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E3UDRES2 citizen science

Book of Abstracts

E3UDRES2
Engaged and Entrepreneurial European University as Driver for European Smart and Sustainable Regions

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Engaged and Entrepreneurial European University as Driver for European Smart and Sustainable Regions

Co-funded by the Erasmus+ Programme of the European Union

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Summary

E³UDRES² International Conference on Citizen Science

Raquel Barreira
Polytechnic Institute of Setúbal, Portugal

The first edition of the E³UDRES² International Conference on Citizen Science (ICCS), took place on the 29th and 30th of June 2023, at the Polytechnic Institute of Setúbal (IPS), in its Barreiro Campus.

The **Engaged and Entrepreneurial European University as Driver for European Smart and Sustainable Regions**[1] (E³UDRES²) is one of the European University Alliances from the European Universities Initiative. The conference was one of the planned activities of its Work Package 4 – Researchers, for which Citizen Science is one of the underpinning concepts. The organisation counted also with the support of its Work Package 6 – Sustainability and Dissemination.

For the conference, the following objectives were envisioned:

- Raise awareness of citizen science among E³UDRES² researchers, lecturers and students;
- Showcase successful citizen science projects and share their outcomes and impacts;
- Provide guidance and support for the development and implementation of new citizen science projects;
- Explore effective strategies to promote collaboration between citizens and researchers in key research areas of the alliance;
- Identify key challenges and opportunities for citizen science projects and develop strategies to address them.

Overvall, all the above objectives were met in a 2 days event that gathered approximately 60 participants, from all 6 E³UDRES² funding partners and also with representatives of 2 of its associated partners.

[1] Project 101004069 — E3UDRES2. For more information, visit www.eudres.eu.

KEYNOTE SPEECH

Citizen Science

Cristina Luís
Interuniversity Center for the History of Science and Technology, Faculty of Sciences of the University of Lisbon, Portugal

With a PhD in Biology, Cristina Luís is currently a researcher at the Faculty of Sciences of the University of Lisbon (Portugal). She conducts research in the areas of science communication, citizen science, science and society, history of science and history of horse domestication. Cristina is part of the promotion team of the Portuguese Citizen Science Network and coordinates a research project on the history of citizen science in Portugal.

In her presentation, Cristina Luís provides an historical overview of the concept of Citizen Science, focus on why it is challenging to define it, and presents some examples of citizen science projects to serve as a basis for promoting some interaction with the audience.

KEYNOTE SPEECH

How to engage people with science

Joana Lobo Antunes
NOVA Institute of Communication, Instituto Superior Técnico, University of Lisbon, Portugal

Head of Communication at Instituto Superior Técnico (Portugal). Lecturer in Science Communication and Social Media for Scientists, FCSH NOVA and Universidade Nova de Lisboa Doctoral School. She is the coordinator of a science radio show "90 Segundos de Ciência" (since 2017), multimedia program "Explica-me como se tivesse cinco anos" (since 2020) and a science podcast "110 histórias | 110 Objetos" (since 2021). Founder and former President of Portuguese Science Communicators Network SciComPTIn her presentation, Cristina Luís provides an historical overview of the concept of Citizen Science, focus on why it is challenging to define it, and presents some examples of citizen science projects to serve as a basis for promoting some interaction with the audience.

In her presentation, Joana Lobo Antunes discusses what resonates with a general audience when we talk about science and presents a set of concrete examples from her experience as a science communicator.

EXPERIENCE EXCHANGE

Biodiversity at IPS

José Sousa and Diogo Oliveira
Polytechnic Institute of Setúbal, Portugal

Valuing biodiversity is one of the topics that currently requires attention. The knowledge and conservation of species represents one of the Sustainable Development Goals defined for 2030 by the General Assembly of the United Nations. The Polytechnic Institute of Setúbal (IPS) is part of the Alliance for the Sustainable Development Goals in Portugal and, therefore, recognizes the importance of preserving and valuing the Biodiversity of its campi. Since 2018/19, the five IPS schools have been awarded the green flag of the Eco-Schools program, awarded for good sustainable practices, and an application for Eco-Campus is underway.

At the IPS, we seek to live with Nature, not only by getting to know our surroundings, but also by providing adequate mechanisms for its conservation or improvement of habitat conditions for more emblematic species. In this context, among other projects already developed and in the process of being developed, a survey of the biodiversity of the IPS has been carried out through the systematic carrying out of field trips in order to photograph all the species that can be found on its campi.

EXPERIENCE EXCHANGE

RadAR - Students as key players on radon management

Canha, N. [1] *; Almeida, S.M. [1] ; Lage, J. [1] ; Felizardo, M. [1] ; Reis, M. [1] ; Antunes, C. [2] ; Malta, M. [2] ; Fonseca, H.[2]

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Introduction

RadAR aims to engage high school students in inland areas of Portugal to empower them to create and implement a local communication strategy that conducts community to measure indoor radon in their dwellings and to take action to reduce exposure in the cases where high concentrations levels are found.

Materials & Methods

Around 60 students of 3 high schools of the district of Portalegre will define strategies to communicate to both scholar and local communities, in order to promote their participation in a radon survey (targeting 300 dwellings). Within a school-project, students will evaluate the results from the survey and communicate their assessment to the communities. The natural proximity between students and their communities will be the key and differentiate factor to an effective communication with the populations, which will enhance their engagement with the different phases of the radon management process. RadAr will run for 6 months and will start in September 2023.

(Expected) Results/Outcomes

RadAR expects as results the following goals:

1) foster radon measurements in a region poorly characterised in terms of indoor radon concentrations; 2) provide the assessment of radon levels of dwellings to citizens, along

with additional information about remediation, which will allow them to act accordingly; 3) allow students to understand the importance of different disciplines to implement such a project, along with the role that a citizen can play in solving a scientific question; and 4) test local communication strategies to reach the general public.

Conclusions/future prospects

RadAR is an innovative science school project to empower students with tools and knowledge to develop and manage a local communication strategy to protect the public from exposure to indoor radon. After end of the project, the materials created will be made available freely and this will allow the strategy adopted by RadAR to be subsequently replicated by other interested parties (other municipalities, countries). This project is funded by the RadoNorm project (Managing risks from radon and NORM), under its "Open Call for Citizen Science Projects".

WORKSHOP

Fostering good conversation: The Use of Art of Hosting for Citizen Science

Moser, Michaela

michaela.moser@fhstp.ac.at, FH St. Pöelten University of Applied Sciences with Hanna Vettori, FH St. Pöelten

Introduction

Good quality conversation between the people and communities involved in Citizen Science Projects are usually crucial for their success. Traditional group discussions are not necessarily the most helpful approach, especially when involving people with language or learning difficulties or with little experience of talking in/to larger groups. The Art of Hosting is an internationally approved set of facilitation techniques that scale up from the personal to the systemic, engaging diverse perspectives in dialogue and fostering co-creation of innovation and change in complex systems[1]

Aim and method/s of the contribution

The presentation/workshop will introduce and give an opportunity to check out a number of Art of Hosting methods that have proven to improve and foster good conversations in groups in Citizen Science projects.

Based on the experiences on a number of Citizen Science projects in research on health and social issues[2], the methods presented will include "Appreciative inquiry" (D. Copperrider et al) and "Dynamic Facilitation/Wisdom council" (J. Rough et al), "Zukunftswerkstatt/Future Workshop (R. Junk et al) as well as a number of digital tools that haven proven to be useful for implementing "analog" methods such as storytelling, brainstorming or mindmapping in new way.

All the methods presented have proven to be useful for involving diverse groups in Citizen Science Projects by focusing on and unveil their strengths and experiences, ideas and possibilities.

Pros and cons on applying the methods in Citizen Science Projects will be discussed, thereby especially drawing on examples and experiences of their implementation in projects with excluded communities and neighbourhoods in Austria as well as with civil societ activists and organisations.

This will be combined with training elements in order to get a concrete idea and first hand experience on how to apply the methods for future projects.

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[1] More information can be found at the Website of the international AoH-Community. https://artofhosting.org/ (17.04.2023)

[2] As listed on the website of the Ilse Arlt Institute of Social Inclusion Research at St Pölten University of Applied Sciences. https://inclusion.fhstp.ac.at/schwerpunkte2/partizipation-diversitaet-und-demokratieentwicklung

The Domestic Waste Management Perspectives of Six European Countries: Difficulties in implementing waste separation in Setúbal

Anderluh, A[1]; Carriço, N.[2]*; Coninck, S.[3]; Galatanu, S.V. [4]; Leščevica, M.[5]; Mesbahi, Z. [1]; Nolz, P. [1]; Paz, M.C. [2]; Radványi, D.[6]; Serralha, F.N. [2]

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Introduction

According to the World Bank, the world is expected to generate 2.59 billion tonnes of waste per year by 2030 and to reach 3.40 billion tonnes by 2050. Waste management is a global issue, that affects the three dimensions of sustainable development: social, environmental, and economic. The waste separation must increase to allow waste to be reused or recycled. The authors conducted a study where the domestic waste management strategies implemented in six European countries are investigated: Austria, Belgium, Hungary, Latvia, Portugal, and Romania.

Materials & Methods

The research methodology was to analyse reports and publications on the management of urban waste and to dialogue with some technicians of the municipalities. In the case of the Setúbal peninsula, in Portugal, the difficulties of increasing the waste selection were verified with the technicians and it is intended to understand the difficulties felt by the population, through the application of a questionnaire.

(Expected) Results/Outcomes

The study has identified the need to change consumer behaviour, from generating different types of waste to reducing it by raising citizens' awareness of the problem. The authors intend to promote a decrease in consumption and an increase in reuse, in collected waste separation and recycling, and hope to understand, in the Setúbal region, what the discouraging reasons for the separation of waste are.

Conclusions/future prospects

Several challenges were brought up for future research and projects, with the contribution of the different countries and the synergies that might be obtained. The knowledge of what is done in each country allows to learn from the best and most innovative solutions and to reflect on the various waste management strategies implemented, according to environmental, economic, and social perspectives, contributing to circular economic growth and to the sustainability of the planet.

Physical activity and sport recovery model in post COVID-19 period

Andersons, A.[1]*; Bushati,J.[2] ; Ritter, S.[3]; Zefi, G.[2]

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Sport is recognized as one of the triggers to economic and social development of societies. The Political Declaration of the 2030 Agenda, reflects on "the contribution sports make to the empowerment of women and of young people, individuals and communities, as well as to health, education and social inclusion objectives" (WHO, 2017).

In this paper authors focus on analysis of physical activity and sports recovery process after COVID-19 pandemic which has created profound challenges for youngsters and their family members. This research demonstrates forecasting incentives correcting outdated sustainability models affected by COVID-19 and rapidly increased level of digitalization and use of technologies.

Research outcomes show that the cancellation of any sports activities also impacts many social aspects as reduced people mobility, limited social cohesion, lower emotional satisfaction and excitement. As follows, it leads to lower physical activity of individuals, especially children and Youth. At the same time, outcomes of system dynamics modelling of the latest data trends shows that a recovery process of observed sports events is reasonably fast and, in some cases, already reached a level of pre-COVID-19 period with tendency to positive further development.

The new system dynamics model is based on data gathered from organized sports events series, case studies and practical tests and research activities in Latvia and Albania. The conclusions, made by authors, are useful for the events organizers and the institutions involved in the organization of outdoor sports events that would like to attract more participants, spectators and tourists to their areas.

Keywords: socio-technical modelling, system dynamic, outdoor sports, digital transformation, post COVID-19

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International Mobility in Sport Science and Education: virtual case studies

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Introduction

During the COVID19 pandemic, higher education institutions had to reshape the face- to-face exchange programs, for students and teachers, into virtual mobility. After this successful experience, it seems that it is necessary, to change the features of our courses to provide new possibilities for internationalization.

Materials & Methods

Aiming to test a different approach to internationalization, we developed a virtual exchange program, in one of our courses from the undergraduate program in Sports (Exercise Prescription Physical Condition), in which part of the contents was taught by a Brazilian teacher (to our students and to the Brazilian students) and the other way around. The evaluation process of these contents was also developed by both teachers, and the students were encouraged to work together to build a common product of evaluation. Our main goals were to promote pedagogical innovation through the exchange of knowledge between different institutions, adopting different teaching-learning environments and digital tools, as a strategy to increase, internationalization and success reducing students' abandonment. We strongly believe that this type of activity can promote the international experience by getting insights into the educational and professional processes of another country, enlarging the cultural and social knowledge. Higher education can act as a gateway to professional contacts, an exchange of experiences, habits, and values, and the possibility of awakening new interests and professional opportunities.

(Expected) Results/Outcomes

We had a very positive evaluation from the students and from the teachers involved, and thus we intend to extend this experience to the other courses of the sports degree, supplementing the above-mentioned activities with seminars, that will be available to all the community. The methodology presented here can be a real alternative or an addition to face-to-face programs bringing together students, researchers, and different institutions in response to real challenges that require innovation and where a wide variety of skills are required. We are convinced that these virtual mobilities should include institutional case studies highlighting specific challenges regarding academic values, such as academic freedom, integrity, and equity, as well as institutional or national initiatives to actively promote them.

Conclusions/future prospects

Additionally, this type of mobility can bring the academic community closer to companies and other organizations, creating new teaching-learning paradigms more aligned with the current social challenges and the new profile of our students.

Improving citizen wellbeing using interoperability in digital health

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Introduction

Digital health ensures that medical data provided by the patients contributes to improve wellbeing of citizens adding new and real data from day to day life and connect it with the EHR. Interoperability [1] between different medical units it is important leading to a better patient healthcare and better treatments, ensuring continuity and ubiquity of care and giving the possibility to medical institutions to add important information from citizens/patients., consequently improving citizen wellbeing and life. Interoperability can be achieved using a communication standard, as HL7 FHIR (Fast Healthcare Interoperability Resources) [2].

In Europe there are more initiatives related to interoperability. Currently, the European Health Data Space [3], as an ecosystem related to health, gathering rules, standards, common practices, and infrastructure ensures the frame to empower the persons for digital access and controls related to health electronics data, on nation and UE level. The data quality can be reached using the FAIR principles (Findability, Accessibility, Interoperability, and Reuse) [2].

Materials & Methods

Figure 1 presents the system architecture of the Obstetrics-Gynecology department Information System, using the HL7 FHIR standard module and a cloud.

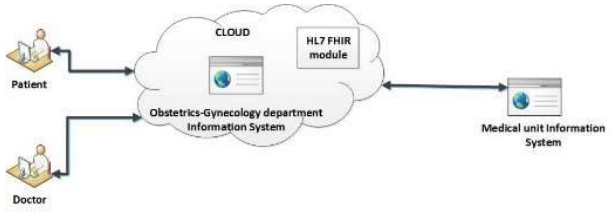

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Figure 1. System architecture

The Obstetrics-Gynecology department Information system is an existing web application that will be improved with different functionalities, and the HL7 FHIR standard module will substitute the older version of the module which was based on HL7 CDA. Also, it will comply with the FAIR principles.

Conclusions/future prospects

The aim of the project is to improve the wellbeing of a persons, by ensuring continuity and support from patients to add important health data, resulting in a better health status.

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Lead the ReGeneration: citizen and stakeholder engagement in regenerative living labs

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Introduction

Strategic documents on the green transition are increasingly focusing on the need for multistakeholder involvement, including citizens. Transversal competences are needed in order to engage stakeholders in challenges related to the green transition. Several frameworks have been developed describing the competences needed for the green transition (e.g. GreenComp, Inner Development Goals, …), but it is still unclear how to apply these frameworks in practice. The future project proposed below will engage students and educators in living labs where they will work together with stakeholders from their community to solve local challenges related to the green transition.

Materials & Methods

In the living labs, stakeholders will provide challenges related to the green transition from the local community. Students, educators and stakeholders work together in tackling these challenges. The living labs will have a regenerative focus which goes beyond sustainability. In a regenerative approach, the aim is to train the competences to act in ways that renew or revitalize resources in widening circles of care (ourselves, others, the planet). In addition, a reflective self-assessment tool is developed and applied so students, educators and stakeholders can assess their transformation related to the competences for the green transition.

(Expected) Results/Outcomes

The living labs are expected to lead to a playbook with good practices on how to apply the green competences when working with stakeholders and the community on challenges related to the green transition. This playbook will include good practices, educational

and training methodologies and a self-assessment tool for the competences for the green transition. In addition, an on- and offline community of practice will be created.

Conclusions/future prospects

Multistakeholder engagement is needed in order to successfully navigate the green transition. This needs a practical application of the existing frameworks on the skills needed for the green transition. This future project will provide such an application with a specific regenerative focus, going beyond sustainability to widening circles of care (ourselves – others – the planet).

The motivation for football practice in Setúbal district

Espada, M.C.[1,2,3]*; Rodrigues, D.[1]; Arruda, J.[1]; Ventura, R.[1], Ferreira, C.C.[1,4]; Figueiredo, T.[1,2]; Santos, F.J.[1,2,5]

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Introduction

Football is one of the most popular sports worldwide, a reality that is also observed in Portugal, with particular emphasis on Setúbal, where players and coaches from the region reach a prominent position at the national and international levels. The aim of this study was to evaluate the motivations associated with engagement in football practice in the Setúbal district.

Materials & Methods

We used the Motivation for Sports Activities Questionnaire (QMAD), a Portuguese version translated and validated by Serpa and Frias (1990) from the original Participation Motivation Questionnaire (PMQ), by Gill et al. (1983). The instrument presents 30 questions on a 5-point Likert scale. A total of 105 football players from 2 different level Setúbal district teams, aged between 15 and 18 years old, participated in the study.

(Expected) Results/Outcomes

We found that globally the questions that obtained the best point average in the answers were "improve technical skills", "keep in shape", "work as a team", "team spirit" and “being in good physical condition". However, differences were observed when

analyzing different age groups (15-16 and 17-18) and teams (regional and national level).

Conclusions/future prospects

It is essential to assess the motivation of sports practitioners to find the best strategies for attracting and retaining youths in sports, which is associated with various benefits from an individual and societal perspective, namely considering the wellbeing. This study revealed that it is necessary to try to understand the motivations of youth football players and consider specificities such as different age groups and club levels with youth football players.

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CrossFit injury prevalence: A review

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Introduction

CrossFit is becoming worldwide popular, although, the loss of the correct mechanics of the execution of the movement due to extreme fatigue may result in injuries (Arcanjo et al., 2018). The aim of the present study was to analyse the scientific evidence regarding injury prevalence in CrossFit.

Materials & Methods

A search was performed in scientific databases "PubMed", "B-On", "Science Direct" and "Scielo" considering the keywords "CrossFit", "Injuries" and "Prevalence" in the manuscript's title and considering a time amplitude between 2015 and 2021. From an initial result of 5.334 studies related to "CrossFit", the established criteria lead to a final number of 13 studies which were analysed in detail.

(Expected) Results/Outcomes

A mean injury rate of around 3 injuries for 1.000h of CrossFit practice was observed in scientific data, which is comparable to Olympic Weightlifting (3.3 injuries per 1.000h of training/competition) (Escalante et al., 2017) or even sports with higher injury prevalence, such as Football (7.8/1.000h) or Basketball (9.6/1.000h) (Summit et al., 2016). Some studies also revealed interesting conclusions, such as "CrossFit is an inclusive sport and is safe for all, regardless of age, sex, or ethnicity" and "CrossFit appears to be a training program that is suitable for different age groups when performed in a safe environment and with assistance from qualified professionals".

Conclusions/future prospects

This research revealed that CrossFit practice is not associated with a high prevalence of injuries, which may represent motivational support for citizen engagement. It was observed in this study that the injury prevalence is lower in this activity compared to other sports, however, some caution should be associated with CrossFit practice, which also requires further research within the scope of citizen science projects.

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Biodiversity and citizen science: Knowing and valuing biodiversity in pre-service teacher education

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Introduction

Teacher education has an essential role in raising awareness about the importance of public participation in scientific processes and in developing competences in citizen engagement and data collection. Schools' grounds and the immediate natural environments are real and accessible contexts that can be explored fostering engagement with nature and biodiversity. But future teachers tend not to recognise species biodiversity, namely plants (e.g., Çil & Yanmaz, 2017), which reinforces de importance of involving undergraduate students with this approach.

Materials & Methods

Students of the 2nd year of a Portuguese pre-service teacher undergraduate degree, attending the optional subjects "Environmental Studies" or "Experimental Research Workshop", explored the rich cork oak forest, were Polytechnic Institute of Setúbal was built, as a source of learning and development of an active citizenship. Activities involved field work, laboratory activities and desk research. Students also developed competences in using the free app Seek by iNaturalist. The paper discusses some of the educational strategies implemented.

(Expected) Results/Outcomes

Twenty species were identified, characterized and, whenever possible, shared in the citizen science platform iNaturalist/Biodiversity4all. This platform allows users to publish their findings and contribute to other projects. Collecting information regarding the name

of a given species can be a starting point for a learning path about the species identified and their ecosystems as well as the importance of its conservation.

Conclusions/future prospects

Citizen science seems to play an important role in learning and in improving the relationship between science and the environment and, therefore, has the potential to be an important pedagogical tool in learning about immediate surroundings (Smith et al., 2021). The use of the app Seek and the platform iNaturalist are a good example of how students can monitor and value biodiversity, using accessible technology.

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Citizens involvement in air biomonitoring with strawberry plants

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In Seixal, a densely populated urban-industrial municipality, with a high influence of traffic and industry (namely steelworks), occasional settled dust events have increased the population's concerns regarding the impacts of the air pollution on their health. Therefore, the need to pinpoint the sources of these events and to study the local air quality, has emerged among local authorities [1,2]. The present study aims to answer this problem by biomonitoring particulate air pollution using strawberry plants as biomonitors, in a citizen science project, aiming to map and identify pollution hot spots.

In order to engage the population with the biomonitoring program and increase air quality literacy, a local meeting was held with the population on February 1st, 2020, in order to explain all the phases of the study and the procedures expected from the population for taking care of the strawberry plants during the exposure period. A total of 78 strawberry plants were distributed among the volunteers. From February 1st until June 16th, the strawberry plants were placed in the open air, in a ground or first floor of the volunteers' houses. At the end of the exposure period, the volunteers collected branches of each strawberry plant and sent them to the Lab, where leaves were lyophilized, grinded to powder and pelletized, for analysis by micro-X-Ray Fluorescence (micro-XRF) technique, to assess the concentration of 25 chemical elements. Afterwards, a

GIS software was used for creating maps of the chemical elements' spatial distribution, allowing to pinpoint air pollution hotspots.


Sessão do Fórum Seixal em Aldeia de Paio Pires

População participa em Estudo sobre Poluentes Atmosféricos

Figure. Citizens' engagement in the biomonitoring project, for biomonitors exposure.

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Citizen Science applications in sustainable food systems. Possibilities for food scientists

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Introduction

Citizen science is an approach to scientific research where members of the public are actively involved in various stages of the research process, including data collection, analysis, and interpretation. In recent years, citizen science methods have been increasingly used in food systems research, where the participation of community members can provide valuable insights into various aspects of food production, distribution, and consumption.

Participatory mapping is one of the most common citizen science methods used in food systems research. This involves the collection of geographic data from community members, such as the location of food outlets, community gardens, and other food-related resources.

Another popular citizen science method is crowd-sourced data collection, where community members contribute data on various aspects of the food system, such as food waste, food safety, and food labelling. Crowd-sourcing information on health risks or allergens helps researchers and policymakers to understand consumers' attitudes toward food allergies, intolerance, and its labelling.

Citizen science methods can also be used to study the nutritional content of food. For example, inviting citizen scientists to measure the nutritional content of food using low-cost portable devices. Such devices can be used to collect data on greenhouse gas emissions from farms to study the impact of food production on the environment. The resulting data can inform policy interventions to reduce greenhouse gas emissions and promote sustainable agriculture practices.

Conclusions/future prospects

In conclusion, citizen science methods have significant potential in food applications, offering valuable opportunities for community members to engage in scientific research and contribute to policy interventions that promote sustainable food production, improve public health, and reduce environmental impact. The use of citizen science methods in food research is likely to continue to grow as more people become aware of the potential benefits of community engagement in scientific research.

Workshops with Future University Designers: Engagement of Pupils (Future Students) in Foresight Process of Higher Education

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Introduction

Involvement of various types of stakeholders has become an essential part of a foresight process. This proactive deed helps to consider the needs, wants and fears of stakeholders and provide precise promises and solutions. Young, smart pupils of the last grades of high school are tomorrow's students which definitely must be included in future university design processes. The aim of this study is to share the engagement experience and results of it.

Materials & Methods

The process of active engagement of pupils was organized in the form of "Future Students workshops" during spring semester 2023. Firstly, schools were contacted about their interest in participation in Future workshops, then the most relevant formats for each class were identified. As a result, last grade pupils of 5 schools from Latvia participated (n=205). During the Future workshop we used several methods such as associations, drawings, short questionnaires with 5 open questions and Janus cones. We also assured that the atmosphere would be open, creative and free of any influence of the teachers or us. The data obtained are in format of texts or images. Data is relevant for qualitative analysis, for example, colour coding can be applied.

Results/Outcomes

Although the data analysis is still ongoing, it is possible to conclude that data is rich and potential of the pupils has been underestimated so far. The preliminary analysis of

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data proves its relevance for further studies in depth. From the perspective of learning and study content Future workshops can be logically embedded in the classes of social science, carrier education or other.

Conclusions/future prospects

Active engagement of the pupils of the last grades of high school is mindful in the context of citizen involvement in foresight activities. Young minds are highly motivated to contribute and actively discuss their own and communities' futures by using various tools. The perceptions of future of these stakeholders are brave, dynamic and well- thought. From organizational perspective schools should be considered as one of primary stakeholders in context of higher education future, it is rather easy to access them and use as massive contributors to data gathering. These activities can help strengthen the link among different levels of education provision. In regards of our study, next steps are data analysis in depth and usage of it in development of E³UDRES² Future University Blueprint.

TWINSOR: Co-Creating a Digital Agriculture Monitoring Ecosystem

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Introduction

Small and medium-sized farms struggle with increased needs for monitoring in different dimensions, including having to respond to regulatory requirements. This research presents work on Digital Agriculture towards digital twins for multi-sensor land and plant monitoring. TWINSOR aims to provide farmers with a "digital twin", i.e., a monitoring ecosystem that allows them to visualize multi-sensor data collected from their fields, but also to "plug in" predictive models. The system should allow the use of a wide range of "sensors" ranging from free satellite images, low-cost off-the-shelf sensors, to sophisticated and novel technologies (e.g., odour sensors).

Methodology

TWINSOR is being developed as a citizen social science research project following a co-creation and multi-actor approach, which may contribute strongly for its success as it is being designed with the participation of different stakeholders that are aware of real needs of the farms. The methodology places a strong emphasis on actively involving agricultural technicians, researchers, technology providers, and other relevant stakeholders in the process. This process is guided by four key principles: co- creation, empowerment, openness, and changemaking.

Results

The TWINSOR ecosystem concept and its architecture are already designed, aiming to provide an integrated platform for various digital solutions, from sensor data collection to rich interactive visualisation, by leveraging, e.g., AI techniques and VR. Moreover, Agri-

Dash is a mobile app prototype co-designed with the participation of AVIPE[1] and farmers, in Portugal, aiming to assist small to medium winegrowers in their daily activities. Agri-Dash acts as a tool in the TWINSOR top layer that aims to allow end users to interact with the platform. An important feature is to allow users to collect and classify data while performing tasks in the field, thus applying citizen science.

Conclusions and Future Work

The TWINSOR ecosystem is already a stable solution that is being developed after the research team has gathered valuable inputs from stakeholders and partners from the farming field. Agri-Dash is under the first testing phase with the participation of winegrowers and technicians to collect data on how they interact with these solutions while they are working. Further research will focus on the design and implementation of the main components of the TWINSOR platform.

[1] Association of Winegrowers of the Municipality of Palmela

Quantitative Data about Societal and Economic Transformations in the Regions of the Three Baltic States – Data Acquisition Approach

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Introduction

This work is related with the project Baltic100 that "breaks new interdisciplinary ground in the socio-economic history of the Baltic countries, providing for the first time cross- time and cross-country comparable gross domestic product (GDP) data series for all three countries, covering the complete 100 years period since the end of independence wars. Applying a methodology tested in recent research on the economic development of Europe's regions since 1900, it will decompose these series down to a regional level to explore trends in the economic and social disparities between regions inside of each Baltic state" [1].

Approach

To implement the project one of the main tasks is creation of data depository with data on economic and social differences between regions of Baltic countries. Data acquisition for 100 years period is a vital part of this task. Data acquisition includes working in archives and libraries with data sources both in digital and analogue format. Data in all 3 countries may be stored in different formats, might or might not be available in an integrated way or partially may be missing at all. There is developed a customised approach to support data acquisition process. All data are sub-divided in over 20 data series. In turn data series are sub-divided per 3 countries and further per 4 data periods: inter-war period, WWII period, soviet period, post-soviet period. To foster uniform data acquisition approach for further importing data in the data depository there are developed: () Separate data acquisition templates for each data series type; () Data template confirmation process in MS Teams; () Data acquisition process

containing 5 role-players, 10 steps with custom naming convention aligned with data series numbering in () Data acquisition plan. Developed approach encompasses data integrity and quality maintenance perspective.

Acknowledgments

This work is supported by the "Quantitative Data about Societal and Economic Transformations in the Regions of the Three Baltic States during the Last Hund`red Years for the Analysis of Historical Transformations and the Overcoming of Future Challenges" project EEA-RESEARCH-174 (Baltics 100) at Vidzeme University of Applied Sciences.

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How can Neurofeedback benefit from citizen science and vice versa

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Introduction

Neurofeedback nudges the brain to make more of some frequencies and less of others, creating new patterns that enhance its natural complexity and its bias toward self-regulation[1]. It is a technique that can be applied in several conditions such as ADHD, trauma. Although Neurofeedback has been used in the past decades and has shown positive results, it is relatively unknown for the general public. Up until now, It required a specialised expensive equipment, thus it hasn´t been very accessible. With the recent developments in Neurofeedback, it is the moment to use citizen science in Neurofeedback. I will benefit a larger public while creating an extensive data base of results for future studies and applications, creating a win-win framework.

Materials & Methods

Neurofeedback equipment has become more affordable and user-friendly in the past years, and often doesn´t require the presence of a specialist. This, added to the numerous applications for widespread issues on mental health in today´s society make it the best moment to use citizen science in Neurofeedback. Campaigns in collaboration with numerous stakeholders such as health care providers, will be created to reach a large population to participate in large-scale studies on Neurofeedback.

(Expected) Results/Outcomes

Mental health, the importance of addressing it and the conversations around it has gained visibility, especially through social media. Society is outspoken about it and it is now considered as something that affects everyone and is no longer taboo. Allowing citizens to access and getting to know Neurofeedback and its benefits, will give visibility to this technique by allowing to tackle dominant mental health challenges in an autonomous way to a large population.

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Conclusions/future prospects

A future project on this topic will encourage a multi-actor approach by collaborating with citizens, mental health institutions, hospitals, governments etc. I will encourage and allow access to a wide population, ideally breaking through the stigma of mental health and the current limited access to a big part of society due to the high cost of some treatments including Neurofeedback up until recently.

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Hippopotamus monitoring in the Orango Natural Park, Guinea-Bissau

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Introduction

The country's protected areas (PAs) are managed by IBAP-Institute of Biodiversity and Protected Areas which was created in 2004. The IBAP team at that time consisted of a single marine biologist, a directorate and a team per park (which included the manager and a corps of 6 guards).

In the last quarter of 2006, IBAP was challenged to develop a strategy for monitoring of the hippopotamus in the PNO, with the objective of knowing the size and distribution of the population of this species on the island. With a small budget and an inexperienced team, the integration of local fishermen in the team monitoring the species proved to be an effective alternative.

Materials & Methods

Materials: (i) pirogue with oars; (ii) data sheets to record the number of adult and juvenile individuals by sex observed, as well as traces of presence (footprints, excrement, vocalizations); (iii) data sheets to record the presence of other key species (crocodile, dolphin, manatee, gazelle, otter and marine turtle);

Methods: (i) traveling to the PNO to identify places where the species frequents and record coordinates with the help of the local community; (ii) selecting fishermen to join the monitoring team for each of the 11 hippopotamus frequenting areas; (iii) choosing the date and time for observations in consultation with the 11 teams, with consideration for specific criteria that potentiated observation of individuals; (iv) preparing observation record sheets and giving a short training session on how to fill them in; (v) defining the monitoring route in advance;

Hippopotamus monitoring in the Orango Natural Park, Guinea- Bissau

Results/Outcomes

Approximately 200 individuals were counted, and sex and age distribution were identified in most cases. Anor lagoon had the highest number of individuals.

A map of the distribution of other key species was compiled.

The importance of local knowledge in supporting research and management in parks was acknowledged, and local communities were appropriated to participate in joint management. Additionally, the relationship between local communities and management teams substantially improved.

Conclusions/future prospects

Worthwhile results were achieved with minimal resources and without disturbance to natural habitats. Hippo population counts now take place once a year.

Needs assessment of the Elderly above 60 years' old in the city of Sint-Truiden (Belgium): What do they need to continue living at home in stead of moving to a residential care setting – A citizen science approach

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Introduction

At the end of 2017, the public welfare services of the city of Sint-Truiden (Belgium) appointed UC Leuven-Limburg Universities of Applied Sciences to perform a needs assessment of their elderly population living both in the city centre as well as in the suburbs. The main research question was what does this specific population need to be able to continue living independently at home. The reason for this research was the increasingly older population living in the city of Sint-Truiden. This comes with a higher demand of support in various areas because most of the elderly wish to live at their own home for as long as possible and to delay moving to a residential care setting for as long as possible. With this needs assessment, the city wants to invest in those areas that are posed by the people above 60 years old themselves.

Materials & Methods

To assess the needs of the elderly above the age of 60 living in the city centre and suburbs of Sint-Truiden, a questionnaire was created. The questions were a combination of questions from other needs assessments and only those themes were selected that appeared relevant for the stakeholders included in the research. To increase the response rate we chose to use pollsters that fill out the questionnaire together with the participant in their own home.

An important feature of this needs assessment research was the use of peer-interviewers. This means that the pollsters were in fact themselves elderly above the age of 60 that volunteered for this task. The reason why we chose this approach is because we felt that the elderly would be more comfortable and honest to someone their own age. Besides that, the peer-reviewers themselves were also people from the region. Before starting with their task, the peer-reviewers took part in a two-hour group- training were they learned how to conduct a questionnaire in a standardized way. Each question from the questionnaire was discussed and clarified so that it was clear for everyone what was meant by the question and how to write down the answers.

Concerning the diversity regarding characteristics and needs of elderly above the age of 60, we decided to divide them into three categories: ages ranging 60-69, ages ranging 70-79 and the people above 80 y/o. Because we wanted our results to be as representative as possible, we calculated how many elderly from each age category and region of Sint-Truiden we needed to participate. We then randomly selected participants and contacted them to ask if one of our peer-interviewers could come by to fill out a questionnaire with them.

(Expected) Results/Outcomes

In total, 35 peer-interviewers volunteered to conduct the questionnaires. They managed to interview 421 participants. The most important results were concerning the topics of housing, the lack of services (e.g. food stores,…), traffic, public transport and loneliness.

The results show us for example that more than 25% of the elderly that rent a home is dissatisfied about the condition of the home. A much higher number than those that rent from private owners or own a house themselves.

The lack of available services closeby is mainly an issue in the suburbs. This not only includes a supermarket, a baker or a butcher but also a postbox or an ATM.

Public transportation was also posed as an issue for the elderly, mainly because in the suburbs there's not a good connection, especially in the evening hours and during the weekends which inhibits perceived freedom of the elderly.

Finally, the topic of loneliness was a difficult issue. Research has already identified that perceived loneliness is a subjective feeling and is not specifically correlated with for example having lots of social interaction or doing meaningful daily activities. Loneliness was mainly perceived by those not having a romantic partner anymore and during the evening hours or the holidays. Those characteristics makes finding a solution for the problem not an easy one.

Conclusions/future prospects

The needs assessment was not the real end result. The results and concluding report (including recommendations) was used by the public welfare services/the city of Sint-Truiden as a source of information and to take future steps to enable the elderly to live independently in their own home but to also make sure they live in a more enjoyable neighbourhood.

As far as we know, the city mainly focussed on the topic of loneliness and took some specific actions towards improvement.

VR-Gym: a virtual alternative to encourage physical activity

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Introduction

Physical inactivity, one of the main concerns of the modern society is considered to be the 4th leading risk for global mortality, according to the World Health Organization. Critical levels of physical inactivity are strongly related to cardiovascular conditions, diabetes or breast and colon cancer burden. The development of the virtual reality tools allow users to perform physical activities in a friendly virtual-based environment, at home, with no special equipment, except the VR headset and the special "exergame".

Materials & Methods

Oculus Quest 2 tools were used to simulate the virtual environment and a dedicated application was developed allowing the user to perform physical exercises such as squats, lunges, jumping Jacks or boxing imitation. Each user starts with a warm-up session followed by strength and cardio exercises. The physical activity level was assessed using physiological parameters such as heart rate and electromyography and each user was asked to fill specific questionnaires.

Results

The preliminary results demonstrated a strong adherence of the users to the VR game, showing an increase of the heart rate and the muscle activity, as expected.

Conclusions/future prospects

The VR solution allows users to increase their physical activity level contributing to their well-being and therefore to a better health. Furthermore, the study protocol being implemented in laboratories from different European countries, partners in the E³UDRES² project, could offer an international social perspective on how a specific VR solution could generate an increased physical activity level in sedentary people.

Acknowledgements

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Friends or not? Peer-to-peer support and its opportunities for participation of social service user

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Introduction

Peer work in the sense of "support by peers" (Utschakowski et al. 2016:16) has a long tradition in social work. In the field of working with the homeless, peers are (formerly) homeless people who use their experience to support users, who are currently homeless. In recent years peer work in Viennas Homeless Services has been professionalized, including specific training courses for peers. In 2020/2021 a project conducted by researchers of St. Pöelten University of Applied Sciences (2020/21) in collaboration with trained peers (= people with experiences of homelessness) as co- researchers, looked at the inclusion of employed peer workers in Homeless organisations in Vienna. Building on this study, an undergraduate research project with social work students (2022/23) has been further exploring the issue of peer-service user-relationships and their potential for social participation in different fields of social work, giving students also the opportunity to learn about alternative research methods in co-operation with peers and users of social work.

Methods

Both research projects used participatory methods of collaborative action research (such as future workshops) and qualitative methods (including semi-structured interviews and focus group discussions), including peers themselves as co-researchers (and as a co-teacher of the student project).

Outcomes

Key findings from the research project include the great potential of peer work and its important contribution to the labour market integration of a discriminated group.

In an interactive presentation (hold by students, a peer worker and researchers/lecturers), we would like to discuss the results of both research projects. Furthermore, we would like to discuss the potential of peer work for the social participation of service users as well as the learnings of a participative co-researching projects for all the parties involved.

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Engaging Collections – Local history, living archives and citizen science.

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In recent years Citizen Science based archives like the Topothek have seen been highly successful in engaging local population and new scientists. They seem to provide strong intrinsic motivation, and provide a technical framework that allows to collect, digitize and tag artefacts with little technological expertise of acquaintance with databases and archival systems. My talk presents three projects that include different levels of engagements and asks about the specific challenges and potentials encountered there. All three concern themselves with "Haunted data".(Blackmann 2021). - Marginalized data that did not emerge in local archives yet, in this case the traces of extinct Jewish communities and forced labour. Entered and negotiated in a living archive, the citizen scientists become part of a cu-curation process of Cultural Heritage, that is currently under debate. (Blaschitz et all 2022)

The talk will take the conceptional framework of those papers to contextualize and present three current research projects.

- "GEJIDE" – Collected and digitized Material on the former Jewish community of a lower Austrian community, predominantly using the Topothek
- "Regiobiograph", a project that uses the Topothek as a data repository and living archive along with a linked open data media- wiki that is used to create the events for filmic narrations.
- "History made visible" presents a laboratory setting in which citizen science engagement is interlinked with historic research, artistic practise and site specific approaches of digital memory culture.

The presentation outlines open research questions on future digital collaborations regarding Citizen Science and curational and archival work.

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"You're not alone unless you live in the rural" – On the transformative potential of applied social research.

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Introduction

If we look at the different discourses on queer recognition, significant disparities become apparent in terms of spatial distribution. For instance, in Germany queer diversity is located in urban regions and seems to almost elude rural spaces. These disparities create a research gap and materialize themselves socially in a reduced queer visibility in rural areas. The conference contribution would like to tie in with this and show how an engaged research approach, can make important contributions to studying and contributing to processes of social transformation, by participatory methods. This abstract is linked to a doctoral research which is conducted in a project with a participatory approach about acceptance and diversity in a rural region in Germany (https://akzeptanz-und-vielfalt-fulda.de/). The core of the project is to initiate changes in the field through the research process itself.

Materials & Methods

On a methodological level, the empirical work follows Adele Clarke's Situational Analysis Approach (2005)[1], which paradigmatically refers to american pragmatism that makes the co- creation and positive transformation of lifeworlds to one of the central concerns of qualitative empirical research (Offenberger 2019)[2]. On this methodological substructure, the heterogeneous data corpus is completed by community-based research methods. This approach led to redesigning the research process towards more participation and allowed the project to gain quality through the integration of participatory methods.

(Expected) Results/Outcomes

At this point in the ongoing research process some results can be pointed out, which concern opportunities for public participation in scientific and democratic processes. On one hand, community participation has yielded data material that has been integrated into the data corpus. On the other hand, the results have been integrated into local political democracy- building processes through networks and events.

Conclusions/Future Prospects

In conclusion, my conference contribution sheds light on a critical finding: explicitly applied social research possesses the necessary resources to go beyond the realms of academia and embrace societal transformation. By recognizing and harnessing its redeeming transfer potential, this research paradigm becomes a powerful catalyst for driving positive change. Researchers have the opportunity to forge meaningful partnerships with stakeholders from various sectors. These collaborations can amplify the reach and effectiveness of research outcomes, translating knowledge into actionable solutions that have a tangible and positive impact on individuals and communities and democratic structures.

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