

ZDRAVA ENERGIJA: RAZVOJ REŠITVE ZA SPODBUJANJE ZDRAVEGA NAČINA ŽIVLJENJA V JAVNIH STAVBAH

HEALTHY ENERGY: DEVELOPMENT OF A SOLUTION FOR
PROMOTING A HEALTHY LIFESTYLE IN PUBLIC BUILDINGS



City & organisation	Ljubljana, Faculty of Arts, University of Ljubljana
Urban challenge(s) addressed	Various
Name/title of learning practice	Zdrava energija: Razvoj rešitve za spodbujanje zdravega načina življenja v javnih stavbah (Healthy energy: Development of a solution for promoting a healthy lifestyle in public buildings)
Type of case study	Extracurricular
Programme level learning practice/ case study	Local (city level)

BACKGROUND AND HISTORY

Years of establishment: 2016

Motivation behind intervention

The Healthy Energy intervention was funded within the PKP (Creative Path to Knowledge) funding scheme, which was part of an education programme of the Government of Slovenia (co-funded by the Slovenian Ministry of Education, Science and Sports and the European Social Fund) and ran between 2016 and 2020. The main purpose of the funded projects was to enable students to gain the opportunity to participate in projects with businesses (PKP projects), or cooperate with the public and non-profit sector at the local level (related scheme ŠIPK), thus developing professional competences and acquiring practical knowledge and valuable experience. The key motivation of both programmes was therefore that the students could gain competence and experience that are needed for transitioning from university into working life.

General content of intervention

The Slovenian Public Scholarship fund had an open call for funding of projects each study year between 2016 and 2020. The calls were open to all Slovenian higher education institutions, which partnered up with either companies, public or non-profit sectors, with project proposals that addressed the challenges of the industry, the local, or social environments. In the period between 2016 and 2020, over 1000 such projects were funded, involving over 7500 students, 1500 pedagogical mentors, and 1400 representatives of the business sectors and social environment.

The key aim of the Healthy Energy project was to link the energy efficiency of public buildings with the health of its occupants.

Target group

The key target group of the Healthy Energy project (and PKP projects in general) were the involved students. However, as the concept of PKP projects includes cooperation between higher education institutions, research organisations, businesses, or other organisations, benefits to these stakeholder groups were likewise expected, in addition to the impacts on the (social) environment.

Length of the course: The PKP projects last between 3 and 5 months. The Healthy Energy project lasted for 5 months.

Average number of students attending

The PKP programme co-financed projects that were carried out in groups of 4 to 8 students. In the Healthy Energy project, 6 students have participated.

URBAN CHALLENGES ADDRESSED AND THE CONTEXT

Which urban challenge: Energy efficiency in buildings; IEQ (indoor environmental quality); health in buildings.

Why was it addressed

The aim of the project was to link the energy efficiency of public buildings with the health of its occupants. According to the World Health Organization (WHO), 1.5 billion of world population is overweight, of which 500 million people are obese. We are confronted with an "epidemic" of non-communicable diseases, such as type 2 diabetes and cardiovascular diseases associated with obesity. Maintaining health and appropriate body weight is therefore becoming increasingly important, crucial role being played by healthy lifestyles, that is, regular exercise and healthy nutrition. At the same time, we rarely consider that many of us spend as much as 90 percent of our days in buildings according to research, so the way in which we use these buildings and move around them can significantly impact our health and wellbeing, in addition to factors such as air quality, thermal conditions, light and acoustic environment. Finally, buildings are responsible for 40% of final energy consumption and 36% of GHG emissions in the EU, thereby energy efficiency is one of the crucial challenges that needs to be addressed.

The innovative solutions would contribute to a healthier lifestyle and improved energy efficiency of public buildings.

How is it addressed

The Healthy Energy project team focused on public buildings, namely buildings of the University of Ljubljana. They focused on shared spaces of these buildings: hallways, staircases etc., i.e. transitional parts of buildings occupied by students and employees during lectures. That is why they are important for raising people's awareness and changing their everyday habits and practices. The main question they faced in their development was how they could turn these spaces into an interactive hub that encourages a healthier lifestyle. Before the project team started developing a solution, they reviewed the literature. They developed two questionnaires (psychological and medical), which were filled out by students at the faculties of the University of Ljubljana. Thus, the research and development team obtained data on physical activity and habits related to energy saving. On this empirical basis, they developed a laser sensor that measures movement on stairs and corridors and, in combination with a web application, encourages users of public buildings to engage in more physical activity. The technological solution is complemented by printed leaflets and an information leaflet, intended especially for new users of the building, such as first-year students. Such a set of solutions raises the awareness of building users about the energy efficiency of the building in many ways and connects this in a meaningful way with the physical activity of the individual at the micro-location in which the solution is installed.

ORGANISATIONAL DESIGN

Stakeholders involved:

- Faculty of Arts, University of Ljubljana (project coordinator)
- Metronik, automation and digitalization systems (partner)
- Research Centre of the Slovenian Academy of Sciences and Arts (partner)
- students of the University of Ljubljana
- Public Scholarship, Development, Disability and Maintenance Fund of the Republic of Slovenia (funding agency)

Resources required (human, capital, physical)

FUNDING

National scheme "Creative path to knowledge" (PKP) as a funding mechanism which enhances interdisciplinary cooperation between students, researchers, professors, industry professionals and other external stakeholders (governmental and NGOs, municipality, community, citizens).

HUMAN:

3 university professors (pedagogical mentors)

1 researcher (non-academic mentor)

1 industry representatives (non-academic mentor)

6 students (Faculty of Arts, Faculty of Mechanical Engineering, Faculty of Electrical Engineering, Faculty of Medicine, Faculty of Natural Sciences and Engineering)

PHYSICAL

Lab equipment for development of solutions (Arduino, computers, software) – provided by the involved Faculties

LEARNING DESIGN

ECTS: N/A

Learning objectives

- cooperation in interdisciplinary teams;
- cooperation with non-academic partners and development of professional competences;
- acquiring practical knowledge and valuable experience in the fields of energy efficiency in buildings, health in buildings, IEQ, awareness-raising campaigns;
- applying research methodology to real-life pilot case study (applied anthropology)

Training methodologies: Lectures by pedagogical and working mentors

Format

5-month extracurricular applied research & development project (lectures and workshops; interdisciplinary student research; research analysis; design and development of solutions)

Student support systems

- funding (payment for involved students)
- mentoring

Assessment methods

- self-evaluation (report for the funding agency)
- overall evaluation of PKP projects within the funding period

Integration into curricula (if applicable)

/ (extracurricular)

HINDERS

In relation to urban challenges

- difficulty with obtaining data on energy use in pilot buildings
- difficulty with installing measuring devices (sensors) in some of the pilot buildings

In relation to delivery of intervention

- Short-term projects (PKP in general)
- Limited funding period
- Sustainability of project outputs is impacted by the above two factors
- bureaucracy related

ENABLERS

In relation to urban challenges

- Connecting health to energy use as a fruitful strategy, since the project was aimed at raising awareness and initiating behaviour change related to the use of buildings – while energy use is abstract, health is something occupants of buildings can better relate to and are more motivated to change their behaviour in order to improve their health and well-being. At the same time, they can see how the changed behaviour also creates an impact on energy use (e.g. using stairs instead of elevators).

In relation to delivery of intervention

- Availability of national funding (albeit limited in amount and duration) was at the same time also an enabler and allowed the involved stakeholders (including students) compensation for their (extracurricular) engagement.
- Motivated students and mentors.

REFLECTION

Success factors

Selection of relevant team members (stakeholder organisations, mentors), interdisciplinarity (students from 5 different fields and Faculties), focus on health (as described above).

Outputs, outcomes and impact:

OUTPUTS:

- survey analysis; movement laser sensor; information and behavioural change campaign (wall stickers and leaflets; information leaflet)

IMPACT:

The immediate societal benefits of the new solution are both practical and theoretical. At the individual level, they contribute to the better health of individuals and users of public buildings, which has positive consequences for both people and public finances (reduction of health care costs, lower energy consumption in public buildings). Indirectly, the project is important because of its interdisciplinarity, as it shows how different disciplines and scientific fields can work together to gain new insights and innovative solutions.

The project was also important for the participating partners. Metronik has acquired the design of an innovative solution that will be able to expand existing services to the field of raising awareness of users of public buildings and thus increase the added value of its products and services. With the project, the Research Center of the Slovenian Academy of Sciences and Arts established a platform for interdisciplinary cooperation in national and international projects. Cooperation with industry partners is likewise an important impact, and is increasingly emphasized in science. The demonstration of the applied value of the humanities, especially anthropology, in the development of new products and technological solutions was also of great importance.

N/A

Lessons learned and recommendations

- the need for simplifying the bureaucracy in student projects such as PKP;
- students really enjoyed inter- and trans-disciplinarity (e.g. students of the Faculty of Arts working on sensors, and gaining an insight into learning engineering skills alongside their team members)

Other: N/A

Note: The information contained on this description was extracted from the "Case Study report" (published by the Urban GoodCamp consortium in March 2022), available at: https://www.urbangoodcamp.eu/uploads/1/6/2/1/16214540/ucamp_-_case_study_report_1.pdf

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