Digital skills and cross-domain entrepreneurship for societal challenges

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Lead partner(s)	TAMPEREEN AMMATTIKORKEAKOULU OY
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Contributor(s)	UNIVERSITAT AUTONOMA DE BARCELONA UNIVERSITE DE LAUSANNE INSTITUT NATIONAL DE RECHERCHE POUR L'AGRICULTURE, L'ALIMENTATION ET L'ENVIRONNEMENT UNIVERSITE DE LAUSANNE ALMA MATER STUDIORUM - UNIVERSITA DI BOLOGNA TECHNICKA UNIVERZITA V KOSICIACH
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Baron, Marcin	UNIWERSYTET EKONOMICZNY W KATOWICACH
Campana, Giampaolo	ALMA MATER STUDIORUM - UNIVERSITA DI BOLOGNA
Esparza Masana, Ricard	UNIVERSITAT AUTONOMA DE BARCELONA
Hillman, Lasse	TAMPEREEN AMMATTIKORKEAKOULU OY
Huusko, Petra	TAMPEREEN AMMATTIKORKEAKOULU OY
Kebir, Leila	UNIVERSITE DE LAUSANNE
Nygård-Skalman, Karin	MITTUNIVERSITETET
Ochojski, Artur	UNIWERSYTET EKONOMICZNY W KATOWICACH
Pohjola, Petri	TAMPEREEN AMMATTIKORKEAKOULU OY
Polko, Adam	UNIWERSYTET EKONOMICZNY W KATOWICACH
Rafaj, Oliver	EKONOMICKA UNIVERZITA V BRATISLAVE
Rehak, Stefan	EKONOMICKA UNIVERZITA V BRATISLAVE
Roukolainen, Jari	TAMPEREEN AMMATTIKORKEAKOULU OY
Salim, Emmanuel	UNIVERSITE DE LAUSANNE
Sebastiao, Pedro	ISCTE - INSTITUTO UNIVERSITARIO DE LISBOA
Sebova, Miriam	TECHNICKA UNIVERZITA V KOSICIACH
Tahlo, Sanna	TAMPEREEN AMMATTIKORKEAKOULU OY
Vuorenmaa, Marika	TAMPEREEN AMMATTIKORKEAKOULU OY
Wallet, Frederic	INSTITUT NATIONAL DE RECHERCHE POUR L'AGRICULTURE, L'ALIMENTATION ET L'ENVIRONNEMENT
Westerlund, Torbjörn	MITTUNIVERSITETET

Introduction

The following examples of action learning tell the stories where students and learners were or could be put into real situations related to societal challenges and could « test » and reflect on their capabilities to act their role with the use of digital and entrepreneurial competencies, we peer-learned during the intensive week described in documents available to the reader. Stories 1 – 3 provide real cases concluded in the listed places. Stories 4 and 5 elaborate on potential cases to be launched in future. Stories 6 and 7 focus on the event regularly organised for students and teachers to work on real cases provided by public sector organisations as well as industry.

How to read the cases

A comprehensive analysis of potential local events, aimed at addressing contemporary societal challenges in various regional contexts, formed the foundation for understanding how learners may apply their skills and competences. Volunteers, learners, teachers, researchers, and local organizations actively participated in peer- and facilitated learning sessions to explore effective ways of tackling societal challenges. This material contributes to a deeper understanding of real-case knowledge regarding the competences required and utilized during these events. It takes the form of a testimony, offering practical insights on evaluating the facilitators and barriers associated with the content of action learning. More examples can be found in the handbook also available to the reader.

List of cases presented in the document:

1. PARTICIPATORY WORKSHOP IN RUDA ŚLĄSKA, Poland
2. HACKATHON IN KOŠICE, Slovakia
3. INTRODUCTION TO DATA VISUALISATION IN BRATISLAVA, Slovakia
4. A POTENTIAL ACTUAL CASE DESCRIPTION AT THE UNIVERSITY OF BOLOGNA, Italy
5. THE ADOPTION OF DIGITAL SOLUTIONS TO STRENGTHEN THE AGROECOLOGICAL TRANSITION IN ARIÈGE: OPPORTUNITIES AND LIMITS, France
6. DEVELOPMENT OF INNOVATIVE IDEAS UNDER THE INTENSIVE COURSE ON "ROAD SHOW FOR ENTREPRENEURSHIP – RS4E", Portugal
7. SPRINT HACKATHON, Tampere, Sweden

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PARTICIPATORY WORKSHOP IN RUDA ŚLĄSKA

REAL CASE SITUATIONS: SOCIETAL CHALLENGES FACED

Creating territorial projects shaping city spaces
25.04.2023,
Biblioteka Ficinus, Ruda Śląska, ul. Kubiny 24

The idea of the real case
Project work carried out by students together with employees of the City Hall of Ruda Śląska.

Objective
Developing a preliminary set of territorial undertakings/projects that may become an impulse for shaping the attractive spaces of the city of Ruda Śląska, also in the context of giving importance to the agglomeration-type location of the city and metropolitan aspirations of Katowice. The city is still under the pressure of coal-mine industry and deals with the so called just transition.

Context
The work with students so far has been carried out at the university mainly using heuristic techniques based on desk research studies and - in the case of some teams - computer-assisted interviews or short judgments using social media. They directed the students to get to know and evaluate the specificity of the city in many dimensions, also in historical terms. At this stage, however, it was not so much the assessment that was important, but rather the process of thorough recognition of the components of genius loci. They include components of areas that are important in the opinion of Students, also for the development of the city as a whole. The work uses the concept of a prospective area and a regenerative area, as well as techniques appropriate for discovering the identity of areas (cf. Klasik A., Ochojski A. 2019, Klasik A. Kuźnik A., Ochojski A. 2023).

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| the nature of societal challenges addressed.

With the development of technology and easy access to the Internet, city dwellers become more willing to create / be part of virtual environments, including professional environments, social environments, club environments that they are interested in. This may lead to a temporary or permanent "abandonment" of the local identity of the inhabitants or a kind of departure from sharing the common values of a given area in favor of the values of other groups, including virtual environments. Thus, cities may be exposed to a lack of interest in supporting / creating bottom-up initiatives or limiting them to a few short-term activities that do not necessarily fit into the collective benefits of the community of a given territory. New skills are needed - mainly regarding the perception / search for opportunities, acquiring resources, taking initiatives. On the other hand, digital skills, including searching for information, assessing the credibility of data, creating, and managing new digital content, are key competences in many professions. Therefore, the work of future external experts, who may become graduates of Urban Economy and Real Estate, should be focused on how to better use entrepreneurial competences and digital skills for societal challenges.

| real case description - aims of real case; what is the real case about.

The aim of the workshops is to learn about the city's potential and to indicate, in the conditions of a workshop with the participation of stakeholders (city), which areas should be used in the first place to identify / create territorial projects enabling the shaping of attractive city spaces.
Students together with employees of the Ruda Śląska City Hall and lecturers from the University of Economics in Katowice will take part in a) fieldwork and b) two sessions of creating ventures / projects. The proposals developed during the workshops will be "confronted" with the planned strategic initiatives of the city; the presented strategic initiatives will be the basis for a discussion on similarities and different ways of perceiving territorial projects shaping city spaces.

As part of the fieldwork, the data obtained in the conditions of desk research studies will be subject to validation - the image of knowledge will be enriched as part of conversations, interviews, street surveys, and field observations.
As part of two sessions of creating ventures / projects, the following will be used:

- teamwork on proposals for territorial projects using the world cafe technique (workshop question: using the potential of the area, what results / transformations should be considered desirable for its development in the next 3-5 years and what must happen? - time 1 hour, one round, 7 teams, 7 minutes for work at each "table")
- joint work on one territorial project / project (selected by employees of the City Hall) using workshop techniques (workshop question: what future of the selected area / project do we want to propose, bearing in mind that it is an area with prospective potential? What does this future depend on?)

The continuation of the work will be a discussion on civilizational challenges (genesis, ways of dealing with them) that determine the functioning of urbanized areas.

To prepare students - participants of the workshop, it is necessary in the conditions of didactic classes at the university:

- Students' involvement in the project and getting to know the specificity of the area and its distinguishing features (3-6 hours in total),

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- description of the area in a systematic way, including the presentation of the spatial arrangement / range of the area covered by the analysis, conditions of changes taking place in its area (3-6 h),
- deepening knowledge about the area through the application of several working methods (using digital techniques and direct contact - fieldwork) - (2-4h).

| organizing the real case - pragmatic hints, efforts made, how easy / necessary it was for the university to be involved

An agreement between the University of Economics in Katowice and the City Hall in Ruda Śląska has been reached; being the basis for the implementation of the real case project. The preparation of the workshop required establishing a common scope of commitments, including the place/time of the meeting, conditions, people involved and expectations. During the workshops, students will work out solutions, then listen to the voice of local stakeholders and take part in a discussion / debate about the future of the city.

During the workshops, visual moderation techniques and workshop techniques will be used, which determines the size and layout of the room used and tools for conducting the workshop (see moderation techniques: e.g. H.-W. Franz, R. Sarcina, 2009, Building Leadership in Project and Network Management. A Facilitator's Tool Set. Springer)

| real case learning outcomes - with the listing of ENTRECOMP/DIGICOMP foreseen to be evaluated

- Student / Graduate can use knowledge (thanks to the description and assessment of identified areas) for practical use of cooperation tools and reflective learning necessary to create territorial projects.
- Student can present the results of work in a professional environment using the language appropriate for the discipline.
- Student has knowledge of societal challenges that determine the functioning of urbanized areas.

The didactic goal of the project workshops - important for academic teachers - is to conduct classes in a way that enables the development of:

- entrepreneurial competences, including in particular (bold letters):
  - **Spotting Opportunities - Use your imagination and abilities to identify opportunities for creating value**
  - **Creativity - Develop creative and purposeful ideas**
  - Vision - Work towards your vision of the future
  - Valuing Ideas - Make the most of ideas and opportunities
  - Ethical and sustainable thinking - Assess the consequences and impact of ideas, opportunities and actions
  - **2.3 Mobilizing Resources - Gather and manage the resources you need**
  - 2.5 Mobilizing others - Inspire, enthuse and get others on board
  - **3.4 Working with others - Team up, collaborate and network**
  - 3.5 Learning through experience - Learn by doing
- digital skills:
  - **1.1 Browsing, searching and filtering data, information and digital content**
  - **1.2 Evaluating data, information and digital content**

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- 1.3 Managing data, information and digital content
- **2.3. Engaging in citizenship through digital technologies**
- **3.1 Developing digital content**
- 3.2 Integrating and re-elaborating digital content
- 5.4 Identifying digital competence gaps

| pedagogical methods used for engaging students at all phases - preparation, execution, self-learning – if applicable

Preparation for the workshop:
Students build their knowledge on the studied city/cross-city area, create their own maps with searched and evaluated data; elaborate on the content identified / created. Thus, it is necessary to:

- apply tools and methods to browsing, searching, and filtering data, according to a specific assignment, individually and as a group – browsing various repositories, including public data and social media,
- apply tools and methods to evaluate data, information, and digital content – discussing, evaluating, checking for data reliability in teams / with local stakeholders (especially by interacting with them locally through direct questions, interviews, surveys, etc.),
- apply tools and methods to manage data, information and digital content – creating own repository, allowing access to the repository to team members, creating maps with data,
- understand the issue of digitalizing society based on research – to get involved in digital society by contacting social media and observing reactions to various topics relevant for the study,
- critically reflect on being engaged in digital society – to critically reflect if the digital content may be published and made open for the local society.

Workshop execution:
Students use their knowledge on the studied city/cross-city area to show new possibilities and to present it to local actors (public administration). Thus, it is necessary to:

- apply tools and methods to facilitate the process of creating ideas for projects,
- critically reflect on the results within student's teams,
- apply tools and methods allowing to present and promote the ideas.

Self-learning
Students use their work on new possibilities to confront it with opinions of local actors (public administration). Thus, it is necessary to:

- critically reflect on the results based on the feedback of local stakeholders.

| ways to do action learning [how do we evaluate the learning outcomes in action, i.e., while being involved in the real case – how can teachers learn what students do and how they succeed with their competences / need more involvement), including the peer learning made with partners]

Due to multiple phases of executed activities, it is necessary to comply to the following action learning steps / approaches:

- critical reflection and group discussion – were the students engaged in team reflection on tool used, data gathered, results achieved?

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- trial and error – were the students enhanced to make trials and not be afraid of errors in various phases of actions?
- discovery of actions made – what the techniques were uses, were the techniques justifiable, would other techniques serve better and if so – were the students informed on the need to look for more data / other data?
- learning from each other – were the actions taken knowledgeable enough so that all involved in the process could gain new insights, new perceptions?
- evidence of impact – were the results critically examined / given constructive feedback / made exposed to comments from external (to academia) environments?

To evaluate the activities performed and the readiness of students to actively engage in real-case situations, the following actions were performed:

- active observations while students working on the assigned tasks in groups (WorldCafe exercise) made by academic and professional (city officer) to check:
  - level of engagement
  - collaborative approach
  - knowledge sources
  - opportunities spotted
  - ethics when using the data
  - creativity
- discussion panel with the students and professionals to see:
  - self-awareness
  - creativity
  - valuing ideas
- follow-up discussion / feedback session with the students in class environment to identify:
  - issues they ran into with regards the organization and running of their assignments
  - ways they coped with the issues
  - competences used in particular when handling digital content, approaching the public and professionals
- a questionnaire to check further on:
  - competences used / levels of competence
  - competences unused / misused

| lessons learnt – joint elaboration of results towards their own region / university involvement / their courses updated – partners involved in each case

- identified based on the mutual discussion between the city and university;
- based on the workshop
- discussion with peers (teachers)

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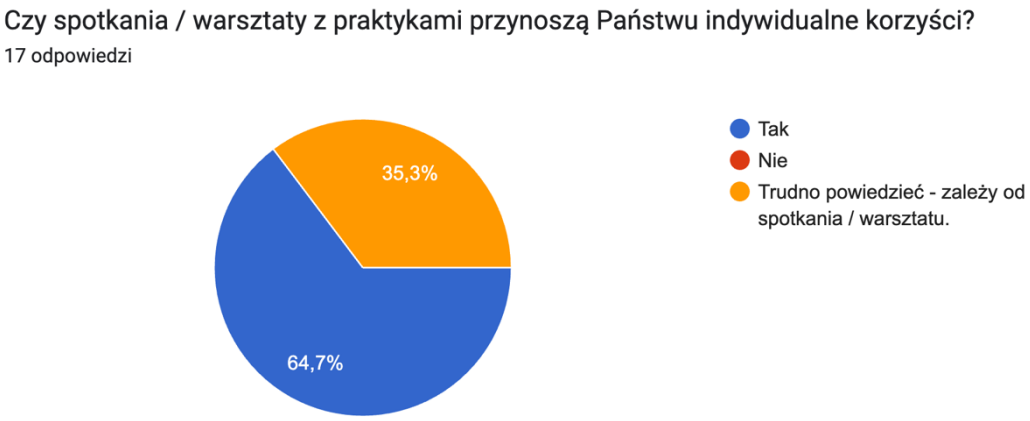

For 65% of the participants of the real-case it was a true benefit-building experience. For the remaining, it was hard to judge. No one said, he had no positive reflections.

The process of planning to meet people in the street and then to act as a person contacting respondents were among the two first competences not used. The reasons for that: it seemed simple, no need to prepare and plan and in some cases – there was no one whom they could speak to in the street. The other two competences not used – public speaking and being an expert to the city. The fact is that they could speak all the time in front of the representatives and themselves. And, indeed, they could build self-awareness of being an expert with the discussions made directly with the officials.

Interestingly, the competence of digital content management and its valuation was covered in a moderate way.

Having this opportunity to contact a representative of the city during such workshops, the most important thing for me would be ... (please finish the sentence briefly).

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- getting to know opinions on the possibility of implementing the presented solutions and suggestions.
- an opportunity to learn about important issues concerning the city, which are difficult to find in online sources, as well as the opportunity to receive information about the point of view of the city's representatives on the topics discussed in the project work.
- expressing an opinion and indicating what could be modified in the adopted concept.
- getting the opinion of the representative to understand whether the project has a right to exist.
- getting an objective evaluation of our work. Information whether something can actually be accomplished.
- discussing our vision and get a comment on it.
- finding out what plans employees of the city office have for the development of this area.
- discussion, talking to a representative.
- discussion, presentation of the city's image, solving some dilemmas.
- hearing an honest opinion about the task at hand.
- obtaining interesting information about the city
- getting feedback on our idea - is it good or bad, should something be changed.
- direct information from the representative regarding the idea/project
- hearing about the city's activities and the solutions they plan.
- getting advice
- the view on the problems that appear in the city and professional visions for solving the problem.

If I had to indicate what was the most valuable for me during the real-case in Ruda Śląska, it would be ... (please finish the sentence briefly).

- Opportunity to explore ideas, other groups and the possibility of supplementing your own project with suggestions from other people.
- Synthetic exchange of observations between groups and the possibility of consulting doubts regarding project work with a representative of the city (obtaining information whether a given project would be physically possible to implement in the city or not).
- Possibility of translating the theory developed so far into practice.
- Seeing the city and the area we are working on with our own eyes.
- Seeing the places, we worked on live. Talking to other groups.
- Conversations with other groups about our project (I was the group leader)
- The opportunity to meet with a representative of the City Hall.
- Getting acquainted with the ideas of other groups for the prospective area of the city; conversation with a representative of the city and the opportunity to present our ideas to him; joint brainstorming about valuable elements in the city and what can be done.
- Getting to know the vision of other groups.
- Discussion.
- Obtaining new information and assessing the credibility of the collected data.
- The presentation of representatives of the city and a study visit
- Conversation with other representatives of the groups, presentation of ideas for changes in the city by a representative from Ruda Śląska.
- talking to other groups about the project
- Comparison of our work with reality and city plans
- Outdoor activities.
- I have a clearer approach to the topic we learn on the city prospective areas.

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HACKATHON IN KOŠICE

REAL CASE SITUATIONS: SOCIETAL CHALLENGES FACED

Hackathon: How to increase biodiversity in the city?
25.4. – 2.5. 2023
Technical University of Košice

The idea of the real case
Collaboration of students and experts/ practitioners in environmental issues to deal with the challenge of deteriorating biodiversity in an urban environment.

Objective
The objective was to increase students' awareness about diversity loss and encourage them to be involved and active by ideating creative solutions to help conserve urban biodiversity. The pedagogical objective of the Hackathon was to train entrepreneurial skills among students, primarily creativity, ethical and sustainable thinking, taking initiates, working with others and learning through experience.

Context
The Hackathon was a part of the course Sustainable Development, which curriculum was innovated in the framework of the project DIGI-SOC. To enable students to work on real-life projects and train entrepreneurial skills, we incorporated the hackathon in the course assessment.
The Hackathon was the last and the most significant assignment of the course at the end of the semester. The students were informed about Hackathon, its general objectives and evaluation at the beginning of the semester (February 2023).
To organise it professionally, we cooperated with the business partner EurActiv Slovakia, who included the hackathon in the framework of their project. Therefore, we had the financial sources for the event (e.g. costs for renting the conference venue, coffee breaks and fees for presentations of experts).
Hackathons usually provide a valuable tool for developing entrepreneurial skills because they foster collaboration, innovation, and problem-solving abilities. Also, our students were exposed to real-world challenges and were required to think creatively, adapt quickly, and work to develop feasible solutions within a limited timeframe. Hackathon also encouraged networking because students had the opportunity to build connections with professionals from the local and regional government, NGOs and other organisations (botanical garden, museum).

The nature of societal challenges addressed.
The **challenge** of the Hackathon was to propose innovative solutions to *increase biodiversity in the urban environment*, especially in the university campus and its neighbourhood.
The loss of biodiversity in urban environments presents a significant challenge due to its far-reaching ecological and societal implications. The diversity of flora and fauna is usually associated with the countryside, and the topic needs to be addressed in the public debate in Slovakia, where the number of urban citizens exceeded half of the population only recent years. Urbanisation, characterised by the expansion of cities and the conversion of natural habitats into built environments, leads to the destruction and fragmentation of ecosystems. This loss of biodiversity disrupts crucial ecological processes, such as for example pollination. Additionally, the loss of biodiversity in urban environments can have adverse effects on human health, as it contributes to air and water pollution. Moreover, the decline of diverse plant and animal species in urban areas

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diminishes the aesthetic and cultural value of green spaces, depriving residents of opportunities for recreation, relaxation, and connection with nature.
The biodiversity makes cities not only more beautiful and unique but impacts the urban ability to adapt to climate change and mitigate the negative effects of heat islands. Preserving and restoring biodiversity in urban areas is therefore crucial for ensuring the sustainability, resilience, and well-being of both urban ecosystems and the urban communities that depend on them.

Real case description - what is the real case about?
The Hackathon was organised in three phases.
PHASE 1
25th April 15:30 - 18:30 University Library TUKE
Lectures of the experts
In the first phase:

- Experts and professionals hold lectures about different perspectives on urban mobility
- The challenge for the hackathon was introduced to the students.
- Students got basic instruction about the design thinking process.

The experts included in their presentations the main biodiversity challenges in the city of Košice to inspire students to look for solutions.
Involved experts and their presentations:

Name	Organisation	Presentation
Martina Gregorek	NGO Mill drive	Mill Drive on the river Hornád in Košice - living water in the city
Peter Krišovský	East Slovak Museum in Košice, Department of Natural Sciences	Biodiversity in the city as a new biotype and what affects nature in the urban environment
Jana Kolibábová	Department of Urban Greenery, local city part KVP	What has changed in the management of urban greenery in Košice in recent years?
Eva Singovszká	Municipality of Košice	The strategy of the city of Košice in the field of biodiversity
Martin Pizňak	Botanical Garden Košice	Increasing biodiversity in cities - examples from best practices
Zdenko Lipták	NGO Novozem	Biodiversity in a different way

The aim was to involve stakeholders from the different sectors with a practical experience in the field. During lectures, students were educated about biodiversity loss from different perspectives and about the potential implications on the various aspects of ecosystems and human life. Speakers also explained the current situation in Košice and how the stakeholders approach them. But they also presented inspirational examples of best practices to inspire students to think outside the box.
After the presentations were introduced the challenge for students:

Challenge Description:
The main goal of the projects should be to increase biodiversity in the city of Košice. Therefore, the proposed solutions should directly contribute to improving the living conditions of animals such as birds, insects or pollinators in the urban environment. However, your participants can also focus on the development of urban greenery, or you can address fauna and flora simultaneously.
In addition to direct actions, we are also happy to see projects aimed at raising awareness of the vulnerability of animals or plants in the urban environment, projects aimed at motivating residents to contribute to solutions, or projects aiming to collect or make better use of urban biodiversity data.

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Ideally, projects should be tailor-made to the specific local environment. This means they will respond to a local problem and offer an effective and feasible solution.
Solutions should be based on three main principles:

1. Severity (problem prioritisation)
2. Effectiveness (how much the solution will help)
3. Feasibility (how feasible it is to implement the solution)

Picture 1: Presentation of experts in the University Library

Students were asked to create teams of four students. Each team proposed a name for the group, which helped to support their connection to the team and encourage collaboration spirit. Seven groups of students participated, together with 29 students (1 group with five students). We tried to motivate students also by announcing the winning prizes sponsored by local partners (e.g. voucher to the bookstore, voucher to the escape room, voucher to the local bistro).

PHASE 2
26th April – 1st May
Work of students and mentoring

Hackathons are mostly organised in a relatively short period – 24 or 48 hours when the participants have to create collaboratively and rapidly innovative solutions under time pressure. But the design of our hackathon was different because we needed to respect the students' schedule during the semester. Therefore, we extended the phase for creating projects for seven days. During these days, students had their duties at the university, and there was also a weekend.
Students got the video developed by the professional design thinking trainer, who provided them with the process phases. Students were asked to brainstorm ideas, organise fieldwork in the locality they wanted to focus on, ideate about the solution, choose the best one and test it.
Each team had the opportunity to contact mentors during the week to consult with them about their ideas. The mentors were experts from the Museum of Eastern Slovakia, the NGOs Novozem and Mlynský náhon, amateur ornithologists, as well as representatives from the Košice City – Department of Strategic Planning and Department of Urban Greenery and teachers from the Faculty of Economics.

PHASE 3
2nd May 15:30 - 17:30, Technicom, Scientific Park of Technical University of Košice

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Final presentations in front of a panel of stakeholders and awards ceremony

The hackathon's last phase was the final concepts' pitches in front of the stakeholders. Students had 5 minutes for the presentation in PowerPoint. All members of the team should be included in the presentation.

The students' projects were mainly focused on the locality of the university campus and the dormitories because they spend most of their time in Košice. They tried to develop solutions that could improve the living conditions of species present in these areas, for example, squirrels, birds, insects and frogs. Most of the projects worked with expanding green areas, including vertical and horizontal green roofs. There were presented ideas for greening the roof of the TUKE University Library, creating a community garden and inventing green street lighting poles. The jury deliberated for a long time over the winner and finally selected two winning projects developed by the teams 2DKM and We Four.

The team We Four presented a design for a vertical green wall at the Jedlíková TUKE dormitory. Next, team 2DKM focused on helping the birds in the hot months and prototyped a homemade bird watering hole which could be located in the Jedlíková dormitory. They also presented a plan for how the community could care about the bird watering hole to keep it safe and clean.

In the jury were: Adriana Šebešová from the Košice City Council, Martina Gregorek from NGO Mlynský náhon, Zdenko Lipták from NGO Novozem, Peter Krišovský from the East Slovak Museum and Peter Breyl, General Director of the Innovation Centre of the Košice Region. They posed students questions and gave constructive feedback.

The jurors were asked to complete a simple assessment form (1-5 points for each criterion).

Relevance	How relevant is the problem which the project addresses (in terms of importance and timeliness) for the challenge of the hackathon? For example, does the project correctly identify the needs of the site or target group (plants, animals)? To what extent does the identified problem contribute to improving biodiversity in the selected locality?
Efficiency	Is the solution effective/ ecological/ innovative/ better than other alternatives?
Feasibility	To what extent is the proposed project feasible? Is the budget realistic? Were potential barriers identified, and ways of addressing them proposed? Will the project be workable in terms of the identified target groups?
Presentation	What is the quality of the project presentation? The clarity, structure, coherence, attractiveness of graphic design and layout of slides? Were all members of the team involved in the presentation? Is the team able to respond promptly to follow-up questions?

Picture 2: The winning teams with the jury

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Organising the real case - pragmatic hints, efforts made, how easy/necessary it was for the university to be involved

From the organiser's perspective, the huge advantage was the opportunity for financial support from the project of EurActiv. It was much easier to contact the stakeholders and ask them for their capacity to prepare a lecture, provide mentoring or participate in the final pitches when I could offer them a fair financial reward. Therefore, it would be useful if the faculty could allocate some financial sources to support the implementation of these techniques into education.

Maybe the most challenging task was identifying the relevant stakeholders because I didn´t have professional contacts in the field before. But I used the snowball method, and the first contact recommended the next other stakeholders. In the end, it was easy to get references for people who could be rich in knowledge but also accessible to students and inspiring.

The stakeholders looked open and happy to collaborate with the university and promote the topic in front of students. During the event, we also discussed the possibilities of further collaboration (e.g. future common projects with students).

From the students' perspective, even if they were informed about the hackathon at the beginning of the semester, they were quite surprised by the amount of effort required later. Therefore, next time I would invest more attention in better explaining the benefits of the hackathon, so they can better plan their time allocation for it.

Students were asked to share their insights and discuss with their peers or mentors in the MS Teams, which was a supportive online tool for the event.

Real case learning outcomes - with the listing of ENTRECOMP/DIGICOMP foreseen to be evaluated

- Student knows societal challenges that determine the deterioration of biodiversity in urban areas.

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- Students can use knowledge for practical use and reflect at the basic level on the problems of biodiversity in the urban locality and propose some solutions and best practices
- Students can explain suitable solutions and present them in front of practitioners in the field using professional language.

The hackathon provided an enriching experience for the participating students, allowing them to develop and enhance valuable skills.
During the teamwork, students were trained to communicate effectively, delegate tasks, and leverage each other's strengths to achieve shared goals. Problem-solving skills were also honed, as students were required to think critically, analyse problems, and propose creative solutions to enhance biodiversity in specific sites. The hackathon encouraged innovativeness and out-of-the-box thinking and also enabled students to use their imaginations.
Students needed to plan the sources realistically and outline the budget draft to prove the feasibility of the solution, so they used financial literacy. In the final phase, the hackathon helped them to train their presentation and pitching skills, communicate their ideas effectively, articulate their vision, and persuade others. In addition, they received valuable feedback from judges and mentors, enhancing their ability to refine and improve their concepts if there was an opportunity.
According to the taxonomy of EntreComp Framework, there were trained following **entrepreneurial skills**:

1.1. Spotting Opportunities: Use your imagination and abilities to identify opportunities for creating value
1.2. Creativity: Develop creative and purposeful ideas
1.3. Vision: Work towards your vision of the future
1.4. Valuing of ideas. Make the most of ideas and opportunities.
1.5. Ethical and sustainable thinking - Assess the consequences and impact of ideas, opportunities and actions
2.3. Mobilising sources: Gather and manage the resources you need
2.4. Financial and Economic Literacy: Develop financial and economic know-how
2.5. Mobilizing others: Inspire, enthuse and get others on board
3.2. Planning and management: Prioritise, organise and follow up
3.4 Working with others - Team up, collaborate and network
3.5 Learning through experience - Learn by doing

During the hackathon were trained following **digital skills**:
1.1 Browsing, searching and filtering data, information and digital content

Feedback about achieved learning outcomes in action learning
From the perspective of a teacher
Action learning, in brief, is learning from concrete experience and critical reflection on that experience through group discussion trial and error, discovery, and learning from and with each other.
(DIGI-SOC agreed definition elaborated by TAMK Team)

Hackathon is a great tool for action learning and I could see that also, in our case, the hackathon enabled a unique experiential learning environment. Students were actively engaged in problem-solving about the different biodiversity issues, and their awareness and interest in the topic increased immensely.
They worked on real-world challenges linked to well-known localities rather than passively absorbing theoretical knowledge. They learnt by doing and gained practical experience in ideation,

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planning and presenting a project. Self-learning of students was forced, but they also experienced group discussion and peer-learning.
But I can also see the shortcomings. I can see the weaknesses in the quality of feedback. Even if the confrontation with practitioners brought students valuable insights, there weren´t so much space for trials and errors. Next time I should follow the hackathon design more strictly and organise the joint session for the ideation, prototyping and testing phase. It is important to facilitate the process of creating ideas for projects and give students the opportunity for feedback from the mentors in all stages of the creative process. So they can experience more productive discussion, trials and errors and react on them flexible.
Although students had the video about the phases and processes of design thinking, some said they didn´t watch it. These students missed the substantial understanding of the creative process. Therefore, some solutions were imitation rather than innovation. But still, it was an valuable application of their new gained knowledge on the real-life problem.
The pitching session was at the end of the semester. After the final session, I discussed with several individual students and two teams their opinions and feelings about the hackathon.
Unfortunately, there wasn´t any other lecture to have the opportunity for deeper reflection with all students and all groups. Therefore, next year I need to improve the timing, allocate the last lecture for the group feedback, and give a chance to critically reflect on the results within the student's team.
The challenge is how to design an appropriate assessment tool that could assess effectively if the learning objectives were achieved.

From the perspective of stakeholders

We had a group discussion with the stakeholders. They were supportive and constructive. As the main benefit of the hackathon, they emphasised the increasing awareness of the students about the topic.

From the perspective of students.

Results from the interviews and survey

The best thing at Hackathon:

- It was useful for me because I learned about real-life problems and how to solve them.
- I liked the idea as a whole, our "mentors" were also great
- Working in a team, searching and grouping information into one unit
- The opportunity to work with real professionals and contribute positively to the change of the region
- New knowledge about biodiversity
- Teamwork
- Presentation
- Collaboration with other students
- Consultations with experts and their advice
- Improving relationships between classmates and the best thing was that we thought more about the various problems of biodiversity in cities and about the possibilities of solving them
- We learned something new.

The worst thing at Hackathon

- The time. It would be better at the beginning of the semester when we are not dealing with so many mid-term exams and we could allocate more time to the presentation
- The week -.. if it would be organised in the second or third week of the semester, the quality of the projects would have definitely been higher
- Not enough time for projects

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- A relatively small amount of time
- Tight deadline for projects dThe shortness of time to prepare the project and also the timing, as the hackathon was held the week we had the most credits for the whole semester
- There wasn´t enough time because, at the end of the semester, we had much workload for every course.

Which unique new competences did you learn (not so usual for other courses)?

- How to communicate and solve problems in the team
- I liked the level of seriousness, it's also nice that we got also prizes, I think it motivated the students
- Since this was my presentation of the project after a long time (the last time in the primary school!), it was a challenge for me, as I didn't know how to present it, but somehow I managed :)
- Practical and constructive thinking
- To present projects in front of a bigger group of people
- To use my fantasy
- How to use your ideas to develop really feasible projects
- For example, I presented something in front of such a large audience and also a professional committee for the first time
- Communication in team

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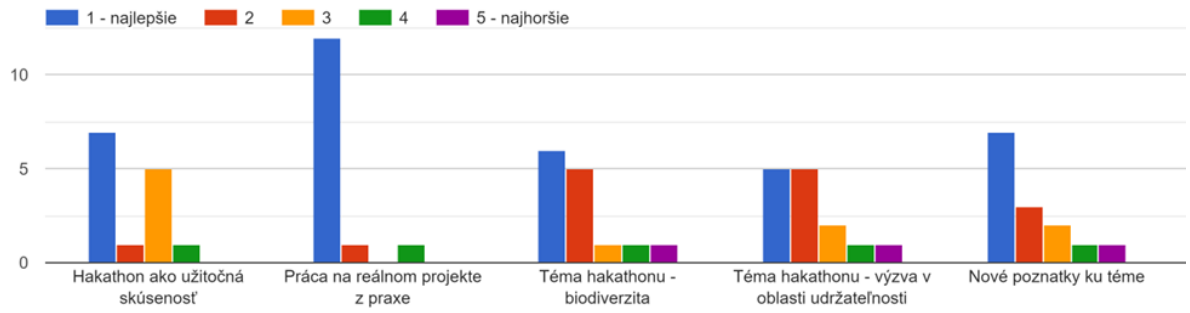
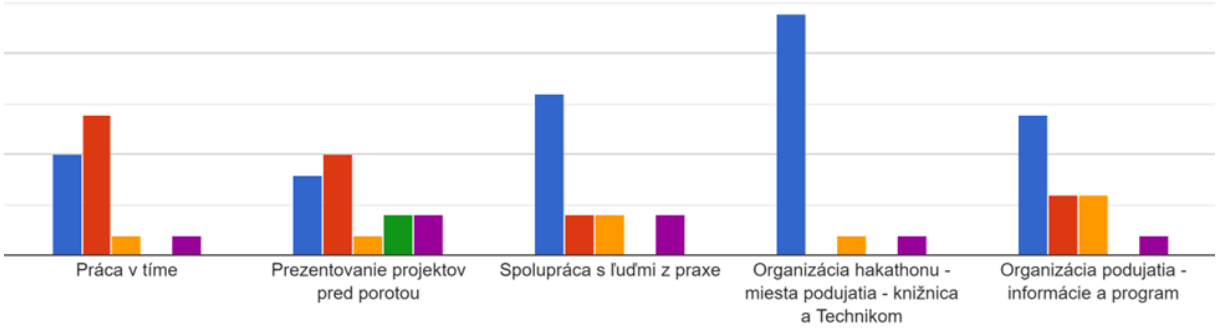
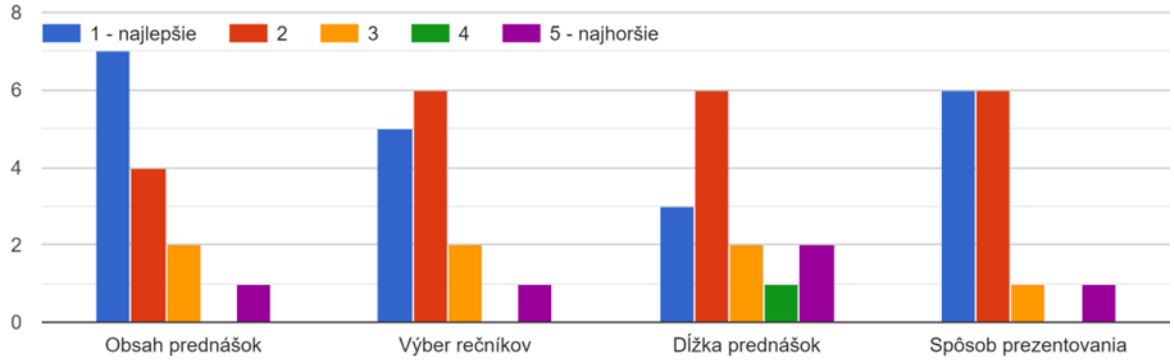
Ohodnoťte, ako v škole, 1- najlepšie, 5 najhoršie.





Ako sa vám páčili prednášky odborníkov? Ohodnoť ako v škole 1 - najlepšie, 5 najhoršie



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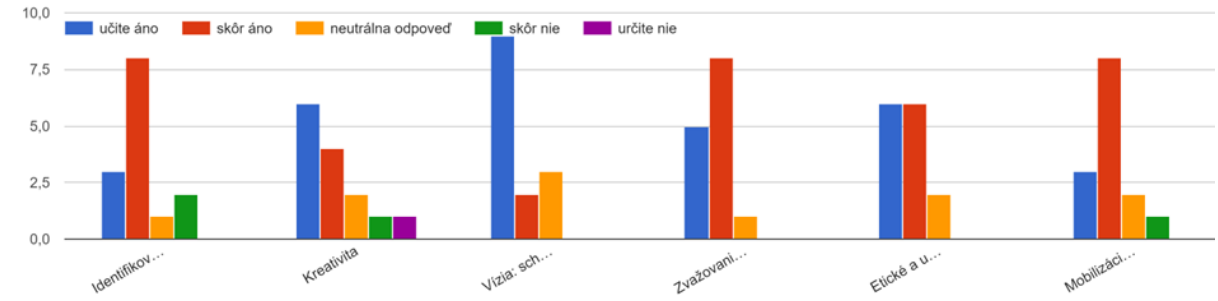
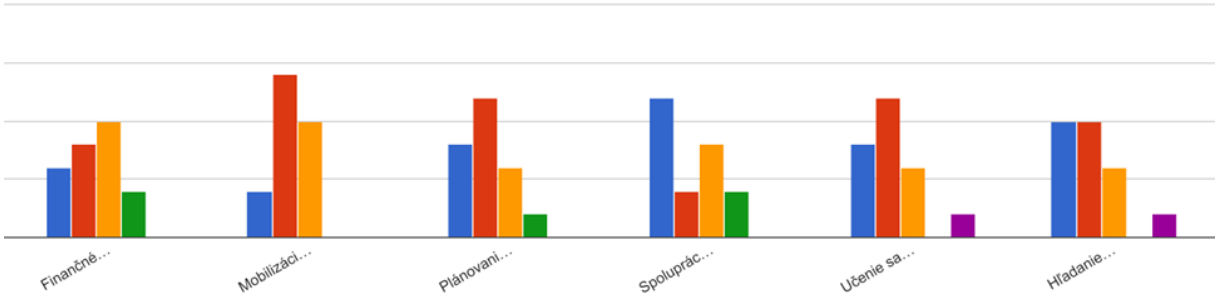
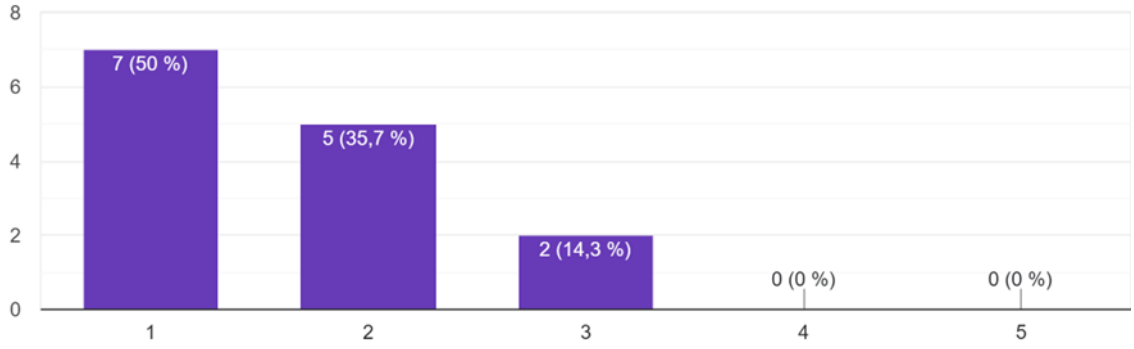
Uveďte, nakoľko ste mali možnosť trénovať počas hakathonu nasledujúce zručnosti





Odporučili by ste iným spolužiakom/spolužiačkam zúčastniť sa hakathonu?

14 odpovedí



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Introduction to Data Visualisation
Action learning case from University of Economics in Bratislava (UEBA)

1. Context

The specific Action learning case refers to a one selected student project from 2022. The project is based on subject Introduction to Data Visualisation, within the study program Management of public policies. Around 20 students attend this course every year. The description of the course, its objectives, syllabus, and teaching goals, are in the Handbook. In 2022, this course took place in collaboration with a non-profit organization, Alvaria. Since 2014, Alvaria brings together a team of analysts, programmers and experts who have several years of experience in multiple areas. From processing and visualizing data from state registers, product development and management, through community and volunteer involvement in the development of IT solutions, to the creation of public policies in the field of open data. The outcome from this course is through data visualisations point out on a specific social problem. In 2022, students presented their final projects at a national online workshop, organized by Alvaria. The national online workshop was attended by approximately 100 participants. Among participants were students and teachers of 6 Slovak universities, representatives of local and regional governments, or experts from practice.
The chosen example of the student project from 2022 is called "First aid as a support tool for businesses during the COVID-19 pandemic". It is a website with interactive visuals. Authors of this project are Adam Brigant and Michal Gabura.

2. Description of the real case

The student project focuses on visualizing the allocation of state financial support to companies and individual entrepreneurs who applied for a state support during the COVID-19 pandemic. During the COVID-19 pandemic, companies operating in Slovakia could apply for a state support to maintain employment, or for a reimbursement for their operating costs.
The social problem that this project focused on was a lack of information and transparency of state support for companies operating in Slovakia. During the COVID-19 pandemic, the public and even the entrepreneurs themselves did not have clear information about the possibilities of obtaining a state support. Also, clear information about which companies, from which regions, from which industries, in what amounts, were not clear. The presented student project proposed a visual solution with clear information about the provided state support. In addition, the project pointed out the spatial distribution of state support between regions. The findings of the project showed that more state support went to regions with higher unemployment.

3. Organising the real case

The topic of the project was students' idea. At the beginning of the course, all students are divided into working groups. Each group freely chooses a specific social problem, which they have heard or read about in the media. Their task during the course is to create a website with visualizations that would address the selected social problem. Students acquire the necessary skills for creating a website and specific visualizations in individual lessons of the course.
To create a functional solution within the "First aid as a support tool for businesses during the COVID-19 pandemic" project, students proceeded as follows. Students independently searched for information on the possibilities of state support for companies during the COVID-19 pandemic provided by the relevant authorities. Specifically, they collected information from the Ministry of the Economy of the Slovak Republic and from the Ministry of Labour, Family and Social Affairs of the Slovak Republic. From these ministries, they obtained data on the support provided for individual companies. They combined several data sources into a single database. Through some simple tools of Power Bi software, they created visualizations about the geographic distribution of the state support, the distribution of the support for individual industries, as well as simple scatter

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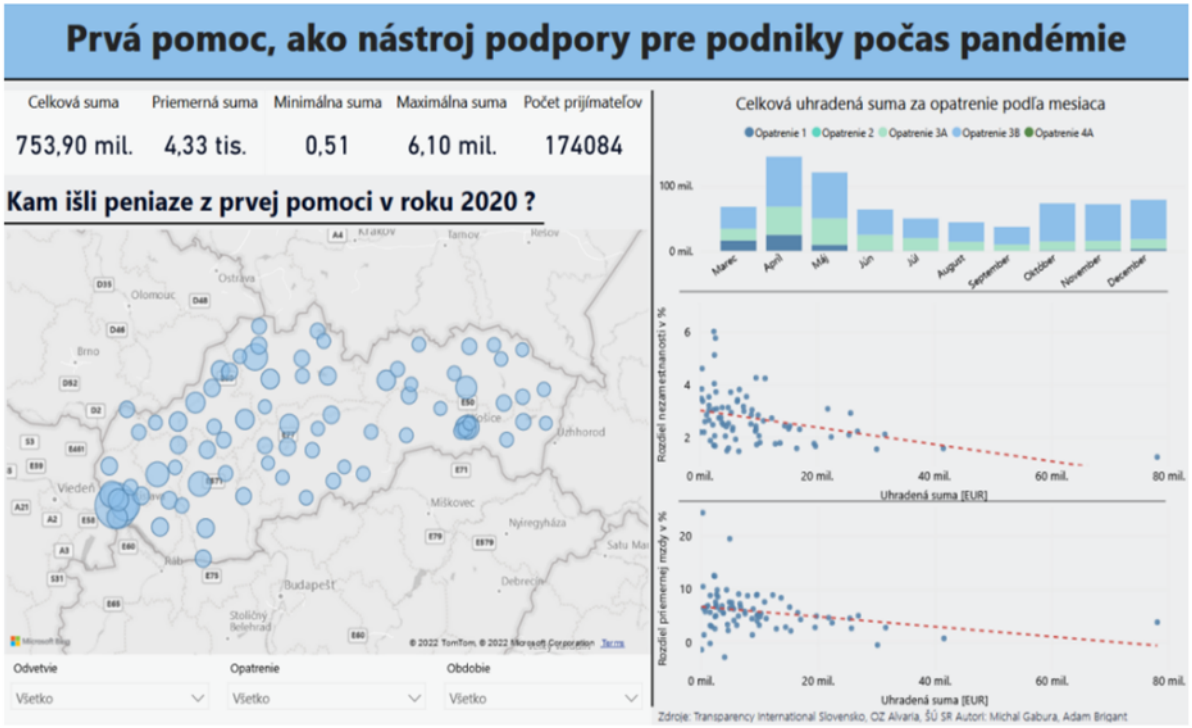
plot visualizations that showed the relationships between the level of unemployment in the regions and their cumulative amount of state support. During the entire course, students were consulting their project with the teaching staff and with an expert from Alvaria. At the end ot the course, students presented their final result at a national online workshop. Figure 1 provides the result of project visualization.

Figure 1 – Visualisation from the Real Case: "First aid as a support tool for businesses during the COVID-19 pandemic"



Authors: Adam Brigant, Michal Gabura
Source: https://www.alvaria.sk/ekonomika/

4. Real case learning outcomes

Graduates of the course Introduction to Data Visualization gained experiences and improve their competences. In the field of digital competences, as well as in the field of entrepreneurial competences. The digital competences that graduates possess after successfully completing the course are:

- Browsing, searching, and filtering data, information, and digital content – graduates can perform activities on online data processing.
- Solving technical problems – graduates can use new program: the Power BI program.

Entrepreneurial competences that graduates possess after successfully completing the course are:

- Taking the initiative – graduates can point out on a societal problem and design a project that highlights its importance.
- Planning and management – graduates can develop a project that includes setting goals, a timetable, and an evaluation of achieved goals.
- Working with others – graduates have experience working in teams either as a team member or as a team leader.
- Learning through experience – graduates have experience how to implement their own project and learn from their own mistakes and successes.

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5. Pedagogical methods used for engaging students at all phase

Self-preparation - students had to educate themselves. They had to come up with a current social problem that represents a certain obstacle for a selected group of residents. Whether for a community, village, city, region, or the entire country. Students could get an inspiration from the media. Subsequently, they had to find the relevant open data sources, which they could process and use to create visualizations. During the course, students received inspiration about specific social problems, as well as open data sources, from the teaching staff.

Teaching principles of data visualisations and using the Power Bi software v- throughout the course, students were introduced to basic principles of data visualisation techniques and learned how to use the Power Bi software. Students learned how to open, combine, and edit data within this software. They learned how to create simple visualizations such as maps, scatter plots, line graphs, column graphs and other visualizations. Lastly, students learned how they can publish their visualizations on a website that is available to the public.

Consultations – students consulted their projects with the teaching staff and with an expert from Alvaria throughout the whole course. During consultations students received relevant feedback. At the end of the course, student presented their final projects at a national online workshop. At this event, they also received valuable feedback from independent viewers, such as mayors of municipalities and cities, administrative staff from local or regional self-governments, as well as from practitioners.

6. Ways to do our action learning case

To create this type of an action learning case, it is necessary to have teaching staff that know the principles of data visualization and know how to use Power Bi software and to have a functional computer room for teaching. The Power Bi software also has a free version, which is sufficient for teaching this course. Everyone can access this free version of this program on the official Microsoft website. To learn how to use this software, it is advisable to go through the Power Bi tutorial on the official Microsoft channel. Also, on the popular YouTube channel, there are several instructional videos how to use this software.

To evaluate individual projects, it is necessary to establish evaluation criteria at the beginning of the course. Evaluation criteria can be the relevance of a social problem (factual data to support the argument for the need of visualization), the size of the used dataset, the appropriateness of the use of specific visualizations, or the clarity of the final website. It is appropriate that each project is evaluated by at least two educators. Even better is, when one of the evaluators comes from an external environment. For example, is an official from the IT department of the city or comes from professional practice.

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A potential actual case description at the University of Bologna

We introduce two case studies based on the activities to support two young students (star-uppers) who are developing their enterprise assisted by the incubator of the University of Bologna and the scientific manager of DIGI-SOC at the University of Bologna.
They both represent a case study about the evolution of entrepreneurial activities related to digitalisation and new tools available today. They also mean an exciting renovation of the entrepreneurial activities associated with the Italian industrial system based on industrial districts characterised by high specialisation in specific fields.

Context

A societal challenge, underestimated and mainly related to SMEs, is associated with know-how transferring. SMEs constitute the backbone of the Italian industrial system and are typically clustered in regional industrial districts. They are characterised by competencies related to the territory and expertise accumulated during the previous decades (sometimes centuries), passed to the following generations by expert workers and entrepreneurs.
This hand-over between generations is facing today a relevant issue related to the quick transformation of (manufacturing) processes and products towards a fully digital world. Achieved expertise (mainly craft ability) is not easily transformed into digital, and young people must find new and innovative ways to keep the technological advantages accumulated by the previous generations of expert workers.
The industrial district in the Bologna area is focused on several sectors (automation for packaging and pharmacological products, automotive, wellness, and a few more). Each industrial sector is characterised by a leading enterprise and several SMEs that are functional to maintain the know-how. The recent paradigm change - based on digital tools dedicated to design and (manufacturing) process modelling, digital twin models, and digitalisation – and the velocity of changes are stressing the industrial systems and the young generation obliged to find new paths to start entrepreneurial activities.
Furthermore, many people from other regions in the centre and south of Italy attend the University of Bologna in the northern regions. It represents a rich cultural pot because students can breathe the industrial and at the same time bring the richness of their territories about their specific regional expertise.

Real case description

This short report is based on a specific experience that occurred in the last years when two young students started their own business by founding start-ups that are now under development. They both participated in the DIGI-SOC programme to learn more about the relationship among digitalisation, entrepreneurship and university HUBs dedicated to incubating new enterprises. In particular, Lorena Pirozzi is the CEO of Auxilio Labs; Leonardo Marotti is the owner of Atto Primo. They both are students of the University of Bologna attending the last year of master courses. Lorena started her enterprise based on an innovative product for the aeronautical sector and funded Auxilio Labs, which develops new and innovative products as a service laboratory. Leonardo followed his passion for jewel design and funded Atto Primo, an online company for jewel (design and) delivery fully digitalised.
They both were inspired by the know-how of their territory and funded young enterprises that are based on digital know-how (CAD – Computer Aided Design, CAM – Computer Aided Manufacturing and CAE – Computer Aided Engineering systems)
They both are tutored in their educational activities by the UNIBO responsible for DIGI-SOC. They started to work on their master thesis after the University course delivered in the second semester of 2022 by the scientific coordinator of DIGI-SOC at UNIBO.

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They both participated in the DIGI-SOC LTTC2 workshop. Lorena – could not participate in all the seminars because she was already busy with her start-up activity - presented (see Figure 1 in the Attachments) her work as the CEO of "Auxilio Labs" during the seminars organised in a dedicated workshop section to start-uppers, who are tutored by the UNIBO's incubator. Leonardo participated as a student and was greatly inspired by the DIGI-SOC LTTC2 workshop and decided to found "Atto Primo", which was still only a concept at that time (April 2023). Based on the evaluation sheet - all the participants in the DIGI-SOC LTTC2 filled out - Leonardo was interested in all the lectures delivered during the five days of the workshop, and he applied all the acquired knowledge during the seminars for the project development. Seminars were offered mainly during the morning time of the five-day workshop and included a presentation of the ENTRECOMP concept (European Commission, 2023. EntreComp: The European Entrepreneurship Competence Framework. Publications Office). He understood the importance of digitalisation and decided to start the enterprise concept - he was already developing during the master thesis – in the digital world (see Figure 2 in the Attachments).

Actual case learning outcomes

From these two case studies mentioned, we learnt that the educational environment can help the entrepreneurial mindset by proposing previous examples of enterprises born during the course delivered regularly at the master courses. Even the delivery of specific workshops that can be more practical than the classical scheme of regular classes and applied to the entrepreneurial spirit are greatly appreciated by all the students.

In particular, we can mention several competencies discussed during the DIGI-SOC workshop and all the tutoring activities of the said students. The main relevant competencies were:

- Digital content creation. The staircase model has been discussed by focusing on the need for advanced and highly specialised expertise. All the dimensions were examined: (i) to create and edit content; (ii) to improve and integrate information and content into an existing body of knowledge while understanding how copyright and licences are to be applied; (iii) to know how to give understandable instructions for a computer system.
- The safety issue. All the dimensions were discussed: (i) to protect devices, content, personal data and privacy in digital environments; (ii) To protect physical and psychological health and to be aware of digital technologies for social well-being and social inclusion; (iii) to be aware of the environmental impact of digital technologies and their use.

By taking advantage of the recent experience of the DIGI-SOC workshop, it was clear that students are available to dedicate extra time, beyond the regular course, to this type of international activity because the interaction among different cultures and backgrounds also attracted them.

Pedagogical methods used for engaging students at all phases

We engaged students by starting with the teaching activities and giving information about the DIGI-SOC project during the lectures of the courses delivered in the semester. Pedagogical methods are mainly traditional and based on lessons, even if we can exploit digital tools and online/streaming connections to invite experts to deliver specific lectures based on their direct expertise and experience. When students are interested in the presented topic, they sometimes ask to be assisted and tutored for their ideas to transform concepts into products. The two mentioned case studies started from direct knowledge while delivering regular lectures.

Learning outcomes evaluation

During the lectures of the regular courses, professors can establish first contact with all the students but only with a few of them, probably because they are more interested in the professor's competencies, start a collaboration that can be based on shared interests or in need of developing

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the master thesis or even because they ask supporting their ideas and concepts that can be further transformed form a conceptual form to an actual (industrial) products.
During the tutoring activities, professors can establish more direct contact with their students and learn about their needs outside their interest in the course (related to the final exam and evaluation of their acquired knowledge and abilities).
A final evaluation of the established collaboration is based on the results achieved. Of course, not all ideas can be transformed into objects, but it happens more frequently than expected.

Giampaolo Campana
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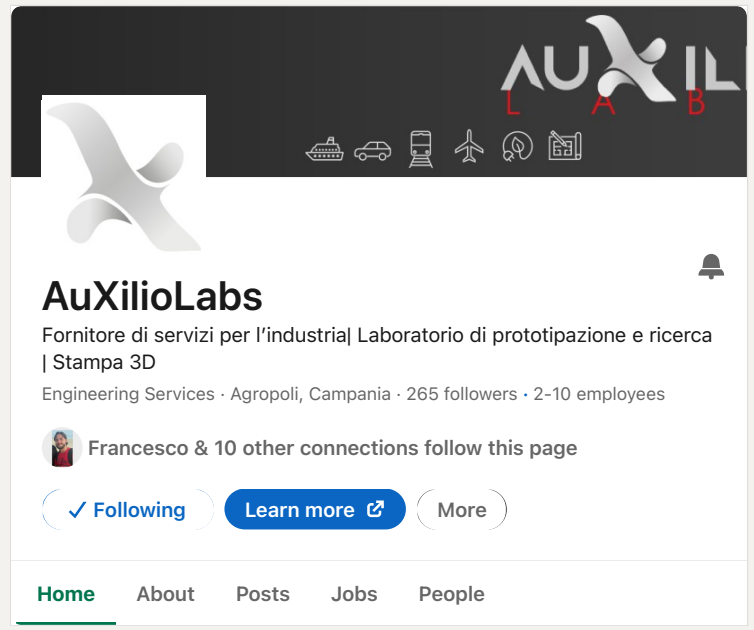

Figure 1: Lorena Pirozzi (upper picture), CEO of Auxilio Labs (lower image from Linkedin, accessed on November 2023), giving a talk during the DIGI-SOC LTTC2 workshop @ UNIBO

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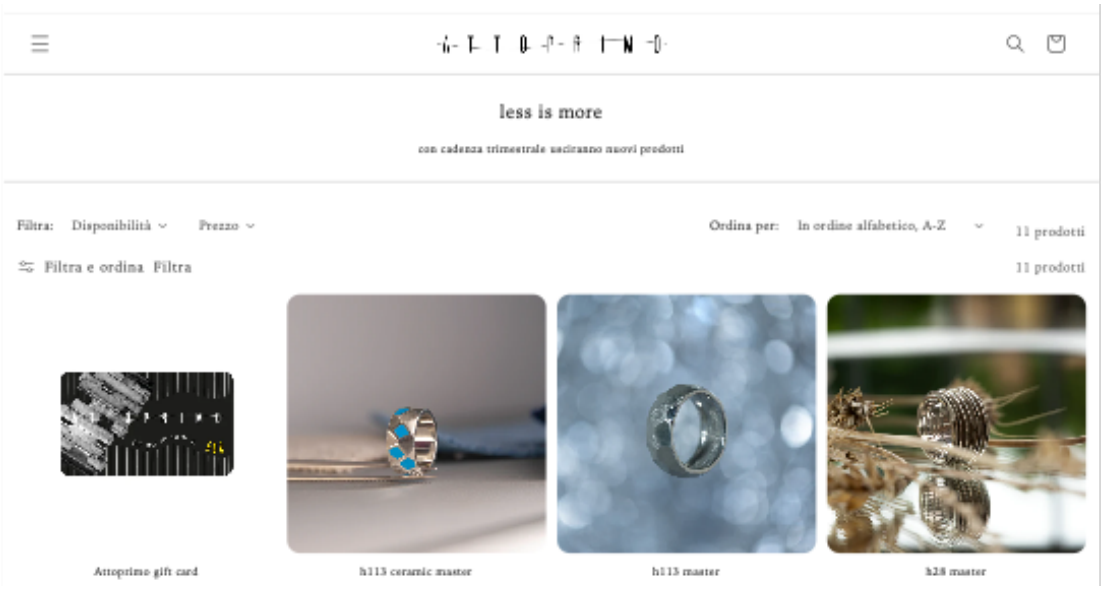

Figure 2: Leonardo Marotti (upper picture, second row, from the right side, the second one), owner of ATTO PRIMO,
attending the DIGI-SOC LTTC2 workshop @ UNIBO.
ATTO PRIMO (lower picture from the web, accessed on November 2023)

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The adoption of digital solutions to strengthen the agroecological transition in Ariège: opportunities and limits in Tolouse

1. Context

Agriculture is directly impacted by climate change, such as increased temperatures, changes in precipitation, and increased occurrence of extreme weather events. These changes can affect food production, crop yields and the availability of arable land. Conversely, agriculture contributes to the deterioration of ecosystems and climatic degradation associated with human activities. Among the harmful effects associated with intensive agriculture, several major impacts are regularly cited: deforestation; loss of biodiversity; overconsumption of water; erosion and reduction in soil quality; intensive use of chemical fertilizers and pesticides; to further greenhouse gas emissions.

To address these challenges, sustainable agricultural practices, technological innovations, better management of natural resources and changes in food consumption patterns are necessary. In this context, digital solutions are increasingly used in agriculture because they are seen as being able to help mitigate negative impacts on the environment. Data production is at the center of the development of the uses of digital tools in agriculture. Technologies such as IoT (Internet of Things) sensors and drones enable real-time data collection on soil conditions, weather and crop growth. This precise information allows farmers to optimally adjust the use of water, fertilizers and pesticides, thereby reducing waste and environmental impact. Blockchain technologies can be used to ensure traceability of food products throughout the supply chain. Algorithms also enable optimization of food supply chain logistics; and digital applications promote the connection between producers and consumers.

By combining these digital solutions, agriculture and food can become more resilient to climate change, while contributing to reducing the carbon footprint and preserving natural resources. However, the adoption of these solutions is debated. Many cognitive, economic, technical and organizational obstacles remain. But also controversies linked to the energy efficiency of these solutions, the risk of loss of professional skills for farmers, the management and ownership of data, etc.

2. Real case description

For several years, local strategies have been implemented to strengthen the agroecological transition of the agricultural and food system in Ariège, located in the south-west of France: local supply infrastructure for canteens, local food project, support for adoption of sustainable agricultural practices (notably organic farming), etc. Despite their success, these strategies fail to ensure the transition of all local agriculture towards an agroecology model and sustainable food for all.

In order to remove the obstacles to the transition, the question of the interest of strengthening the uses of digital solutions in agriculture and food is raised. What are the methods of using digital agricultural and food solutions currently at work? Could strengthening uses promote the transition dynamic of the local agri-food system? If yes, under what conditions?

3. Organizing the real case

The educational operation will be offered to students of the Ruralities master's degree, an interdisciplinary training course (economics, geography, sociology, management) located in Foix (Ariège department), local branch of the University of Toulouse. The work will be carried out collectively, by the entire group (around 15 students), who will have to organize themselves to carry out all the operations.

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The case will take place in 5 stages:
(i) an online survey of farmers and actors in the food value chain to identify their uses of digital solutions, their digital skills, their needs and the obstacles to the adoption of these tools. And carrying out direct interviews with a few key players;
(ii) video recording of practical cases to show concrete situations of digital use;
(iii) processing the survey data and discussing the results with the stakeholders concerned;
(iv) the identification of avenues for individual and collective solutions in the Ariège territory;
(v) an overall assessment

4. Real case learning outcomes

The educational exercise must provide entrepreneurial and digital skills to students. It also aims to strengthen knowledge of digital issues and solutions linked to the agroecological transition for the stakeholders involved in the exercise.

Entrepreneurial skills	Digital skills
Ideas and opportunities - *Spotting opportunities :* Identify needs and challenges, seize opportunities to create value by exploring the social, cultural and economic landscape - *Creativity :* Develop several ideas and opportunities, explore and experiment with innovative approaches - *Valuing ideas :* Recognise the potential an idea has for creating value ; reflect on how sustainable long-term social, cultural and economic goals are **Resources** - *Mobilizing resources :* Get and manage the material, non-material and digital most limited resources needed ; Get and manage the competences needed at any stage - *Mobilizing Others :* Inspire and enthuse relevant stakeholders ; Demonstrate effective communication, persuasion, negotiation and leadership **Into action** - *Planning and management :* Define priorities and action plans ; adapt to unforeseen changes - *Working with others :* Work together and co-operate with others to develop ideas and turn them into action	**Information and data literacy** - **Browsing, searching and filtering data, information and digital content** - **Evaluating data, information and digital content** - **Managing data, information and digital content** **Communication and collaboration** - **Interacting through digital technologies** - **Sharing through digital technologies** - **Collaborating through digital technologies** **Problem solving** - **Identifying needs and technological responses** - **Creatively using digital technologies**

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- *Learning through experience :* Learn with others, including peers and mentors	

5. Pedagogical methods used for engaging students at all phases

The students are accompanied in the exercise by several members of the teaching team. The basic knowledge was provided to them beforehand during lectures. More specific additional teaching is provided during the exercise, at each stage of the process. The skills acquired are both thematic (agroecological transition, digital solutions, etc.), methodological (construction of a survey, etc.) and technical (video production, etc.).
Beyond strengthening digital and entrepreneurial skills, the goal is also to consider behavioral and interpersonal dimensions. And it is to strengthen cognition : critical thinking (structuring a problem, logical reasoning, understanding biases, searching for relevant information), task planning (organization, prioritization, agility, etc.), communication (storytelling, asking relevant questions, message synthesis, listening active), mental agility (creativity, translation of knowledge to different contexts, adopting a different perspective, adaptability, ability to learn).

Organization of a case study

a. Training in the organization of collective work: definition of objectives and tasks
b. Training in organizing collective work: group organization and planning
c. Training in organizing collective work: searching for relevant information and educational resources on the Internet

An online survey

d. Training in techniques for constructing an online survey (syntax, organization of the questionnaire, etc.)
e. Training in building an online survey with digital tools
f. Training in data management from an online survey
g. Training in ethical rules for managing personal data

Direct interviews

h. Training in interview methods
i. Training in analyzing information from interviews

Video recording of practical cases

j. Script writing training
k. Training in image capture
l. Image editing training

Processing the survey data

m. Training in survey data processing software
n. Training in interpreting survey data
o. Training in presenting survey data

Discussing the results with the stakeholders concerned

p. Training in presenting work to stakeholders
q. Training in leading a group work session with stakeholders (management of a contradictory debate, etc.)

Identification of avenues for individual and collective solutions

r. Creativity training to develop innovative solutions to respond to concrete problems (brainstorming, collaborative serious games, etc.)
s. Raising awareness of the impacts of the solutions proposed in terms of sustainable development

Overall assessment

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t. Learn to assess what worked well and areas for progress, at individual and collective levels
u. Learn to assess what was learned during the exercise

6. Learning outcomes evaluation

Evaluating the implementation of the practical case is essential from a perspective of recognition of the efforts made by each individual and by the group, validation of skills, and reflections on educational practices.

The involvement of students in this evaluation work allows them to express the positive and negative elements of the experience, and to become aware of what was learned during the exercise. The evaluation phase must therefore allow them to learn to assess what worked well and areas for progress, at individual and collective levels; but also to learn to assess what was learned during the exercise, and how previous skills could be mobilized to deal with the real case.

For the teaching team, the evaluation phase must also allow for feedback. It allows us to see how the real case promotes direct contact with students, likely to better identify difficulties and skills that are sometimes difficult to understand in a traditional teaching format. It also helps promote dialogue between disciplines to strengthen the coherence of teaching. Finally, it allows us to question the contribution and limits of the use of digital tools in educational practices.

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https://www.rs4e.com/ensino-superior-2023/

1. Context

The present initiative is undertaken once a year under the course named 'Road Show for Entrepreneurship" that is part of the Instituto Universitário de Lisboa spring school (April). In this course, around 70 students from universities of Portugal. They usually include students from a broad range of backgrounds, including business and economics, engineering, arts and humanities, sciences and from several levels (graduation, MSc, and PhD).
The Intensive Course in Entrepreneurship and Business Innovation is an activity developed by ISCTE-Instituto Universitário de Lisboa, Startup Madeira and the Regional Government of Madeira Island, within the scope of the RS4E project. This initiative has the duration of 3 immersive and full days, at the Hotel Vila Galé Santa Cruz.

The project is organized in 3 parts:

Part 1:
The students will have access to theoretical content organised into the following programmatic modules:

Module I - Creating Value in Business Projects
(https://www.rs4e.com/wp-content/uploads/2023/04/Rs4e-Madeira_-Módulo-I_Criacao-de-valor-em-novos-negocios-Ana-Fonseca_2023.pdf)
Module II - Leadership and Team Building
(https://www.rs4e.com/wp-content/uploads/2023/04/Rs4e-Madeira_-Módulo-II-_Liderança-e-Team-Building-Elisabete-Ferreira.pdf)
Module III - Web-based technologies and applications
(https://www.rs4e.com/wp-content/uploads/2023/04/RS4E-Modulo-III-Tecnologias-e-aplicacoes-web-based-2023.pdf)
Module IV - Innovation and Marketing
(https://www.rs4e.com/wp-content/uploads/2023/04/23.03.27-Rs4e-Madeira-Modulo-IV-Inovacao-e-Marketing-Pedro-Dionisio.pdf)
Module V - Financial analysis tools
(https://www.rs4e.com/wp-content/uploads/2023/04/Modulo-V-e-VI-Ferramentas-Analise-Financeira_AG_IL_2023.pptx)
Module VI - How to structure a business idea?
(https://www.rs4e.com/wp-content/uploads/2023/04/Modulo-V-e-VI-Ferramentas-Analise-Financeira_Exercicio.doc)

Module VII - Presentation techniques
(https://www.rs4e.com/wp-content/uploads/2023/04/Rs4e-Madeira-Modulo-VII-Tecnicas-de-apresentacao-2023.pptx)

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The modules are taught by teachers from ISCTE - Instituto Universitário de Lisboa in collaboration with AUDAX – Innovation & Entrepreneurship Centre. Each module has a duration of 2Hours.

Part 2:
After participating in the theoretical modules, participants will be invited to develop a business idea. This activity will be carried out in small multidisciplinary working groups (5 elements) and will have the assistance of ISCTE teachers and technicians from Startup Madeira.

Part 3:
The groups make their presentations in the pitch deck format and a jury of 10 members from public and private organizations votes to select the 3 most innovative projects with development potential to join the market. All students present on the course also participate in this vote.
The groups selected as 1st, 2nd and 3rd receive financial prizes and have a trip to a European city to visit innovation & entrepreneurship structures.

Additional Information:

1) The Participation in the course does not imply any payment on the part of participants, as this course is part of a program co-financed by the European Union and the Regional Government of Madeira.
2) Applications are accepted from students attending Universities and Polytechnic Institutes, in any area of training and level of education (Bachelor's degree, Postgraduate degree, Master's degree or Doctorate degree);
3) Candidates submit a duly completed registration form accompanied by a document proving the number of ECTS completed up to the date of registration (information made available by the University on the student portal). If the number of applications exceeds the number of places available, priority will be given to students with the highest number of ECTS completed to date;
4) In order to guarantee the attendance of students from different courses, the enrollment of students in the areas of Economics and Management are limited to 60% of the total number of candidates selected to attend the course;
5) The order of arrival of applications are the criterion used in the event of a tie in the selection of participants.

2. Objectives and Program

The objective of the activity is, in teams of (usually) 5 students, identify a social challenge for which potential innovation-based ideas can be considered to provide solutions, and develop the project for which a product or service is designed, and a business plan is developed for that specific product/service. In pedagogical terms, the objectives of the initiative are:

- Foster the entrepreneurial mindset of students, ensuring that they can identify an opportunity or needs to develop an innovative idea and a project.
- Develop the territories with innovative ideas, developing products and/or services which can serve as an important solution for several places;
- Enhance the synergies of students from different academic backgrounds, nationalities, cultures, and experience;
- Foster the development of teamwork to defend innovative projects;
- Promote and develop techniques for successful presentations on innovative projects and services;

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- Teach students methodologies to turn ideas into practical projects, making use of their knowledge and new tools, especially digital ones;

The programme can be seen in the following link:
https://www.rs4e.com/wp-content/uploads/2023/02/230216_programa_provisorio.pdf

Some contents to support students:
https://www.rs4e.com/conteudos/

General Information for students:
https://www.rs4e.com/wp-content/uploads/2023/03/230317_indicacoes_regras_gerais_aluno_digital.pdf

Flyer with information:
https://www.rs4e.com/wp-content/uploads/2023/02/2302016_rs4e_U_flyer_2023_site.pdf

Photos of last edition (April 2023) can be seen in the following link:
https://www.flickr.com/photos/rs4e/albums/72177720307439562/

3. Building teams e Organization

The work groups are organized in a heterogeneous way, i.e., each group has at least one management/economics element, one engineering element, one IT element and the remaining elements from other areas. Typically, each group consists of 5 elements;

Each Group has an associated mentor (a responsible teacher), and in each of the specialties according to each of the modules, specialists support all groups depending on the identified needs and as support for each of the deliverables that the groups have to deliver;

Two groups of teachers organize partial presentations to validate innovative ideas in a first incipient phase. After this validation, students begin to develop their content;

Depending on their ideas, students are faced with obtaining data to justify the market potential and clarify the possibility of implementing them;

In addition to the mentoring team, students can involve society in general and public and private organizations to help clarify some details to defend their projects.

4. Visit to an European city by the award-winning groups

An example (last year) of the program for the visit can be seen in the following link:
https://www.rs4e.com/2023/08/17/rs4e-vai-a-lisboa-edicao-2023/

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Tampere University of Applied Sciences, Finland
Team of Sustainable Entrepreneurship
School of Industrial Engineering
with
Mittuniversitetet, Sweden
Innovation Services

SPRINT hackathon 13.4.2023

Objective
To develop process for capturing the most potential ideas from a hackathon and ensure continuation path up to a working prototype. Identify potential collaboration models between university and local startup operator (Platform6 https://platform6.fi/).

Context
Hackathons at the educational institutions are a typical way to foster interdisciplinary activities and collaborate with companies. The purpose is to benefit both parties: students learn in action and companies get fresh ideas. Project team at the Tampere University of Applied Sciences (TAMK) asked themselves what is the real impact of a hackathon? How many real implementations either the participating companies or students get out of a hackathon? During the intensive days at the hackathon, it is common procedure to suggest teams to continue working on their idea and developing it further. However, based on our 10-year experience, very few students carry on. We wanted to find answers to what can be done to the good ideas after a hackathon. We organized two separate workshops to ask it from university lecturers, students and startup ecosystem operators. Participation was voluntary and people were self-motivated to discuss the given theme. The sessions were moderated and notes were taken.

SCRIPT (according to the description of Task 4 –DIGI-SOC)
the nature of challenges addressed
The societal challenges we face require versatile competencies and collaboration skills – often via digital tools. This action learning event addressed nurturing the growth of cross-domain entrepreneurial competences and understanding how different stakeholders (students, startup service operators, teachers) can support individual learners the best possible way.
Entrepreneurship is often part of elective studies that limits the number of students qualifying in it. This is the case even the entrepreneurial value creation and entrepreneurial learning can take place in any sphere of life – from managing own study path or hobbies to establishing a company. Entrepreneurship can in large context be seen as transforming ideas and opportunities into value for others (EntreComp 2016). When taking this to cross-domain level, the ideas and opportunites may be very innovative and groundbreaking. That may enable us to solve the wicked problems the society requires.

Description of study works in real conditions | real case description - aims of real case; non pedagogical; what is the real case about
Transnational scope of collaboration was implemented through the online preparations and planning the session with TAMK and Mittuniversitetet. Exchange of experiences on programmes and curricula among the involved institutions give valuable insights to renewal projects and plans. That kind of peer-learning is best achieved in a project setup that can continue more than just one semester.
The workshop implementation was organized on purpose out of the university campus and more in the setup of entrepreneurial activities. Platform6, the local startup house, hosted our

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workshop and they also introduced their services and premises to the participants. The idea was to make the services more familiar and lower the threshold of joining some of the events organized by the Platform6. This is one of the places where new ideas can grow to future companies.
The second objective of taking the workshop put of the everyday environment was to create more relaxed setup for students to share their experiences and propose new ideas. We also offered them morning coffee with snacks to make the session more appealing.

Work Logistics| how easy / necessary it was for the university to be involved
Univeristy is one of the places where new, innovative ideas are born. It is important to ensure good and functional collaboration with startup ecosystem within city/ municipality. This ensures the continuation for potential startup companies to have place and support in addition to that the university can offer.

Place/time, conditions, people involved and expectations
During the workshop, students shared their experiences on participating the SPRINT Innovation Festival in November. They participated a dialogue facilitated by project team members. The whole team shared experiences, ideated potential new procedures and commented on other people's proposals. We used video material about innovation festival as reminder of the event and to take students and operators back to the atmosphere of the event.
To succeed and engage people in dialogue it is important to ensure four elements: Voicing (speaking from the heart), Listening, Suspending and Respecting. (See book by William Isaacs, 1999: Dialogue - The art of thinking together). The purpose of dialogue is to build learning and thinking together. It is not to find answers but to enrich participators' thinking and to pursue creating shared meanings by bringing together and expanding viewpoints, experiences and thoughts. Dialogue is complementary sharing of accumulated knowledge and experiences.

Didactic methods: pedagogical methods used for engaging students at all phases -preparation, execution, self-learning
Students build their knowledge on their own experience of participating the SPRINT Innovation Festival in November 2022. Building the team has very important role in this process because all member was from different fields. After that was time to inspiration. We had for students 20 different brainstorming techniques and ideations techniques for problem-solving. They use example design thinking and asked from themselves five times why and tried to make solution for the case they were given. Arter one week working they had to pitch their idea in five minutes and give a report. There is risk that good idea can be hide behind not so perfect presentation. That's why we would like to give second chance and possibility to continue working with all potential ideas before hackathon. The follow up session is solution to continue with any ideas.
We made the advertisement (please see it below) and tried to catch from teams we were coaching earlier in November. Even we contacted them directly it was difficult to get answer to participate to that follow up meeting. Maybe it should be a little bit earlier after hackathon event when we still remember our good ideas better. The time take cares this if it's too long delay.
We give the chance to continue with same idea than earlier or it was also possible to continue with other teams. We didn't would liked to define the topic of idea in any way.

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Workshop execution:
The first workshop was targeted to staff members and gathered about 20 participants from different fields of study e.g. International Business, Environmental Engineering, Sustainable Entrepreneurship etc. The participants were divided into two groups and the following questions were given as a starting point for discussion:

1. How to take the hackathon ideas into use?
2. What needs to happen/ be in place in order to get the ideas grow?

The second workshop was targeted to students and startup ecosystem operators (coaches and program coordinators). The aim was to understand how the intensive hackathon had performed in increasing the innovation and ideation skills. Also wanted to ask if some of the ideas were developed since the hackathon. The workshop was organized at the local startup house, Platform6, to promote the services and facilities of city of Tampere. The atmosphere was designed to be relaxed and easy going to encourage students to share of their experiences and hopes for the future. Below is one image of the event.

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Summary of taking the ideas into use: Ideas generated at hackathons can be forwarded to potential funders for investment or used as case studies in various courses. They can also be categorised into themes and forwarded to R&D teams for future projects. It's important to find the right organisation or individual to take the idea forward and build a team around it. Third-party follow-up, such as from TAMK, can also help in reviewing and planning the next steps.
Summary of structures that need to be inplace: To maximise the potential of hackathon ideas, it's important to have a follow-up process with milestones in place to track progress. Additionally, combining potential ideas can create a stronger solution. A model for copyrights and a contract between students and companies can help to ensure that the ideas are protected and can be developed further. Resources such as consultants or experts can be used to take the idea to the next level. Regular follow-up events, such as after 2-3 months, can help support teams in building a minimum viable product (MVP) or prototype.
We heard during the follow-up that from students' perspective SPRINT is mostly focused on coming up with ideas and creating a good pitch, not so much on taking anything further. Mia, a female student who attended the follow-up, said that if the students could work with problems that companies really want to get solved, then perhaps that could lead to more ideas being taken further. The students also expressed that working in English added an extra level of challenge. SPRINT is a compulsory course for some students at TAMK. How about making the next steps of the process (towards creating start-ups) compulsory as well? This was an idea suggested by Petri during the follow-up session.The startup ecosystem operators participated the Follow up meeting to share what kind of observations they made and what kind of cooperation they hope for the future.
According to the feedback, it was good to hear the students who participated Sprint Innovation Festival about their experiences and why or why not they continue with the ideas which were born in Sprint. It is also important to think how to engage the students better during and after the event. Together our network could bring stronger support to the student. It is important for students to work with their own ideas and explore topics they truly care about. It is a solid starting point for getting them more interested in developing these ideas into something bigger.
Our key observations and learnings from the discussion

1. It is important for students to communicate the winning solution with rationale.
2. All solutions to be brought together, offered a continuation option by picking out the best bits.
3. It is essential to tell everyone to come and listen to each other's solution proposals. Encouragement to participate and learn from them as well.
4. There could be some restorative joint program during the SPRINT days? Also the hybrid participants to be encouraged to network and collaborate through playful interactions.
5. The most important lesson for students (1): The ability to brainstorm: to go crazy and offer even raw ideas.

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6. The most important lesson for students (2): How diverse ideas are generated through collaboration.
7. Brainstorming is most fruitful when starting from some irritation that you want to solve ("frustration-led-innovation").
8. The most rewarding thing for students would be to see their own idea tested/ prototype/ in action. "It lights me up!"
9. Ideas can enter into the "Smart Machines2 course" or similar where trans-disciplinary. collaboration is encouraged. Timing to be considered and made smooth for the students.
10. Guidance to the Platform6 community: pre-accelerator (3weeks online) further development of your own idea.

Hackathons are a great platform for innovation and ideas, but it's important to ensure that the energy and effort put into the ideation process contributes to making a real impact. By taking the right steps, such as finding the right organisation or individual to take the idea forward, creating a follow-up process with milestones, and combining potential ideas, we can maximise the potential of hackathon ideas and bring them to life.
Action learning elements like group discussion, critical reflection, learning from each other and taking the time for discovery have guided us both in creating the actual learning event (SPRINT) and now when evaluating the impact of the results. This work is resulting to renewing the concept of our hackathon by taking the learning of these two workshops into use. The next paragraph will introduce the ideas of the new SPRINT 2.0.


Sprint Innovation Festival's future
TAMK team has taken all the feedback and development ideas and created a refreshed concept for the SPRINT Innovation Festival. The core idea is to encourage through ideation and give students more freedom to choose the challenge they want to solve. With this we aim to create more commitment to the topic and therefore ensure the continuation after the hackathon. A big part of the new concept is also the inclusion of a follow up event in the program. This new concept will be piloted in November 2023.
In the Digi-SOC project, the Follow up event/ meeting was tested and according the discussion and feedback, it felt to be a necessary part of the event. In the future, we also want to strengthen cooperation with different operators, such as Platform 6 and RedBrick.

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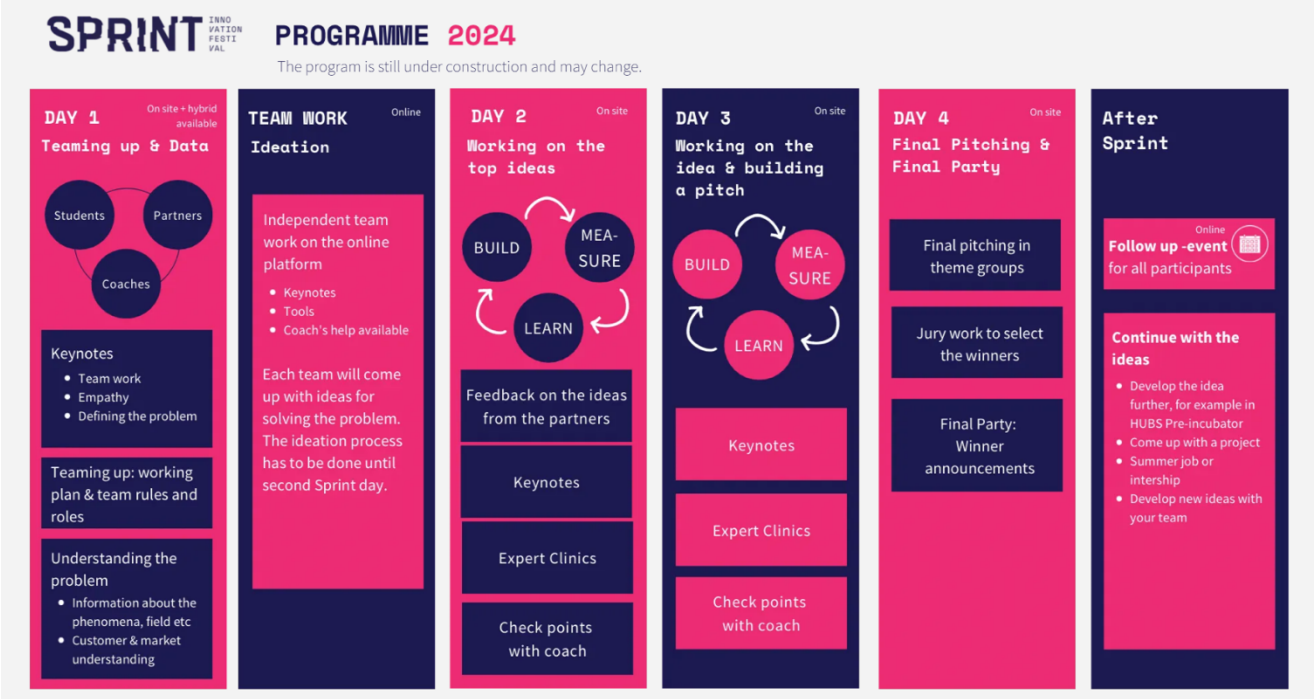

Picture from Sprint Innovation Festival future program where the Follow up event will be part of the official program for students.

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