World Water Day (22nd March 2019). It was again an informal meeting but this time the focus was on water, irrigation and climate and the event was hosted by Ambiente Parco, a social enterprise managing an exposition site dealing with environmental issues and located in the center of the town. The participation of the Oglio River Management Consortium was very important and suggested a future project dealing with dissemination to citizens and farmers of the activities of the consortium.

2.7. Wuppertal Science Shop (WiLaWu)

Knowledge Transfer to the Community and feedback from parties

As a pilot project under the framework of SciShops.eu, the Wuppertal Institute helped to organise the Climathon Wuppertal, a community-based participatory research event that took place on 26 October 2018. Climathon is a global movement dedicated to solving city climate challenges by bringing citizens together to develop solutions to local climate issues. Regular press releases and social media posts in front and during the Climathon Wuppertal 2018 supported the knowledge transfer of the event.

During the Climathon, seven teams spent 24 hours together developing solutions to local climate issues. One idea was a Heavy Rain Kit in response to massive damage caused by heavy rain in May 2018 in Wuppertal, when the roof of a university building collapsed and streets and basements were flooded.

To support the knowledge transfer the Wuppertal Institute has organised three follow up events after the Climathon, moderated co-creation workshops and introduced scientific tools, such as the WI's ecological rucksack calculator (<https://www.ressourcen-rechner.de/?lang=en>). The project team sought to create a positive learning experience and supporting knowledge transfer by connecting physically-perceived impressions with easily accessible information about heavy rain. Through this combined approach, the team wants to empower citizens to engage in climate adaption and prevention actions. The Heavy Rain Kit has since been submitted to the POWER Idea Contest for Sustainable Communities and was awarded 3rd place out of 140 ideas (<https://www.power-h2020.eu/idea-contest-sustainable-communities/power-idea-contest-finalists/>).

Wuppertal Science Shop, known as WiLaWu, is now continuing to further develop its local community network to develop new projects and foster knowledge transfer based on community-based participatory research approach.

2.8. KU Leuven

Knowledge Transfer to the Community and feedback from parties

The KU Leuven pilot project in the framework of SciShops.eu investigates the role of teachers in creating a positive and inclusive school climate. The project's focus has emerged out of our discussions with school directors, teachers and Flemish educational officials. More specifically, this project looks at how teachers in Flanders deal with controversial topics and challenges related to religious and cultural diversity in the classroom (integration, racism, polarization, etc.). For example, teachers are expected to identify signs of extremism and radicalisation among students and are offered trainings to counter the 'us versus them' narratives in the classroom. In addition, a hotline has been established for teachers to report worrisome cases to a network of deradicalization experts. Policies such as these have been criticized for potentially contributing to the stigmatization of particular groups and undermining the student-teacher relationship.

As a first knowledge transfer activity, the science shop engaged intensively with stakeholders (i.e. school directors, teachers & education policymakers) in the conceptualization phase of the project. In this phase, potential stakeholders were informed about the project goals and state of the art in academic research regarding the topics of the project. The science shop actively exchanged ideas with stakeholders regarding the design of the survey instruments and the preparation of the pilot project. As part of these discussions, the science shop has conducted and organized interviews and focus group discussions with policy makers, radicalization experts, school representatives, and representatives from VVSG and 'Bijzonder Comité voor Herinneringseducatie' (BCH) in the period September-December 2018. VVSG is a civil society organization representing local governments in Flanders. BCH is a committee that focuses on how teachers should deal with sensitive, controversial, and historical topics in the classroom. These FGDs were organised to collect inputs for the design of the survey instruments for teachers and students.

The exchange of ideas with relevant stakeholders led to the following research questions:

- 1) Attitudes
 - a. What are the attitudes of teachers towards superdiversity in the classroom and how should schools address this challenge?
 - b. What are the attitudes of students towards superdiversity in the classroom? Do these views correspond with the views of the teachers?
- 2) Experience with controversial topics in the classroom
 - a. To what extent do teachers discuss controversial topics and societal challenges in the classroom? To what extent do they experience polarization when addressing these topics? Have they experienced ideological/religious conflicts in the classroom?
 - b. To what extent are students informed about controversial topics through class discussions? How do they experience these discussions? Are they effective?
- 3) Training: To what extent are teachers aware of existing programmes that help teachers to stimulate social cohesion in the classroom? Do teachers see this as an important part of their job? Do teachers believe that they are sufficiently trained to handle polarized situations or ideological conflicts in the classroom?

After the conceptualization phase of the project, the science shop invited a representative sample of secondary schools in Flanders to participate in the study. The science shop drew a stratified random sample of sixty school from a compiled list of all secondary schools in Flanders. This stratified sample was based on the following criteria: province, school size, school network (public vs private), and school diversity. At this stage a second knowledge transfer took place. The sampled schools received a personalized letter and email informing them about the goals of the project and inviting them to participate in the study. In addition, all schools were repeatedly contacted by telephone in order to discuss the aim and scope of the project in detail. Data collection started in October 2018 and was finalised in January 2019. In total, 47 schools participated in the study. 2553 students and 850 teachers completed the survey.

A third knowledge transfer will occur with the dissemination of the results. The science shop is currently analysing the data and preparing the dissemination materials. Aside from the general summary report for Flanders, the science shop is preparing customized reports for each of the participating schools. These reports will be disseminated to the schools in May-June. As a final knowledge transfer activity the science shop will host several dissemination events where we will discuss the findings and policy recommendations with school representatives, experts, and policy makers.

2.9. uc3m

In the establishment of the Science Shop of the Carlos III University of Madrid, a significant number of meetings have been held with different stakeholders, in order to establish the topics of greatest interest to the community and on which the researchers of the University could investigate. For knowing this, meetings have been held with the researchers of the university, students, associations and with responsible staff regarding Department of Environment from municipalities of Getafe, Leganés and Madrid.

From the meetings with different stakeholders, it was decided that the topic to be addressed regarding with the expertise of the Science Shop is sustainability because it is the one that includes a greater number of problems that affect the community. Within this topic, the different problems that the cities of Getafe and Leganés, where the University campus is located, were analyzed.

From the City Council of Getafe they said that their most urgent needs within sustainability were in two specific subtopics: the first are those related to the mobility of sustainable urban transport, from multiple aspects; the second was related to the pollution generated by the means of transport and the traffic in general. The two proposals that have raised us from the City Council of Getafe and the science shop has transformed it into a research question are the follows:

- 1 Road plan, circulation and promotion of sustainable modes of transport in Getafe.
 - A. Analysis of the current situation of the Getafe city roads;
 - Study of traffic and trouble spots
 - Mobility model of the city
 - Means of transport and contamination by modes
 - B. Citizen participation:
 - Analysis of the citizen's perception of the problem of pollution generated by transport. And perception of measures and changes in habits.
 - Proposed improvements to roads, reorganization and promotion of more sustainable modes of transport.
- 2 Problematic of the current situation of the pollution generated by the means of transport in Getafe and perception of the citizens.
 - A. Detailed analysis of Getafe air quality, sources of emissions and detail by transport sector.
 - B. Citizens' perception of the problem, consequences and perception of changing habits.
 - C. Proposals for the improvement of air quality and citizen awareness measures.

Regarding the capacity of University of Carlos III for affording these research questions detected, the science shop had meetings with researchers of the University and staff from the Green Office, and a research group was interested to work with the City Council of Getafe, associations, and other organizations from the city, in order to solve these problems. The name of the research group is "Experimental Mechanics, Calculation and Transports (MECATRAN)".

The next step for the Science Shop is to set up a work team and develop different co-creation activities, in order to gather the different stakeholders implies in this project, discuss the possible solutions and resolve the problem.

2.10. Oxford University Science Shop

The Oxford University has been actively pursuing a number of options for developing one or more science shop activities around Artificial Intelligence (AI). These options include engagement with researchers, taking part in a large science festival, and being part of a major two day event which includes outreach to the business community among others.

Means to solicit the public's input about critical issues concerning the social implications of AI are under development, and several discussions have been held with relevant stakeholders and potential collaborators for these events and forms of engagement.