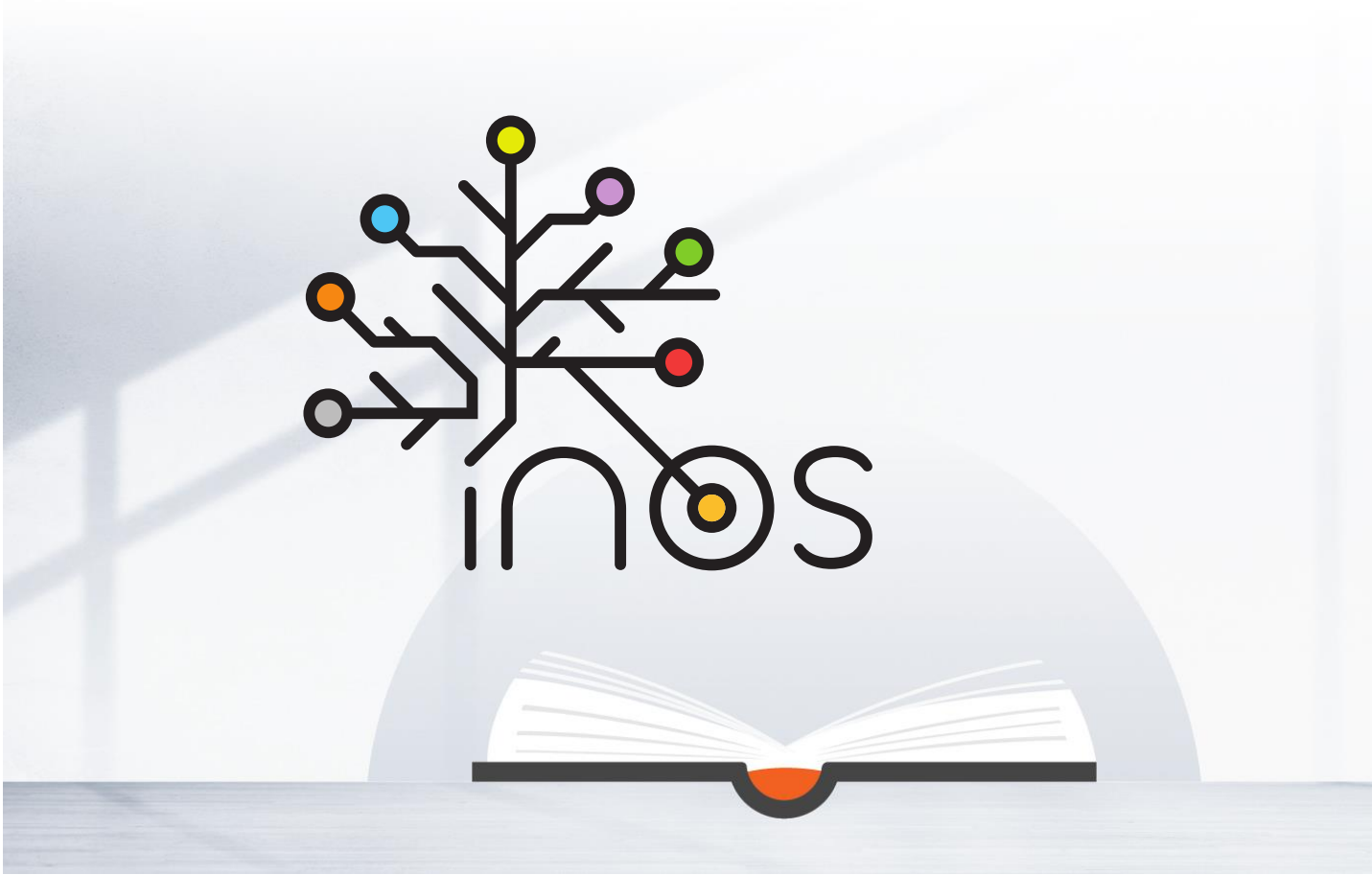
INTEGRATING OPEN AND CITIZEN SCIENCE INTO
ACTIVE LEARNING APPROACHES IN HIGHER EDUCATION



Report on the implementation of open innovation activities

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Deliverable Factsheet

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Abstract:	O4A3 aims to collect data from all local implementations of OIAs and produce a report on how the activities were actually implemented, as well as academic and stakeholder outreach, results achieved, and outcome evaluation regarding their assessed value and sustainability.
Keyword list:	Open science; citizen science; open innovation; pedagogy; implementation, evaluation
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2	Tallinn University	TU	Estonia
3	Web2Learn	W2L	Greece
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6	STICHTING LIBER	LIBER	The Netherlands

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Table of Contents

Deliverable Factsheet 2
Consortium 3
Revision History 4
Table of Contents 6
List of Tables 7
List Of Figures 12
List of Abbreviations 13
Executive Summary 14
1 Introduction 15
2 Methodology 16
3 Climackathon – University of Bordeaux 20
4 DigiEduHack – Aalborg University 40
5 Thessaloniki Citizen Science INOS – Web2Learn 63
6 SPIRIT – Oulu University 80
7 Civic engagement project – Tallinn University 96
8 Cultural data interaction in spatial location – Tallinn University 112
9 Ocean I3 – University of Bordeaux (and University of the Basque Country) 129
10 Technology & Migration – Aalborg University 149
11 Opening up and redesigning the values of public services – Tallinn University 168
12 Collaborative problem-solving – Oulu University 186
13 Conclusion 204
References 206
Annex A – Evaluation survey 207
Annex B – Complementary survey 212

List of Tables

Table 2-1 Table of evaluation of the innovation dimension of OIAs (adapted from Kieslinger et al., 2018) 16
Table 2-2 Table of evaluation of the learning dimension of OIAs (adapted from Kieslinger et al., 2018) 17
Table 3-1 Innovation dimension of the Climackathon – part 1 (results)..... 22
Table 3-2 Innovation dimension of the Climackathon - Analysis of the results..... 26
Table 3-3 Innovation dimension of the Climackathon - Analysis of the results..... 27
Table 3-4 Innovation dimension of the Climackathon - Analysis of the impacts..... 29
Table 3-5 Learning Design Process of the Climackathon (step by step) - Source: Learning Design Framework 30
Table 3-6 The mentoring in the Climackathon - source: complementary survey 31
Table 3-7 The typology of skills developed in the Climackathon - source: identity sheet 31
Table 3-8 The tools used in the Climackathon - source: Learning Design Framework 31
Table 3-9 Participant dimension of the Climackathon – part 1 (results) 33
Table 3-10 Participant dimension of the Climackathon - Analysis of the results 35
Table 3-11 Participant dimension of the Climackathon – part 2 (impacts) 35
Table 3-12 Participant dimension of the Climackathon - Analysis of the impacts 38
Table 3-13 Socioeconomic dimension of the Climackathon (long-term impacts)..... 39
Table 4-1 Innovation dimension of the DigiEduHack - part 1 (results) 43
Table 4-2 Innovation dimension of the DigiEduHack - Analysis of the results..... 47
Table 4-3 Innovation dimension of the DigiEduHack - part 2 (Impacts) 48
Table 4-4 Innovation dimension of the DigiEduHack - Analysis of the impacts..... 50
Table 4-5 Learning Design Process of the DigiEduHack (step by step) - Source: Learning Design Framework 51
Table 4-6 The mentoring in the DigiEduHack - source: complementary survey 53
Table 4-7 The typology of skills developed in the DigiEduHack - source: identity sheet 53
Table 4-8 The tools in the DigiEduHack - source: Learning Design Framework 54
Table 4-9 Participant dimension of the DigiEduHack - part 1 (results) 55
Table 4-10 Participant dimension of the DigiEduHack - Analysis of the results 56
Table 4-11 Participant dimension of the DigiEduHack - part 2 (impacts) 57
Table 4-12 Participant dimension of the DigiEduHack - Analysis of the impacts 60
Table 4-13 Socioeconomic dimension of the DigiEduHack (long-term impacts)..... 61
Table 5-1 Innovation dimension of the Thessaloniki CS INOS – part 1 (results)..... 66

Table 5-2 Innovation dimension of the Thessaloniki CS INOS - Analysis of the results 68
Table 5-3 Innovation dimension of the Thessaloniki CS INOS - part 2 (Impacts) 68
Table 5-4 Innovation dimension of the Thessaloniki CS INOS - Analysis of the impacts 71
Table 5-5 Learning Design Process of the Thessaloniki CS INOS (step by step) - Source: Learning Design Framework 72
Table 5-6 The mentoring in the Thessaloniki CS INOS - source: complementary survey 72
Table 5-7 The typology of skills developed in the Thessaloniki CS INOS - source: identity sheet 73
Table 5-8 The tools in the Thessaloniki CS INOS – source: The Learning Design Framework 73
Table 5-9 Participant dimension of the Thessaloniki CS INOS - part 1 (results) 74
Table 5-10 Participant dimension of the Thessaloniki CS INOS - Analysis of the results 76
Table 5-11 Participant dimension of the Thessaloniki CS INOS - part 2 (impacts) 76
Table 5-12 Participant dimension of the Thessaloniki CS INOS - Analysis of the impacts 78
Table 5-13 Socioeconomic dimension of the Thessaloniki CS INOS (long-term impacts) 79
Table 6-1 Innovation dimension of the SPIRIT - part 1 (results) 82
Table 6-2 Innovation dimension of the SPIRIT -Analysis of the results 85
Table 6-3 Innovation dimension of the SPIRIT - part 2 (impacts) 85
Table 6-4 Innovation dimension of the SPIRIT - Analysis of the impacts 87
Table 6-5 Learning Design Process of the SPIRIT (step by step) - Source: Learning Design Framework 88
Table 6-6 The mentoring in the SPIRIT - source: complementary survey 89
Table 6-7 The typology of skills developed in the SPIRIT - source: identity sheet 89
Table 6-8 The tools in the SPIRIT - source: Learning Design Framework 90
Table 6-9 Participant dimension of the SPIRIT - part 1 (results) 91
Table 6-10 Participant dimension of the SPIRT - Analysis of the results 93
Table 6-11 Participant dimension of the SPIRIT - part 2 (impacts) 94
Table 6-12 Participant dimension of the SPIRIT - Analysis of the impacts 94
Table 7-1 Innovation dimension of the Civic Engagement activity - part 1 (results) 98
Table 7-2 Innovation dimension of the Civic Engagement Activity - Analysis if the results 100
Table 7-3 Innovation dimension of the Civic Engagement Activity - part 2 (impacts) 101
Table 7-4 Innovation dimension of the Civic Engagement Activity - Analysis of the impacts 103
Table 7-5 Learning Design Process of the Civic Engagement Activity (step by step) - Source: Learning Design Framework 104

Table 7-6 The mentoring in the Civic Engagement Activity - source: complementary survey 105
Table 7-7 The typology of skills developed in the Civic Engagement Activity - source: identity sheet 105
Table 7-8 The tools in the Civic Engagement Activity - source: Learning Design Framework 106
Table 7-9 Participant dimension of the Civic Engagement Activity - part 1 (results) 107
Table 7-10 Participant dimension of the Civic Engagement Activity - Analysis of the results 109
Table 7-11 Participant dimension of the Civic Engagement Activity - part 2 (impacts) 110
Table 7-12 Participant dimension of the Civic Engagement Activity - Analysis of the impacts 111
Table 7-13 Socioeconomic dimension of the Civic Engagement Activity (long-term impacts)) 111
Table 8-1 Innovation dimension of the Cultural data activity - part 1 (results) 113
Table 8-2 Innovation dimension of Cultural data activity - Analysis of the results 116
Table 8-3 Innovation dimension of Cultural data activity - part 2 (impacts) 116
Table 8-4 Innovation dimension of Cultural data activity - Analysis of the impacts 118
Table 8-5 Learning Design Process of the Cultural data activity (step by step) - Source: Learning Design Framework 119
Table 8-6 The mentoring in Cultural data activity - source: complementary survey 121
Table 8-7 The typology of skills developed in Cultural data activity - source: identity sheet 121
Table 8-8 The tools in Cultural data activity - source: Learning Design Framework 121
Table 8-9 Participant dimension of Cultural data activity - part 1 (results) 123
Table 8-10 Participant dimension of Cultural data activity - Analysis of the results 124
Table 8-11 Participant dimension of the Cultural data activity - part 2 (impacts) 125
Table 8-12 Participant dimension of Cultural data activity - Analysis of the impacts 127
Table 8-13 Socioeconomic dimension of Cultural data activity (long-term impacts) 128
Table 9-1 Innovation dimension of Ocean I3 activity - part 1 (results) 132
Table 9-2 Innovation dimension of Ocean I3 Activity - Analysis of the results 135
Table 9-3 Innovation dimension of the Ocean I3 Activity - part 2 (impacts) 135
Table 9-4 Innovation dimension of Ocean I3 Activity - Analysis of the impacts 138
Table 9-5 Learning Design Process of Ocean I3 Activity (step by step) - Source: Learning Design Framework 140
Table 9-6 The mentoring in Ocean I3 Activity - source: complementary survey 141
Table 9-7 The typology of skills developed in Ocean I3 Activity - source: identity sheet 141
Table 9-8 The tools in Ocean I3 Activity - source: Learning Design Framework 142
Table 9-9 Participant dimension of Ocean I3 Activity - part 1 (results) 143

Table 9-10 Participant dimension of Ocean I3 Activity - Analysis of the results 145
Table 9-11 Participant dimension of Ocean I3 Activity - part 2 (impacts) 146
Table 9-12 Participant dimension of Ocean I3 Activity - Analysis of the impacts 147
Table 9-13 Socioeconomic dimensions of Ocean I3 Activity (long-term impacts) 148
Table 10-1 Innovation dimension of Tech and Migration Activity - part 1 (results) 151
Table 10-2 Innovation dimension of Tech and Migration Activity - Analysis of the results 154
Table 10-3 Innovation dimension of Ocean I3 Activity - part 2 (impacts) 155
Table 10-4 Innovation dimension of Tech and Migration Activity - Analysis of the impacts 157
Table 10-5 Learning Design Process of Tech and Migration Activity (step by step) - Source: Learning Design Framework 158
Table 10-6 The mentoring in Tech and Migration Activity - source: complementary survey 159
Table 10-7 The typology of skills developed in Tech and Migration Activity - source: identity sheet 159
Table 10-8 The tools in Tech and Migration Activity - source: identity sheet 160
Table 10-9 Participant dimension of Tech and Migration Activity - part 1 (results) 160
Table 10-10 Participant dimension of Tech and Migration Activity - Analysis of the results 163
Table 10-11 Participant dimension of Tech and Migration Activity - part 2 (impacts) 164
Table 10-12 Participant dimension of Tech and Migration Activity - Analysis of the impacts 166
Table 11-1 Innovation dimension of "Opening up values" Activity - part 1 (results) 170
Table 11-2 Innovation dimension "Opening up values" Activity - Analysis of the results 172
Table 11-3 Innovation dimension of "Opening up values" Activity - part 2 (impacts) 172
Table 11-4 Innovation dimension of "Opening up values" - Analysis of the impacts 173
Table 11-5 Learning Design Process of "Opening up values" Activity (step by step) - Source: Learning Design Framework 175
Table 11-6 The mentoring of "Opening up values" - source: complementary survey 177
Table 11-7 The typology of skills developed in "Opening up values" Activity - source: identity sheet 177
Table 11-8 The tools of "Opening up values" - source: Learning Design Framework 178
Table 11-9 Participant dimension of "Opening up values" Activity - part 1 (results) 179
Table 11-10 Participant dimension of "Opening up values" Activity - Analysis of the results 180
Table 11-11 Participant dimension of "Opening up values" Activity - part 2 (impacts) 181
Table 11-12 Participant dimension of "Opening up values" - Analysis of the impacts 184
Table 11-13 Socioeconomic dimension of "Opening up values" (long-term impacts) 185

Table 12-1 Innovation dimension of “Problem-solving" Activity - part 1 (results) 188
Table 12-2 Innovation dimension of "Problem-solving" Activity - Analysis of the results 190
Table 12-3 Innovation dimension of "Problem-solving" Activity - part 2 (impacts) 190
Table 12-4 Innovation dimension of "Problem-solving" Activity - Analysis of the impacts 191
Table 12-5 Learning Design Process of "Problem-solving" Activity (step by step) - Source: Learning Design Framework 192
Table 12-6 The mentoring in "Problem solving" Activity" - source: complementary survey 193
Table 12-7 The typology of the skills developed in "Problem-solving" Activity - source: identity sheet 194
Table 12-8 The tools in "Problem-solving" Activity - source: Learning Design Framework 194
Table 12-9 Participant dimension of "Problem-solving" Activity - part 1 (results) 195
Table 12-10 Participant dimension of "Problem-solving" Activity - Analysis of the results 199
Table 12-11 Participant dimension of "Problem-solving" Activity - part 2 (impacts) 200
Table 12-12 Participant dimension of "Problem-solving" Activity - Analysis of the impacts 202

List Of Figures

Figure 1 Analysis NVivo of the general appreciation of the Climackathon participants 26
Figure 2 Screenshots of Klaxoon ideation phase of the Climackathon 32
Figure 3 Screenshots of the application storyboardthat used by Team 3 in the Climackathon 32
Figure 4 Analysis NVivo of the general appreciation of the DigiEduHack participants 47
Figure 5 Screenshot of Padlet board – DigiEduHack 54
Figure 6 Slack screenshot - communication in DigiEduHack 54
Figure 7 NVivo analysis of the empowerment of the participants – DigiEduHack 59
Figure 8 NVivo analysis of the motivation of the participants – DigiEduHack 60
Figure 9 NVivo analysis of empowerment – Thessaloniki CS INOS 77
Figure 10 NVivo analysis motivation of the participants verbatim - SPIRIT 84
Figure 14 Screenshot of the Jamboard 1 – SPIRIT 90
Figure 15 Screenshot of the Jamboard 2 - SPIRIT 90
Figure 13 NVivo analysis of the expectations of the participants - SPIRIT 92
Figure 14 Screenshot of the Mural Board - Civic Engagement Activity 106
Figure 15 Screenshot of the Trello board - Civic Engagement Activity 106
Figure 20 NVivo analysis of the verbatim concerning the new practices acquired – 117
Figure 17 Screenshot of a mind mapping - Cultural data activity 122
Figure 18 Trello screenshot - Cultural data activity 122
Figure 19 Uxpressia screenshot - Cultural data activity 122
Figure 24 NVivo analysis on the general verbatim - Cultural data activity 126
Figure 21 Oktonine screenshot - Ocean I3 Activity 142
Figure 22 NVivo mind mapping of the motivations of the participants 153
Figure 23 NVivo analysis of the verbatim regarding the lessons of the Tech and Migration Activity 165
Figure 24 Persona canvas and worksheet on Trello - screenshot - "Opening up values" Activity 178
Figure 25 screenshot - "Opening up values" Activity 178
Figure 26 NVivo analysis of the verbatim concerning the role of the participants - "Problem-solving" Activity 197
Figure 27 NVivo analysis regarding the self-evaluation of new skills (verbatim) - "Problem-solving" Activity 202

List of Abbreviations

The following table presents the acronyms used in the deliverable in alphabetical order.

Abbreviations	Description
CIE	Collaborative innovation event
CS	Citizen Science
HEI	High Education Institution
LDF	Learning Design Framework
OI	Open innovation
OIA	Open Innovation Activity

Executive Summary

Universities are positioning themselves more and more actively at the heart of societal issues to build knowledge and research. Open-innovation activities (OIAs) - extracurricular or intracurricular, short, or long, including socio-economic actors or not - are in their diversity concrete means of taking charge of this role by becoming actors of this change. As community builders, innovation catalysts and socio-economic actors, they organise and assess OIAs within interdisciplinary teams to transform knowledge into innovative ideas/prototypes/artefacts.

A large corpus of experience and knowledge already exists on open innovation methodologies. However, INOS aims at strengthening them by active learning approaches embedded in the learning design framework (Teo, 2020). Based on action research carried out over one year, the INOS project has made it possible to test various tools and methods (compiled in the *Guidelines on designing, implementing and evaluating open innovation activities*) through around ten different activities run during the year 2020-2021 and gathered in a compilation of use cases (O4A2). The report on the implementation of open innovation activities presented here aimed to collect data from all local implementations of OIAs and produce a report on how the activities were actually implemented and academic and stakeholder outreach, results achieved, and achievements regarding their assessment and sustainability.

Following a typology established in the compilation document (O4A2), the report will, on the one hand, present and detail meticulously all the data are given to understand the activity and its implementation, and, on the other hand, format and analyse the data allowing to measure the results and impacts. From this work, lessons learned will gradually emerge, which will constitute the guide for good practices.

1 Introduction

The Guidelines (04A1) proposed a first step toward realising a shared INOS vision on mainstreaming open innovation into the higher education curriculum. As a companion to the learning design framework for open science activities (Teo, 2020), it has provided some general recommendations, which to the test of reality, will lead to the design of the Guide of best practices (04A4). The preparation of the activity report carried out during the year 2020-2021 is the intermediate stage which prepares the finalisation of this document. It has been designed as a detailed activity-by-activity report making it possible to identify the strengths and challenges of the activities about their format and specificities. Indeed, a report activity-by-activity accounts for the complexity of each activity according to its context, duration, and general and specific objectives. These individual reports will stem some first lessons learnt and best practices which will be depicted in conclusion. They will address the trends, and the key ideas developed more practically (O4A4).

With its knowledge base, the INOS consortium gathered material to inform specific recommendations that will compose a very practical and synthesised document.

Ten open innovation activities encouraging collaboration and multidisciplinary approaches between students and HE staff were conducted during the 2020-2021 year. The ten OIAs brought together around 312 participants, including at least 211 students from different disciplines. In addition to the LDF and the guidelines, the INOS partners provided data to establish a basis for evaluation, such as:

- an identity sheet based on the provisional activity consolidated in O4A2. This step was the occasion to complete a typology of events that is reproduced in the document (see the table below).
- a pre-event and a post-event survey following the guidelines on open innovation activities, which made available some tips and incentives to OIAs organisers (see the annexe).
- and any other data they deemed useful (screenshots, communication media, resources created, links to recordings or files, etc.).

The typology of use cases (O4A2) proposes showing a large panel of activities where the university is positioned as an organiser (except one ruled by Web2Learn, a private partner and a start-up). It has to be considered that this academic year was a special one; the Covid crisis has impacted practices by changing the format of activities, which sometimes used to be face-to-face. Consequently, most of the activities were conducted online or in mixed format. Aware that this year will significantly impact the practices, the present document considers three direct consequences: 1) the need to adapt for the coordinators of each activity, whether they are administrative, academic or teachers, 2) the impact on social relationships between the participants, and 3) the importance of tools and more broadly of technical skills. Therefore, a complementary survey has been sent to the activity coordinators to collect additional data on this context.

1.1 Scope

This document reports on the ten open innovation activities run by the INOS partners during the 2020-2021 academic year.

1.2 Audience

The primary audience of this document is INOS project partners involved in the OIAs analysed, but also all the HEIs academics, administrative or students interested in open innovation activities and their implementation and assessment.

2 Methodology

An evaluation process has been elaborated in the guidelines to translate all the data collected and prepare the next deliverable (namely, the guide of best practices). Evaluation can help plan and manage a successful engagement initiative in open and citizen science. There will be many other considerations in planning good public engagement by Open Innovation activities. However, this document provides some specific ideas for using evaluation to i) set objectives for engagement of the different actors in OIAs, ii) monitor progress and measure achievements and outcomes that will be defined further and iii) identify lessons and best practices and help improve upon these practices (O4A4). The evaluation of each activity will compare several results and impact indicators to assess the importance of different objectives. Based on the table depicted in the document, the evaluation will follow three dimensions depending on how we observe the activity and on the role that the university successively takes in terms of innovation and social impact.

1) **An open-innovation activity is any activity** that needs to be sustainable to create innovation, whether new projects or new practices. In this case, the HEIs are co-creators of innovation communities mixing backgrounds, cultures, disciplines and even ages and genders. The pre-event surveys, the complementary surveys, and the planning resources will be used and analysed. This analysis is **the innovation dimension.**

Table 2-1 Table of evaluation of the innovation dimension of OIAs (adapted from Kieslinger et al., 2018)

Main achievements	Indicators
Assure the quality of the activity innovation process/in line with the artefacts *A measure of the documentation or IP, for instance, diversity of funding*	Diversity of the participants: profiles, backgrounds, ages, and genders Number of resources
Meet the interest of the participants *Quality of the activity, relevancy of the topic, number of the participants...*	Level of satisfaction of the activity Relevancy of the topic Number of participants achieved and expected
Create the conditions of the sustainability of collaborations and results *Diversity of the results, number of workable results (according to the objectives)...*	Number and diversity of results Evaluation of the results if available
Main impacts	**Indicators**
Create new projects and collaborations, e.g., service, product, concept, insight, start-up, initiative, joint project... *Several new projects or collaborations (compared to*	Community rate Communities are given the opportunity to have effective influence and control Investment to developing and Partnerships invest

the number of teams, for example), typology of new projects and collaborations...	significant time, money to sustaining community participation Resources attributed to developing participation.
Create new knowledge resources *Number of publications around the activity, typology of the publications (e.g., presentation of the results, analysis on the activity...)*	Dissemination level of the activity: number and typology of publications
Develop and enrich the innovation processes in the institution *Evolution of the stakeholders involved in the institution, implication of the research fields and structures...*	Dissemination level of the activity

2) **The activity is a project-based learning activity** using Design Thinking which needs to meet the skills issues of the participants. In this case, the HEIs are considered "generators of skilled human capital" (European Commission, 2016, P.17). The INOS project noted that one of the main issues regarding the difficulty of optimising the pedagogical impact of activities is the lack of learner responses. That is why this part will be based on the pre-and the post-event surveys' monitoring of the learning process, the mentoring, the tools, and resources and finally, the pedagogical impact. This point is **the participant dimension.**

Table 2-2 Table of evaluation of the learning dimension of OIAs (adapted from Kieslinger et al., 2018)

Main achievements	Indicators
Encourage the personal engagement/involvement *Target group alignment, degree of involvement*	Engagement rate Target group alignment
Facilitate the synergies between the participants *Relevancy of the choice of the mentors, communication and community management tools use and performativity...*	Interactivity rate Rate of satisfaction regarding the expertise and the role of mentors Rate of satisfaction regarding the tools Rate of satisfaction regarding the pre-training session
Create the conditions of partnerships *Number and alignment of the partners, representation of the ecosystem during the event (networking)...*	Networking rate Rate of stakeholders involved
Main impacts	**Indicators**
Develop personal learning and development *Degree of learning (comparison between personal learning before the event and after the event), typology of the personal skills learnt (according to the participants)*	Typology of skills Comparison between personal learning before and after
Motivate new skills, empowerment, and fun *Number of suggestions for improvement of the activity, quality of questions and discussions, evidence*	Empowerment rate

of advanced thinking in learning tasks	
Innovative value of the project's outputs *Quality of the outputs (publications)*	

3) The activity is an open-science activity that can change people's perception of science and its social impact. In that perspective, HEIs are providers of new mindsets fundamental for society to come. This point is **the socio-economic dimension.**

As observed in tables 2.1 and 2.2, this level of evaluation depends on the sustainability of the projects themselves and the capacity of the organisers to conduct a long-term assessment with all the stakeholders. It also depends on the common will to share assessments, and maybe data, from one institution to another, basically the INOS community approach. Some indicators could appear to be roundabout. But they are not because the specificity of this framework is that it produces impact indicators creating a dynamic analysis. The other benefit is that it encourages improvement and collaboration between different communities in the same institution, on the same territory or even between universities by creating references and good practices and opening up new perspectives for funding. Most of the activities do not have the necessary data to evaluate this socioeconomic dimension properly. That is why it will be started at the end of each activity.

2.1 The data

The different collection tools provide two types of data: i) quantitative data: providing facts and figures such as the number of participants and the answers to the surveys (statistics) ii) qualitative data: providing narrative and descriptive data, which can be useful for capturing perspectives and providing texture to our quantitative results in the form of verbatim feedback of organisers or participants. These data can be analysed thanks to the NVIVO software. Qualitative data were sometimes used to compensate for the lack of quantitative data, especially when the survey response rate was insufficient to exploit. The methodology is based on a consideration of several factors: i) to create a baseline of our standard (before and after activities), if possible regarding the availability of the data provided by partners, ii) to measure achievements and main impacts regarding the objectives of the INOS Project.

2.2 Structure

Each activity is described as follows:

- **An Introduction:** a brief identity sheet summarising the activity's main characteristics, as well as the list of data used as a basis for the analysis.
- **A first part called "Presentation of the innovation dimension of the activity" (How is the HEI a catalyst of innovation?):** description of the activity (context and programme, main characteristics, and results) and analysis (main results and impacts synthesised in the form of a table of strengths and challenges) about the analysis grid presented in the methodology.
- **A second part called "Presentation of the learning dimension of the activity" (How does the HEI have a pedagogical impact?):** description of the learning process of the activity (process as a project-based

learning activity, the mentoring, the typology of skills and the tools and resources) and analysis (main achievements and impacts synthesised in the form of a table of strengths and challenges) concerning the analysis grid presented in the methodology.

- A conclusion: an elaboration of the socio-economic dimension of each activity.

The document follows the typology established in the previous deliverable, namely 04A2: it, therefore, begins with the short events and ends with the long ones.

Duration of the activity	Intra/Extra curricula	Name of the activity	Duration	Focus	Page
The short events (from ½ day to 1 month)	Extra curricula	Climackathon - University of Bordeaux	Two days	Innovation focused	P 19
		Digi Edu Hack - Aalborg University	Two days	Innovation focused	P 39
		Thessaloniki Citizen Science - INOS Web 2 Learn	Two days	Education focused	P 62
	Intra curricula	SPIRIT - Oulu University	Half a day	Innovation & Education focus	P 79
		Civic engagement project –Tallinn University	Ten days	Education focused	P 95
		Cultural data interaction in spatial location – Tallinn University	Three weeks	Education focused	P 112
Long events (one semester)	Extra curricula	Ocean I3 – University of Bordeaux	One semester	Innovation and research-focused	P 129
	Intra curricula	Technology & Migration – Aalborg University	One semester	Innovation focused	P 149
		Opening up and redesigning the values of public services – Tallinn University	One semester	Education focused	P 169
		Collaborative problem-solving – Oulu University	One semester	Education & Research focused	P 187

3 Climackathon – University of Bordeaux

Summary of the activity			
Extra-curricular	Focus: innovation	Duration : two half days	Short CEI
12 and 13 March 2021	Online (Zoom and Klaxoon)	24 + 3 facilitators	Three thematic groups (7-10 people)
Results expected: innovative solutions		Topic and challenge: Behaviours facing climate change	
List of pedagogical resources available for the participants			
Before the event: - The roadmap on societal transition - Some articles on the topic - A selection of data regarding the practices		The event: - Webinar on the differing behaviours towards climate change (different perspectives from neurosciences, social psychology, and marketing). - A canvas on Klaxoon with the Design Thinking method was available before the event.	
Data analysed within the INOS framework			
Learning Design Framework	Completed	Identity sheet	Completed
Pre-event survey	Response rate: 75 %	Post-event survey	Response rate: 83 %
Other data and resources	Complementary survey completed Communication resources Pre-booking and information meetings Two video testimonials Screenshots		

3.1 Description of the activity as an open-innovation activity (innovation dimensions)

3.1.1Context and programme

Punctual event

Framework: part of an internal megaproject called "La journée du climat." The event was originally planned as a face-to-face activity, but due to the pandemic, it was held online.

Organiser/coordinator: the innovation department of the University of Bordeaux.

Inspiration: This project is a new project inspired by other initiatives such as "The Climathon" or other hackathons on climate issues.

The Mode of engagement for the participants includes communication tools such as mailing, social networks and information meetings.

Funding: There was no official funding for human contributions. The sponsors participate with one or several employees.

Format replicable and transferable

Challenge: The goal of the climakathon is to bring together participants from different disciplines to co-create solutions using Design Thinking methods. A reminder of the problem posed: How do you engage the university community on climate change and motivate them to change their behaviour?

Planning:

- Day 1 - from 1.30 to 6 pm: ideation and design phase
- Day 2 - from 10 am to 1 pm: prototyping and pitches

3.1.2Main characteristics

The Innovation Department of the University of Bordeaux organised the event. A working group was created to prepare the resources, notably a preliminary and interdisciplinary introduction to the topic. Five researchers from the University of Bordeaux were involved in that process: two researchers in Psychology one researcher in Marketing) and two researchers in Neuroscience. Some data around the behaviours of the University of Bordeaux communities on three topics were also collected and made available.

The event was built on a dynamic based on the university's transition led by the community involved in environmental issues.

It has to be noted that the climackathon benefited from the experience of the DigiEduHack (method, tools, and tips - see below)

3.1.3Results

Three projects were presented before all the participants and the vice-president in charge of sustainability. All the feedback from the discussions was recorded, and the mentors fulfilled an evaluation canvas to nourish the perspectives of each project.

'Mobility Challenge" - La Mobizone

The team developed the "Mobizone". The prototypical version would be located on the campus presented in a 3D modelling infrastructure. The goal is to have an area totally dedicated to soft mobility: a bicycle room, storage and a repair place, a cloakroom for users' belongings, and a carpooling area.

Challenge "Eco-citizen actions" - ECOllectif

The following question is at the heart of the team's reflections: how to get communities on board with a shared and motivating objective? Their response took the form of an application called ECOllectif because it puts collective action at the heart of the change process. The operating mode is as follows: after having carried out their personal assessment in four areas - mobility, food, hygiene, and cosmetics or digital (carbon assessment, daily habits, etc.) - each user can receive advice and challenges to be carried out in teams directly on their laptop.

Challenge "Consumption, Production"

The team questioned itself about digital responsibility and the urgent question of raising awareness of our consumption, which today causes up to 4 % of greenhouse gases. Their response: a large, eco-designed and mechanical sign, modelled on displays in station halls, recording the number of emails sent throughout the establishment. Updated regularly, it would give the daily evolution of this figure, for example, and translate it into a more visual and comprehensive indicator such as a thermometer or different colours.

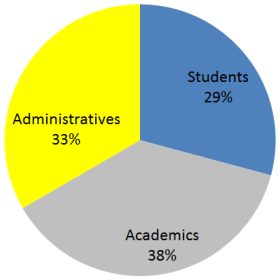
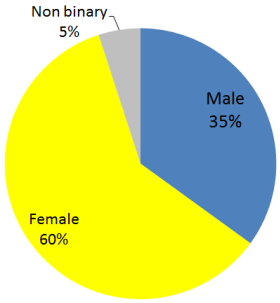
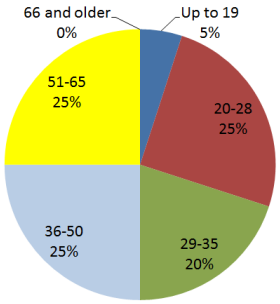
3.2 Review of the open-innovation activity (innovation dimension)

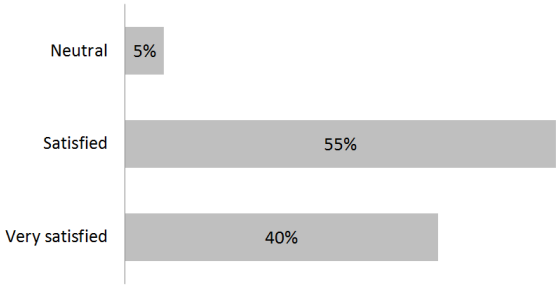
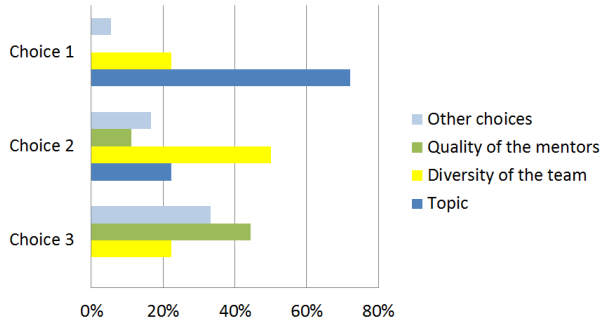
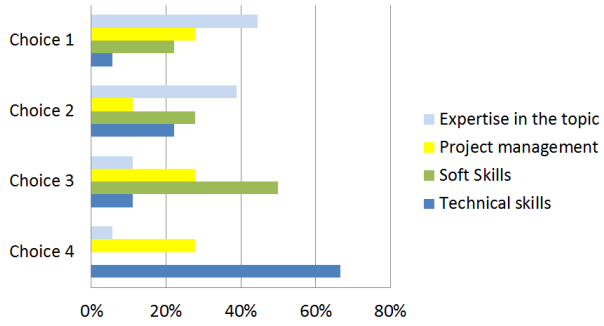
3.2.1Main achievements

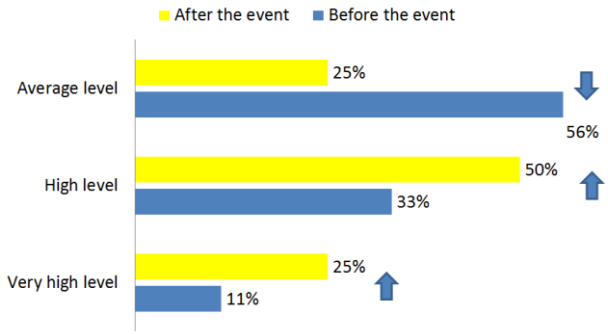
Data grid

Table 3-1 Innovation dimension of the Climackathon – part 1 (results)

Objective 1: Assure the quality of the activity as an open-innovation event			
Participants expected **Participants achieved**	30 29 (27 at the end - 2 excused)	**Participation rate** (difference between the participants expected and achieved)	97 %

Inclusivity rate/Variety of the backgrounds *Source: list of participants*	
Inclusivity rate/Gender of the participants *Source: post-event survey*	
Inclusivity rate/Age of the participants *Source: post-event survey*	
Interdisciplinary rate *Source: Learning Design Framework*	An interdisciplinary challenge involving: - Five scientists on different topics - Three disciplines
Variety of the results *Source: evaluation canvas*	One infrastructure, one application and one prototype
The openness of the resources	Available only for the participants (internal data), despite the webinar.

Objective 2: meet the interest of the participants	
Overall satisfaction of the activity *Source: post-event survey*	
Relevance of the topic/motivation rate *Source: pre-event survey* (What motivates you to participate in the activity?)	
Relevance of the topic/expectations and achievements *Source: pre-event survey* (What are your expectations in terms of learning?)	

Level of knowledge of the topic before and after the activity *Source: pre and post-event survey*	
Objective 3: Create the conditions of the sustainability of collaborations and results	
Diversity of the results Number of projects *Source: evaluation canvas*	Three projects were evaluated with the canvas filled by the jury composed of two entrepreneurs/Design thinking and environmental transition specialists. Three prototypes were achieved.
Verbatim - general appreciation *Source: post-event survey*	1. "The use of design thinking would require a short period of pre-exercise learning by the members of the groups (heterogeneous level of manipulation of the tools). Otherwise, strictly technical difficulties delay brainstorming and harm the group atmosphere." 2. "A greater precision on the themes proposed during the working in teams on Klaxoon should be given before the climate, specifying, in particular, the restriction of the theme to the campus and student life." 3. "It was very well organised and easy to understand. I really liked the "imagine solutions under constraint" part. Congratulations to you for the organisation!" 4. "I would have liked to have been informed beforehand of the goal of this climackathon (we would have gained in efficiency), an initiation into the vocabulary of the 'thing tank' (not being sure I understood correctly, I often hesitated to do proposals). Sometimes I happened to say that I did not understand because no one was speaking ... and in fact, no one had understood what was expected of us ... However, in the end, I was very happy with the exercise and boosted my commitment, seeing that I was not alone in mobilising myself!" 5. "The distance format was very well mastered, and it was very appreciable because of the situation. I think that in a more usual context, a mixture of the two formats would allow a greater emulsion and inclusion." 6. "The distance works but even less well and then shaves the cap of the distance! He needs more time for personal ideation (5 min is too short to have time to develop his ideas and think about presenting them to others)."

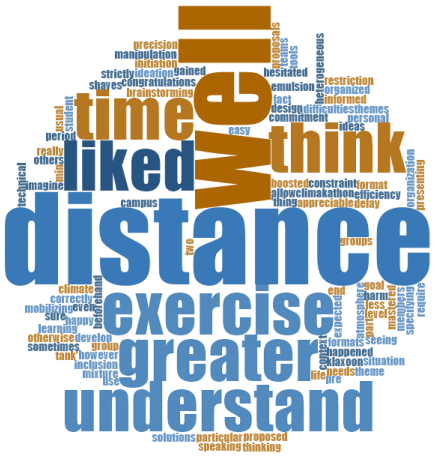


Figure 1 Analysis NVivo of the general appreciation of the Climackathon participants

Funding	No budget, no prices

Analysis

Table 3-2 Innovation dimension of the Climackathon - Analysis of the results

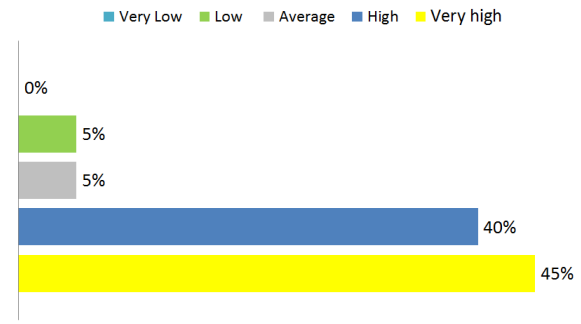
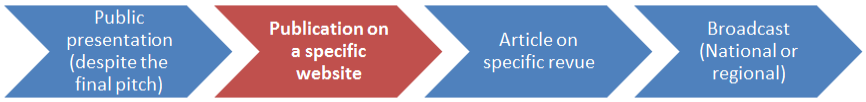
Strengths	Challenges
As an internal activity, the climakathon was as open as possible: a large variety of backgrounds representing all the university categories was the best way to ensure various results. The number of participants was built on a community already existing, which has an ecological consciousness. The topic was indeed one of the keys to the success of the activity, but the format and the method too. On the one hand, the use of the design thinking method (see below), which is novel for the majority, was well appreciated as a booster of collaboration, motivation, and engagement. *"I was very happy with the exercise and boosted my commitment, seeing that I was not alone in*	Regarding the profiles of participants, it has been noted that a more inclusive activity would have been interesting to reach audiences far from the ecological issues. Then, concerning the openness of the resources, the discussion-based learning to co-design the process and assign roles to people before the event (with scientists) was a good start. But this situation could be improved by using more open data and exploiting more methods. Indeed, access to the data was too limited. Participants needed more contextualised information to explore further the topic. Finally, the sustainability of the collaborations and the results were encouraged but not defined beforehand, which would have avoided frustration at the end of the activity. Co-designing the activity is as important as the whole innovation process.

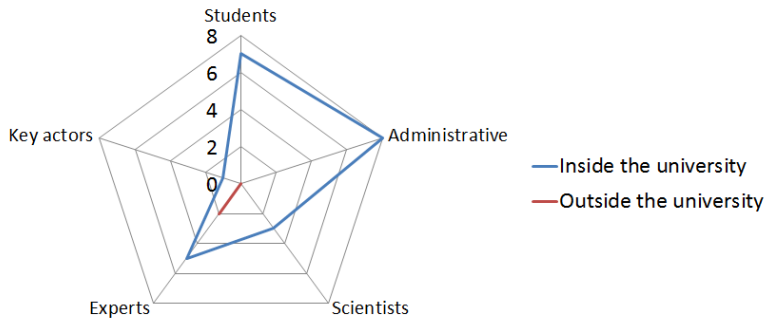
mobilising myself." On the other hand, the online format (which was well mastered and was appreciated because of the situation) was a plus (open tools) even if a hybrid format would have been more popular.	

3.2.2Main impacts

Data grid

Table 3-3 Innovation dimension of the Climackathon - Analysis of the results

Objective 1: create new projects and collaborations	
No IP issues	
Motivation to continue the project *Source: post-event survey* How would you rate your motivation to continue the project?	
Role of the university in the community management *Source: complementary survey*	
Dissemination level of the outputs/medias *Source: complementary survey*	

Dissemination level of the outputs *Source: complementary survey*	**Institution level:** A recorded session pitch All the participants were asked to participate in internal Committees dealing with environmental issues. An article on the institution website Social networks post on the outputs
Community-level/mapping of the participants *Source: list of participants*	
Objective 2: create new knowledge resources	
Creation of new resources *Source: report on the activity*	• the Klaxoon canvas could be reused for another activity • a webinar • a transdisciplinary article by the scientists
Objective 3: Develop and enrich the innovation processes in the institution	
Transferability of the activity *Source: complementary survey*	Yes (mentors)
Dissemination level of the activity/medias *Source: complementary survey*	

Analysis

Table 3-4 Innovation dimension of the Climackathon - Analysis of the impacts

Strengths	Challenges
As a first and internal experience, the activity was disseminated at the institution level. This step was necessary to acculturate the community which already existed. An effort was made with highly motivated participants, notably by creating the conditions of the implementation of the activity. As said before, this situation could have been anticipated, notably by consolidating the role of the mentors to open up the results. The proof of concept of the activity was made. Some actions are expected to further disseminate the concept within an institution.	As an event giving priority to innovation, creating new resources was limited. The discussion-based learning inside the general activity was the part that generated more of the knowledge. More time has to be dedicated to this part of the activity. The presented results were not "innovative" but impactful and transferable (cf. evaluation canvas). The transdisciplinary approach had the advantage to assess some transdisciplinary collaborations inside the university.

3.3 Description of the activity as a project-based learning activity (participant dimensions)

3.3.1 Description of the learning design process (cf Learning Design Framework)

Goal setting

Participants are involved in the evaluation part. A small part of the participants participated in designing the activity (academics)

Participants: anyone from the University of Bordeaux

Participants' pre-activity knowledge of the topic: basic, intermediate, and advanced (mixed levels)

Learning goals: To learn skills on interdisciplinary collaborations, learn about breaks and motivations for change (in the climate change context) and learn about communication tools and ecological transition.

Innovation goals

Sustainability goals (ODP): Sustainable cities and communities and climate action

Openness: open software, different backgrounds of participants, outputs are made open access

Activity development

Coordinator: administrative (innovation department)

Composition of the group/collaborators: Academic researchers, students, entrepreneurs

Learning objectives: To learn about differing behaviours towards climate change (neurosciences, marketing, and social psychology)

Table 3-5 Learning Design Process of the Climackathon (step by step) - Source: Learning Design Framework

Steps (Design thinking method)	How?	Comments of the coordinator
Ideation phase (topic exploration, need-finding, brainstorming solution ideas)	**Participants with guidance by facilitators and scientists** **Online (Zoom and Klaxoon)** **Method: s**econdary research, observing and consulting with target end-users, group discussion/brainstorming	Participants were given resources before the event, including general resources on the topic and "the roadmap of the Environmental and Societal Transitions" as a concrete basis. A group of scientists gave some inputs on the topic (neuroscience, social psychology, and marketing) All the methods were detailed on Klaxoon support (design thinking canvas), and a facilitator per group animated each process.
Design phase (Design model(s) and prototype design(s))	**Participants with guidance by mentors and facilitators** **Online (Zoom and Klaxoon)**	Participants are guided through the Design Thinking Tools by a facilitator, and some general tips and objectives are provided at the beginning of each session (cf. Double Diamond Process).
Implementation phase (User testing, Reiterative design)	**Online (Zoom and Klaxoon)** **Method:** test runs with target users, Consultation with experts	Mentors went from group to group to give feedback on the design, the efficiency, and the feasibility of the solution (Test and Learn). They advised on the communication side of each solution.
Communication phase (presentation and discussion of final outputs, Dissemination of final outputs for real-world application)	**Online** (Zoom and Klaxoon and different presentation modes chosen by the participants) **Method:** presentations, Group discussions, Consultation with experts and Documentation of project outcomes)	Each group presented its solutions (5 minutes) and discussed the outcomes with the experts, the Vice-President in charge of Sustainability and the other participants (10 minutes).

3.3.2Description of the resources

The mentoring

Table 3-6 The mentoring in the Climackathon - source: complementary survey

Who are the mentors?	External partners, consultants, freelancers.
What is their role?	Share advice and give insight on their specific expertise, facilitate, and provide guidance
What are the criteria for choosing mentors?	Motivation and volunteer, a field of expertise, specialisation in a field
How were the mentors involved in the activity?	They are involved in the preparation of the activity, in the pre-training (tool) and the evaluation of the activity (assessment phase)

The typology of skills

Table 3-7 The typology of skills developed in the Climackathon - source: identity sheet

Knowledge of the topic	Behaviours facing climate change, environmental transition, environmental innovation Multicultural conference on "Mechanisms of the decision with 3 points of view: neuroscience, psychological science and marketing."
Technical skills (e.g., using software)	Online collaborative work, online Design Thinking tools
Soft skills (e.g., project management)	Communication skills, critical thinking, collaboration and teamwork, negotiation, creativity, curiosity and problem solving competencies
Open innovation skills (e.g. innovation process)	Design Thinking approach
Others, please specify	

The tools

Table 3-8 The tools used in the Climackathon - source: Learning Design Framework

Collaboration tools

Klaxoon
It was used as a collaborative tool to:

- ★ allow collaborative artefacts to be shared between different participants of the Climackathon.
- ★ provide participants with guidance on expanding their knowledge in the topic after the activity.

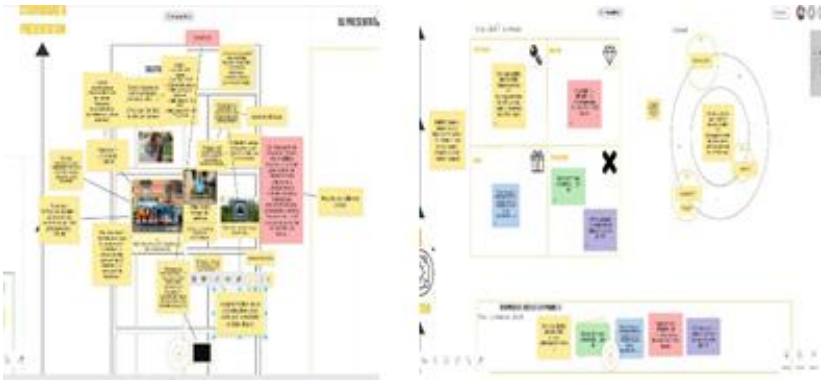


Figure 2 Screenshots of Klaxoon ideation phase of the Climackathon

Storyboard That
It was used as a presentation tool (communication phase)

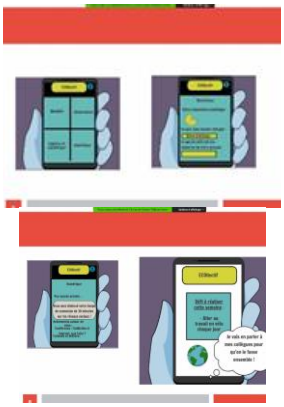


Figure 3 Screenshots of the application storyboardthat used by Team 3 in the Climackathon

Communication tools
Zoom Provided by the organiser, developed by the participant, and used for: ★ Pre-discussion content to include the topic of activity (goals, applications, outcomes) ★ Live presentations ★ Technical instructions for the main discussion ★ Q&A session

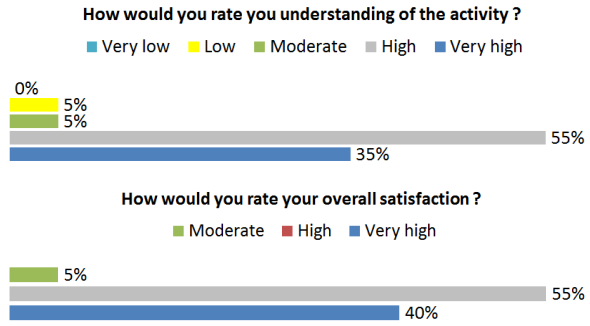
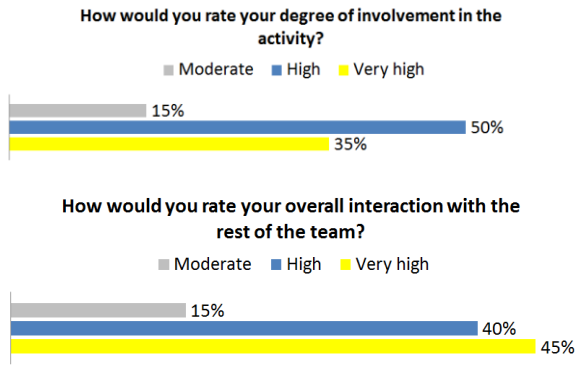
Resources	Internal documentation (not open data): transition roadmap

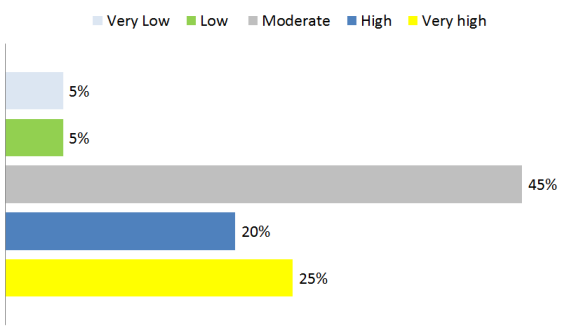
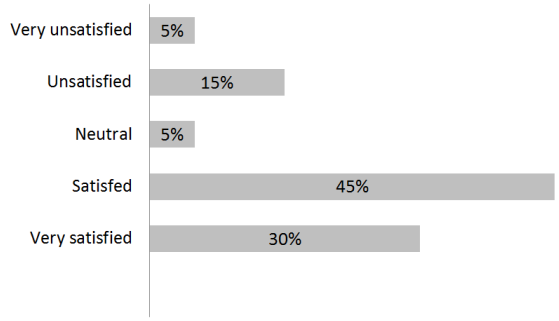
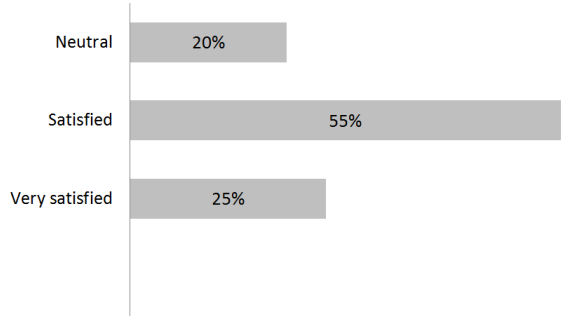
3.4 Review of the project-based learning activity (participant dimension)

3.4.1Main achievements

Data grid

Table 3-9 Participant dimension of the Climackathon – part 1 (results)

Objective 1: Encourage the personal engagement/involvement	
Rate of engagement regarding the understanding of the activity *Source: post-event survey*	
Interactivity rate/general engagement and team engagement *Source: post-event survey*	

Rate of understanding of the Design Thinking method *Source: post-event survey* How would you rate your degree of understanding of the Design Thinking method?	
Objective 2: Facilitate the synergies between the participants	
Satisfaction rate regarding the mentoring/training *Source: post-event survey*	
Communication tools	No discussion happened between the Zoom sessions. The coordinators suggest no use of Slack.
Objective3: Create the conditions of partnerships	
Rate of satisfaction of participants regarding the networking dimension of the event *Source: post-event survey*	
Verbatim regarding the interactivity and the	1. "The collaborative dimension is particularly essential in the field of behaviour change."

engagement *Source: post-event survey*	2. "Interesting contact made with a student." 3. "Beautiful complementarity." 4. "If networking in the sense of resource sharing, then yes, it was highly useful. Otherwise, I don't understand the meaning of the question." 5. "Very high with however a downside on the ability to achieve real networking on larger groups." 6. "I had great encounters, and the participants were very interesting."

Analysis

Table 3-10 Participant dimension of the Climackathon - Analysis of the results

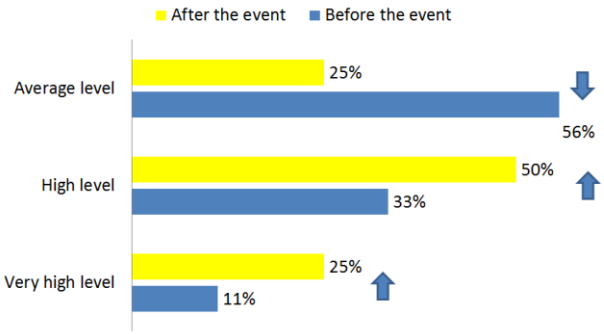
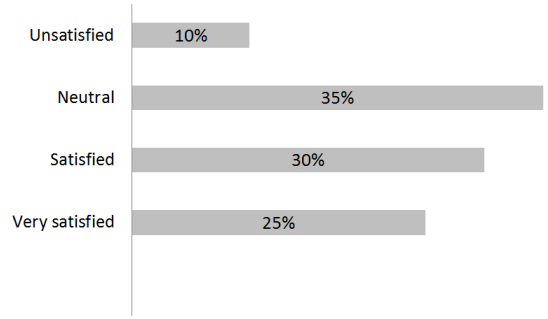
Strengths	Challenges
Generally, the group is aligned on the same understanding of the goal of the activity, which induces a good implication for the participants. Indeed, the activity is linked to the real-life challenge of the university. The high level of engagement of the participants is linked to the topic and the interdisciplinarity, notably in teams. It could have been improved by having smaller groups.	Some participants had some difficulties understanding the collaborative platform Klaxoon and the method of Design thinking used during the activity. The platform was indeed great support, but the appropriation stayed limited even by the facilitators. A training session would have been useful to limit the gap between the participants. Then, teaching "Design Thinking" is challenging, especially with short activities: here again, training would have been useful, or just an introduction session as suggested in the improvement comments. Another challenge is the positioning of the mentors. They were recognised as experts but not facilitators, which means that they stayed at a different level and were not aligned with the group.

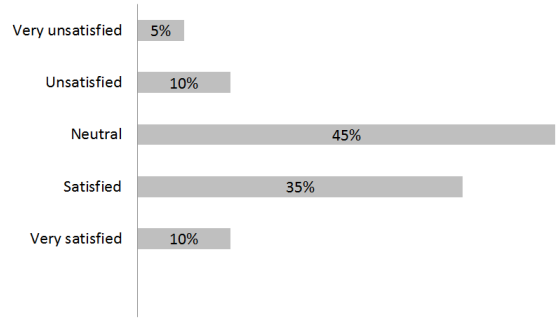
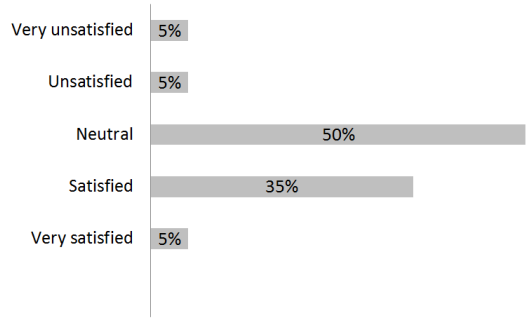
3.4.2Main impacts

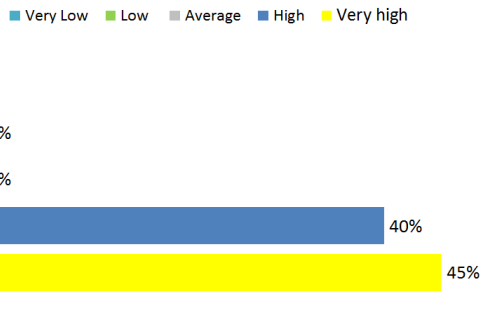
Data grid

Table 3-11 Participant dimension of the Climackathon – part 2 (impacts)

Objective 1: Develop personal learning and development

Empowerment on the topic *Source: pre- and post-event survey*	
Access to the knowledge satisfaction rate *Source: post-event-survey*	
Verbatim – learning dimension of the activity *Source; post-event survey*	1. "I was able to learn several things, in particular about the projects underway in Bordeaux, the feelings of the people in the group and the possible initiatives." 2. "Better knowledge on the question of biases or aspects in sociology." 3. "Not having all the information that can be obtained from the university and the budget allocated to the project, we were not able to really plan ourselves." 4. "The presentation on the brakes on change was very good, but we were perhaps lacking general knowledge of the modes of travel." 5. "The only knowledge I have is on a very personal scale." 6. "I think I have acquired some very interesting new ones, but I do not think that the basic objective was to accumulate knowledge." 7. "No major changes, a few additional notions." 8. "I learned interesting things (on cognitive biases, for example) but not enough to feel really enriched. I do not know if I have retained a quarter of it in 1 week."

Empowerment rate/New skills acquisition *Source: post-event survey*	
Objective 2: Motivate new skills and empowerment/fun	
Empowerment rate/Innovation skills *Source: post-event survey*	
Verbatim – empowerment *Source: post-event survey*	1. "Discovery of design thinking" 2. "Very good Design thinking exercise" 3. "I enjoyed using the design thinking method, but more examples would have been needed." 4. "The feasibility remains to be demonstrated." 5. "Very interesting and complementary inputs from researchers/mentors" 6. "Let's say I got some information on how to create it. There is an evolution in the sense that I was starting from zero we will say" 7. "Collective intelligence in innovation, no real increase in individual competence, if?"
Objective 3: Innovative value of the project's outputs	

Motivation rate to continue the project *Source: post-event survey*	
Verbatim - Motivation rate to continue the project *Source: post-event survey*	1. "It will be quite interesting to follow the extensions given to the ideas germinated during the collective work." 2. "The ideas developed were very stimulating." 3. "The project is very focused on the University campus. My motivation relates more to more general themes (examples: depollution)" 4. "I will be ready to invest myself longer for the project to see the light of day." 5. "I had a great time that I would do again in a heartbeat." 6. "This is the purpose of the investment, to be able to make things happen in a concrete way."

Analysis

Table 3-12 Participant dimension of the Climackathon - Analysis of the impacts

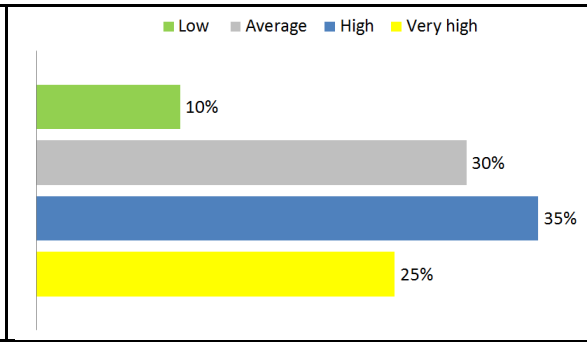
Strengths	Challenges
As a learning activity, the introduction session presenting original highlights from University of Bordeaux researchers was very impactful. The participants, who were highly motivated by the topic, were expecting to learn about ecological issues, and indeed, they learned a lot. As a new competence, the empowerment in Design Thinking was really appreciated even if this application could be perfected. In addition to the evaluators' interest, the participants highly appreciated the outputs, creating a feeling of satisfaction. The quality of the solutions, and especially their innovative character,	As expected in the introduction session, the availability of the resources, and notably those concerning the ecological footprint of the establishment, was limited: the data was too complicated and so not integrated by the participants. A better framework regarding the documentation and the artefacts was needed. As a collaborative activity, it was a success, but the learning dimension of the activity was quite limited. The change of mindset was more on the use of collaborative tools (technical skills) and soft skills rather than innovative skills

helped go from acculturation to innovation. It is too early to assess the results for publications and any other results.	

3.5 Conclusion (socioeconomic dimension of the activity)

The activity achieved good acculturation to open innovation and open science in general. Creating short-lived communities is one of the big strengths of these kinds of events when they meet the expectations of participants. When it relies on existing communities, it is even more impactful. The climackathon is not an intra curricular activity, and it does not have explicit learning objectives. However, it permits to open up the mindset of participants and create new projects, so it participates in disseminating innovation within the establishment.

Table 3-13 Socioeconomic dimension of the Climackathon (long-term impacts)

Rate of understanding of open innovation and the social impact of citizen science *Source: post-event survey*	

4 DigiEduHack – Aalborg University

<table>
<tr><th colspan="4">Summary of the activity</th></tr>
<tr><td>Extra-curricular</td><td>Focus : innovation</td><td>Duration : 2 days</td><td>Short CEI</td></tr>
<tr><td>12 and 13 November 2020</td><td>Online (Zoom)</td><td>18 + 2 mentors + 4 jurors</td><td>Five groups of 3-5 people</td></tr>
<tr><td colspan="2">Results expected: innovative solutions</td><td colspan="2">Topic and challenge: make online learning a better experience</td></tr>
<tr><td colspan="4">List of pedagogical resources available for the organisers (and all participants)</td></tr>
<tr><td colspan="2">Before the event:
- Information meeting: an overview of the challenge, evaluation criteria and prices, planning/schedule, benefits of participation,
- Presentation of European speakers and tips</td><td colspan="2">During the event:
- A toolbox from the main organiser (DigeEduHack): a canvas to fill in for the participants
- Webinars with tips and inspirations (best practices)</td></tr>
<tr><td colspan="4">Data analysed within the INOS framework</td></tr>
<tr><td>Learning Design Framework</td><td>Completed</td><td>Identity sheet</td><td>Completed</td></tr>
<tr><td>Pre-event survey</td><td>Response rate: 100 %</td><td>Post-event survey</td><td>Response rate: 100 %</td></tr>
<tr><td>Other data and resources</td><td colspan="3">Complementary survey completed.
Planning resources from DigiEduHack: IP guidelines & Hackathon rules, evaluation canvas, roadmap/google doc for the participants, slack infrastructure
Communication resources: 4 PowerPoint presentations introduced during the event: (Pre-event Info Sessions, Day & Welcome, Day 1 Ideation, Day 2 Welcome)
Dissemination resources: mailing, Social Networks contents
Pre-booking and information meetings
Two video testimonials
Screenshots</td></tr>
</table>

1.1 Description of the activity as an open-innovation activity (innovation dimension)

4.1.1 Context and programme

Punctual event

Framework: part of an extra mega project called "DigiEduHack" (see above for more details)

Organiser/coordinator: Evangelia Triantafyllou and Elisha Teo, The Technical Faculty of IT and Design (Aalborg University)

Mode of engagement of the participants: communication tools such as mailing, social networks, external calls of participation

Funding: no funding but human contributions. The sponsors participated with one or several employees

Format very replicable and transferable

Challenge: "since COVID-19, many universities have been forced to switch to Online Learning. This sudden change (also known as "The Great Online Pivot") has been challenging for students and educators. What problems do YOU face? Here is your chance to improve your Online Learning experience! The best team can win up to €5000 in a global award contest. Join #HackThePivot to co-create solutions that make Online Learning a better experience for you and others." (Source DigiEduHack website)

Planning:

- HACKATHON DAY 1 - Morning (9 am-12 pm with break): Welcome and Ideation | Afternoon (1 pm-5 pm with break): Solution Design
- HACKATHON DAY 2 -Morning (9 am-12 pm with break): Solution Finalisation | Afternoon (1 pm-5 pm with break): Presentations and Judging

More: "We will guide them with two introductory sessions to deliver the challenges and design framework, from which groups will work independently. Mentors will be available the entire period to help participants in their tasks. Participants will then present their solutions to a panel of judges, who will determine the first and second place winners who will win a prize" (Elisha Ann Teo – Aalborg University)

Framework: DigiEduHack aims to foster the co-creation of solutions that answer real-life challenges in digital education: ideas, concepts, or ready-to-be-developed apps.

https://digieduhack.com/en/#)

DigiEduHack is a series of hackathons tackling digital education challenges worldwide from 12-13 November 2020. DigiEduHack is an EIT initiative created in 2019 under the European Commission's Digital Education Action Plan, led by EIT Climate-KIC and coordinated by Aalto University (2020: 34 countries, 1500 participants, 50+

challenges, ten finalists and three winners). *Each DigiEduHack challenge is owned and organised by a local host: a university, a school, a library, an NGO, a start-up... Participants join a challenge of their choice and take part in DigiEduHack 2021. After the event, each host designates a challenge winner. All the challenge-winning solutions are then assessed by the DigiEduHack steering group, which designate 10 to 12 finalists. The finalists are put up for a public vote.*

Target audiences: students, educators, education professionals, academics, innovators, librarians, software engineers

4.1.2Main characteristics

The Hackathon was a well-organised event thanks, on the one hand, to the framework given by the megaproject and, on the other hand, to the continuous commitment of the mentors. A lot of effort, tools and resources were put into maintaining the constant engagement of the participants. The reward and the visibility offered to the project were really valuable for the participants. More generally, many planning resources, especially concerning the copyright rules, one of the main issues concerning the open-innovation activities, were made available. The local coordinator of the event also produced a list of very interesting and replicable tips for other hackathons. The event was grounded in a solid methodology, which allowed for a very open event with participants from various backgrounds.

"Overall, it was a very good event with a good atmosphere. Collaboration and the outputs were very impressive. We experienced some dropouts from the event. Some did not show up on the day of the event. A few others dropped out during the event as the level of commitment was too high and intense for them. However, motivation was high from the 18 participants who remained." (Elisha Ann Teo-Aalborg University)

4.1.3Results

Here are the summaries of the five artefacts produced (Source: https://digieduhack.com/de/copenhagen-hack-the-great-online-pivot#_solutionsTab):

U-turn-4-U-learn: Social-emotional learning as a pivot

Leaning heavily on modern constructivism, social learning, and active learning theories, this LMS platform and accompanying app bring together content knowledge, artificial intelligence, and the social-emotional aspects of a learning process.

Education: A Privilege For All

Our lives have changed drastically due to Covid-19. As students, the main factor is the way we attend courses in school/university. That is why we are here to evaluate the situation, identify the problems, and suggest beneficial solutions for the students and the teachers.

dotRoot: GRAPH PARALLEL TEACHING WITH A PEER-LEARNING APPROACH

(Non-available)

Engage with global learning buddies

A gamified international learning buddy app encourages you to explore your domain through user-generated challenges.

Q&B: A geosocial &online learning platform for ones with questions

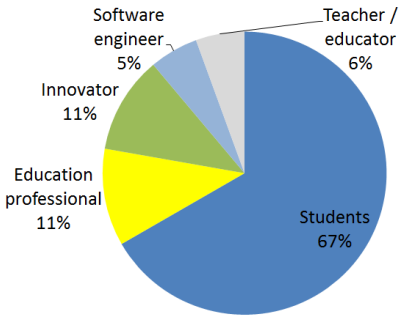
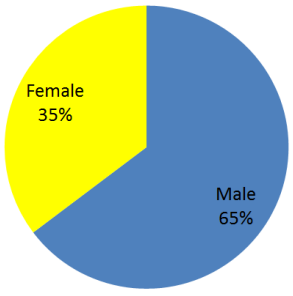
Ask, find personalised answers, and meet up online to deepen your knowledge and mingle! Q&B is a geosocial networking & online learning platform for those with a specific question in mind, from small to big, seemingly frivolous to really important.

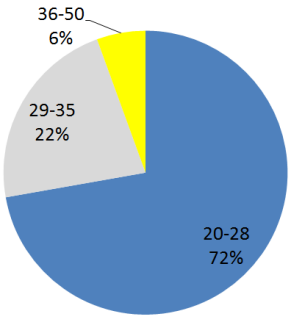
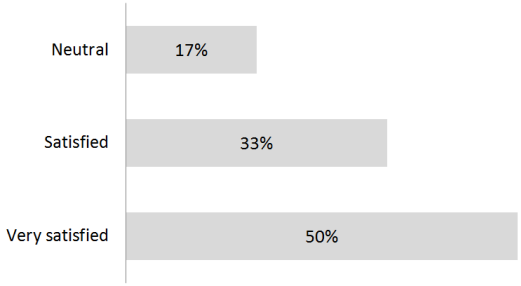
4.2 Review of the open-innovation activity (innovation dimension)

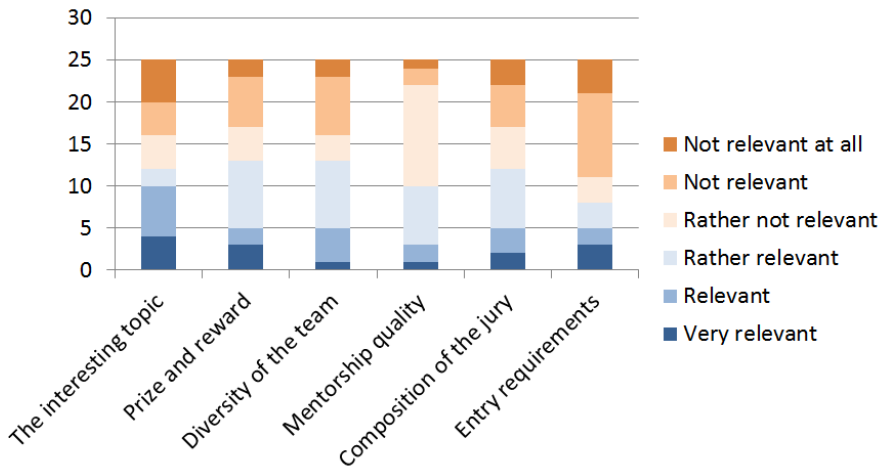
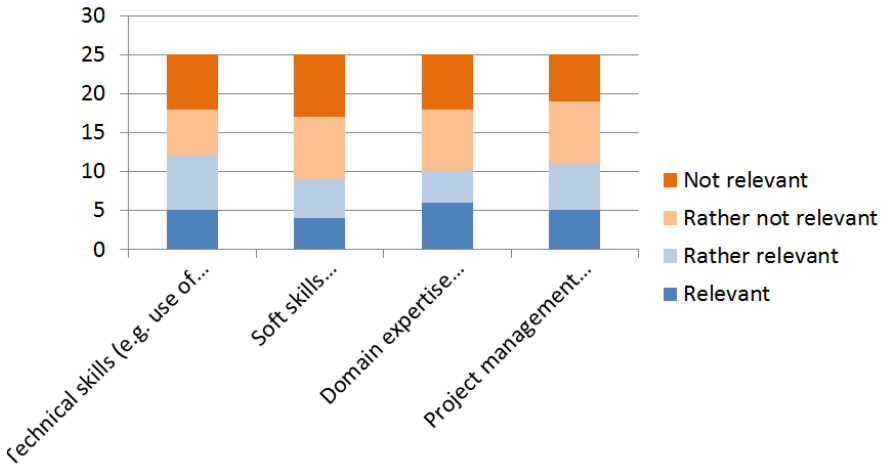
4.2.1Main achievements

Data grid

Table 4-1 Innovation dimension of the DigiEduHack - part 1 (results)

Objective 1: Assure the quality of the activity as an open-innovation event			
Participants expected **Participants achieved**	25 (pre-registrations) 18	**Participation rate**	72 %
Inclusivity rate/Variety of the backgrounds *Source: post-event survey*			
Inclusivity rate/Gender of the participants *Source: post-event survey*			

Inclusivity rate/Age of the participants *Source: post-event survey*	
Interdisciplinary and resources	- slide presentations - Lessons learnt from the previous participants
Objective 2: meet the interest of the participants	
Overall satisfaction of the activity *Source: post-event survey*	
Verbatim/Overall satisfaction of the activity *Source: post-event survey*	1. "There were many other events designed for that day, but yours stood up as one of the few pages which cared about introducing the jury, the aim of the hackathon and the prize in detail." 2. "Offering a viable solution and seeing it in practice about a topic as important as accessible education." 3. "Possible development of leadership skills" 4. "To learn from and with others."

Relevance of the topic/motivation rate *Source: pre-event survey* (What motivates you to participate in the activity?)	
Relevance of the topic/expectations and achievements *Source: pre-event survey* (What are your expectations in terms of learning?)	
Objective 3: Create the conditions of the sustainability of collaborations and results	
Diversity of the results/Number of projects *Source: evaluation canvas*	A jury of five academics and professionals evaluated five projects: ● tlMO - U-turn-4-U-learn: 63.75/100 ● Gakusei - Education: A Privilege For All: 66.7/100 ● Cyber Schnitzel: GRAPH PARALLEL TEACHING WITH A PEER-LEARNING APPROACH: 71.2/100 ● Learning Buddies - Learning Buddies: 74.9/100 ● Asure - Q&B : Questions & Beyond : 78.6/100 One project did not qualify to be published on the website because of some IP issues. (see results part)

Propositions rate (overall satisfaction feedback) *Source: post-event survey*	**9/18 -** One participant in two takes the time to give general feedback on the event.
Verbatim/general appreciation *Source: post-event survey*	1. "Personally, I would like to have more time in order to present a more robust system. The event being held during the mid-term exams week was also not helping. However, I need to express that this is my own personal opinion." 2. "Otherwise, the event was well organised, and the mentors were always available and helpful." 3. "Time Management: the Design Thinking session was quite fast. Our team could not really finish the tasks in the breakout sessions." 4. "I think the time for developing the idea itself was a bit short, and the general buzz of a hackathon was missing because the overall number of participating teams was diluted due to them being spread across so many different challenges (our challenge had only eight teams in the start, with less than that showcasing their final ideas)." 5. "It would be nice to have a topic about finding ways to make video games that make the user use all of his human senses." 6. "First of all, thank you for all your hard work to make this Hackathon happen and thank you, Elisha, for making sure that this hackathon goes as smoothly as possible with very organised lists. The things I would comment that even though the monetary benefit is not the ultimate goal for me in this hackathon, I think you should not alter the prizes claimed before. It just creates instability. I would have said the same thing on rules, but the problem occurred only on the prize part in this hackathon. Also, I think once the hackathon starts, I don't think there should be a change in teams. If some members don't show up, the team should stay as it is (unless just one individual is left). I also believe that there were many breaks with repetitive things, and many members did not show up. So, I would suggest either making the breaks mandatory to be joined by everyone or not doing any of those small breaks at all, since all the info is written on the board that Elisha provided" 7. "I think certain downsides are par-for the course for online hackathons. However, I see several things that could perhaps be improved." 8. "Breaks should not be defined in the schedule. It should be a team decision- If participants are allowed to form teams beforehand, there should be a deadline. After the deadline, teams should only be able to remove members. - Remaining participants could then be added together to form a team on deadline, after which they can only remove members. - It would also be nice to receive the topic/challenge as a surprise at the very first meeting. That's just my personal preference. Thank you so much, again, for the opportunity. I, for my part, did enjoy this very much!"

	9. "You were fantastic! So well prepared and supportive." 10. "The design thinking session could have been a lot more beneficial if enough time were allocated in each step. More practical resources for pitching, value proposition etc., would have also helped."

Figure 4 Analysis NVivo of the general appreciation of the DigiEduHack participants

Analysis

Table 4-2 Innovation dimension of the DigiEduHack - Analysis of the results

Strengths	Challenges
Even though most of the participants were students, the event attracted a lot of various profiles. The event, part of a megaproject run online, welcomed a large and young audience interested in learning issues. The activity was well organised: the DigiEduHack Central Team ensured the organisation and the	The organisers faced two main issues. The first one is the lack of engagement, notably before the event. The DigiEduHack is part of a whole list of challenges taking place simultaneously. Organisations have to deal with a large panel of participants from various backgrounds and countries with different and unknown expectations. The DDay organisers had to deal with

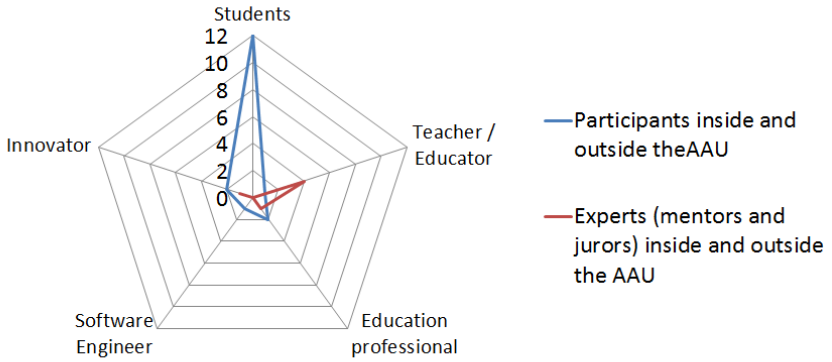
planning resources (see webinars). The local organizer could focus on the participants providing very strong support and many communication tools. The good level of satisfaction of the participants is linked to different criteria, including the notoriety of the mega event and its experience, the topic, and the fact that the activity responds to this requirement (professional interest). The transparency of the method was announced before the event (meeting) and again before each session, and the openness of the resources was appreciated.	absenteeism which provoked new changes that were not appreciated. The second issue is the management of time (see above). Globally, the participants really enjoyed the session, which is the first important thing to create an efficient and performative event. However, these issues could have been avoided with some activities to get to know the participants, such as initial meetings and icebreaker sessions.

4.2.2Main impacts

Data grid

Table 4-3 Innovation dimension of the DigiEduHack - part 2 (Impacts)

Objective 1: create new projects and collaborations	
IP issues (cf."Intellectual property guidelines" for DigiEduHack participants)	
Role of the university in the community management *Source: post-event survey*	
Dissemination level of the outputs *Source: complementary survey*	
Dissemination level of the outputs *Source: complementary*	**International level**: article on the DigiEduHack website

survey	
Community-level *Source: post-event survey*	
Objective 2: create new knowledge resources	
Creation of new resources *Source: planning of resources*	• Practical/planning resources for the organisers (available on the megaprojects' website: see the Host Guide • Open resources are collected for the ideation phase
Objective 3: Develop and enrich the innovation processes in the institution	
Transferability of the activity *Source: complementary survey*	Very replicable, on the same format/topic, and another as well.
Dissemination level of the activity/media: international level *Source: complementary survey*	

List of tips *Provided by the AAU organisers*	

Analysis

Table 4-4 Innovation dimension of the DigiEduHack - Analysis of the impacts

Strengths	Challenges
The participants were mainly students who enjoyed the experience as a one-time event. The focus was on the innovation process and skills more than on the sustainability of the outputs. By the way, the AAU had not taken a leading role in the animation of a sustainable community. In contrast, it had taken an important role in building an "event community" (see the collaborative tools). The sense of an international community of practices is emphasised by the principal organiser of the international event. The planning resources (open resources) adapted to this kind of open event mixing backgrounds and roles and countries are useful. AAU underlined the exchanges with other organisers from other universities. Resources are also collected for participants: each edition provides feedback	This experience stays very valuable because the event is quite notorious (international dissemination level of the outputs), and participants are free to network with each other. However, it needed more conviviality moments that were prevented by the online format.

testimonials by former participants, and the coordinator collected some open resources on the topic.	

4.3 Description of the activity as a project-based learning activity (participant dimension)

4.3.1 Description of the learning design process (cf Learning Design Framework)

Goal setting

Participants filled the survey before the activity (motivations and expectations)

Participants: anyone interested in the Higher Education context

Participants' pre-activity knowledge of the topic: from basic to intermediate

Learning goals: To learn skills in cross-boundary collaborations, To learn about online learning methods, To learn about Design Thinking

Innovation goals

Sustainability goals: Quality education, reduced inequalities

Openness: open software, different backgrounds of participants, outputs are made open access

Activity development

Coordinator: Evangelia Triantafyllou and Elisha Teo, the Technical Faculty of IT and Design (Aalborg University)

Composition of the group/collaborators: Academic researchers, University undergraduate and postgraduate students, citizens/general public/non-experts

Learning objectives: Participants are able to demonstrate good collaboration skills and produce an innovation that meets the evaluation criteria

Table 4-5 Learning Design Process of the DigiEduHack (step by step) - Source: Learning Design Framework

Steps (Design thinking method)	How?	Comments of the coordinator
Ideation phase (topic exploration, need-	Participants with guidance by mentors (Zoom and Slack)	Participants are asked and given resources before the event to think about ideas.

finding, brainstorming solution ideas)	**Method: s**econdary research, observations and consultations with target end-users, group discussion/brainstorming	During the Ideation session, participants share their personal experiences with Online Learning, as they are also users of online learning. From the sharing, each group then develops their idea further.
The ideation phase as a discussion-based activity	**Pre-discussion:** the organizer provides the topic and the contents (background of activity, basic knowledge, and technical instructions) **Method**: online video and website **Main discussion:** in groups, the participants produce a collaboration artefact Method: idea wall and plan Tools: google drive and tablet	Students create a problem statement as per the Design Thinking process Evaluation of this session will be included in the post hackathon survey and post-hackathon interviews. Participants are also able to provide live feedback during the session.
Design phase (Design model(s) and prototype design(s))	**Participants with guidance by mentors and facilitators** **Online (Zoom and Slack)**	Participants are guided through the first few steps of the Design Thinking process, from which participants can then continue independently in their groups.
Implementation phase (User testing, Reiterative design)	**Online (Zoom, Slack, and whatever platform the teams want)** **Method:** test runs with target users, Consultation with experts	Groups are paired to give each other feedback on their work. Groups are also able to make appointments with mentors to get consultations.
Communication phase (presentation and discussion of final outputs, Dissemination of final outputs for real-world application)	**Online (Zoom)** **Method:** presentations, Publication and Documentation of project outcomes)	Each group submits a written description of their project, which will also be published online on the DigiEduHack website. Each group also gives a 15-minute presentation before a panel of judges, asking questions.

4.3.2Description of the resources

The mentoring

Table 4-6 The mentoring in the DigiEduHack - source: complementary survey

Who are the mentors?	AAU teachers and guest teachers from other universities
What is their role?	Facilitate and provide guidance, evaluate the artefacts
What are the criteria for choosing mentors?	Engagement and availability, Field of expertise (specialisation in a field), University network/partners (networking and new opportunities)
How were the mentors involved in the activity?	They are organisers (they are involved in all stages described), they are involved in the evaluation/assessment phase

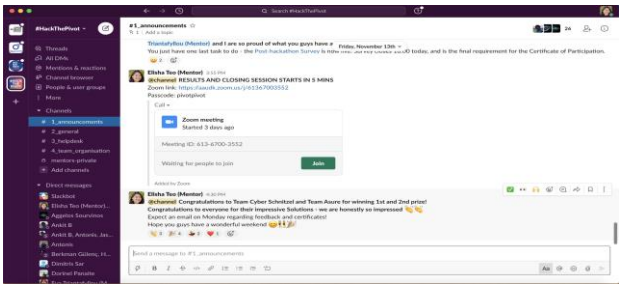
The typology of skills

Table 4-7 The typology of skills developed in the DigiEduHack - source: identity sheet

Knowledge of the topic	Online learning methods and service design innovation
Technical skills (e.g., using software)	Online teamwork, online collaborative software, online innovation tools
Soft skills (e.g., project management)	Project management, communication, online teamwork
Open innovation skills (e.g., innovation process)	Innovation process, cross-border teamwork
Others, please specify	

The tools

Table 4-8 The tools in the DigiEduHack - source: Learning Design Framework

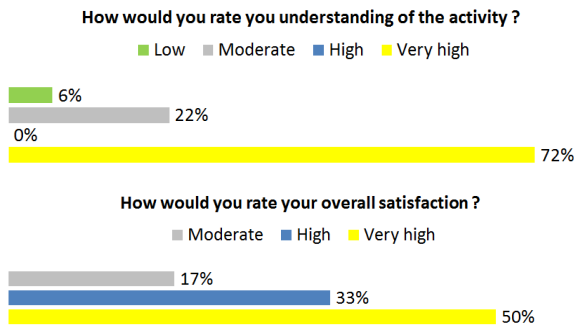
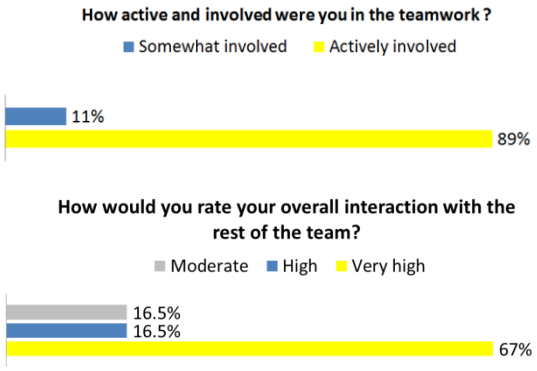
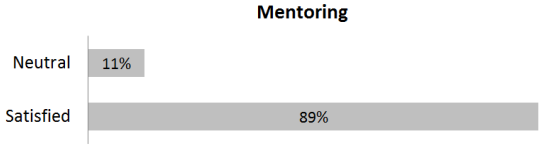
Collaboration tools	
Padlet (discussion-based learning activity) ★ used as a collaborative tool for teams to generate ideas	 *Figure 5 Screenshot of Padlet board – DigiEduHack*
Communication tools	
Zoom and slack Provided by the organizer, developed by the participant, and used for: ★ introducing the topic ★ guiding the participants ★ presentations ★ And the final session.	 *Figure 6 Slack screenshot - communication in DigiEduHack*
Resources	Web conferencing software (e.g., Zoom, Adobe Connect, Microsoft Teams, Skype) Collaboration and file-sharing software (e.g., Miro, Google Drive) Tips from last year's winners 2019 Winning solutions on DigiEduHack website An introductory presentation, an archive, or resources Use of open-source software and hardware in tasks

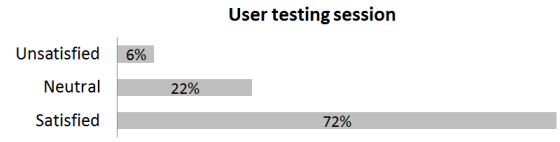
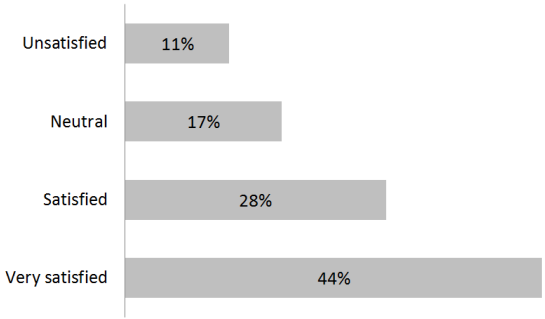
4.4 Review of the project-based learning activity (participant dimension)

4.4.1Main achievements

Data grid

Table 4-9 Participant dimension of the DigiEduHack - part 1 (results)

Objective 1: Encourage the personnel engagement /involvement	
Rate of engagement regarding the understanding of the activity *Source: post-event-survey*	
Interactivity rate/general engagement and team engagement *Source: post-event-survey*	
Objective 2: Facilitate the synergies between the participants	
Rate of satisfaction regarding the mentoring and the training *Source: post-event survey*	

	
Objective3: Create the conditions of partnerships	
Rate of satisfaction of participants regarding the networking dimension of the event *Source: post-event survey*	
Verbatim regarding the interactivity and the engagement *Source: post-event survey*	1. "The session was very clear and gave us a brief understanding as to what was expected and how to go about it. Loved the sessions." 2. "Perhaps we were the lucky group to have professional mentors to guide us, not quite sure about the other groups' experience." 3. "We had divergent ideas." 4. "It was too short a time period for us to develop an idea which could be tested by someone outside the team." 5. "We received good ideas and great feedback to expand our project." 6. "Improvements on both sides of the teams" 7. "It was nice to talk to another team and its members and see what specific issue they wanted to tackle in online education."

Analysis

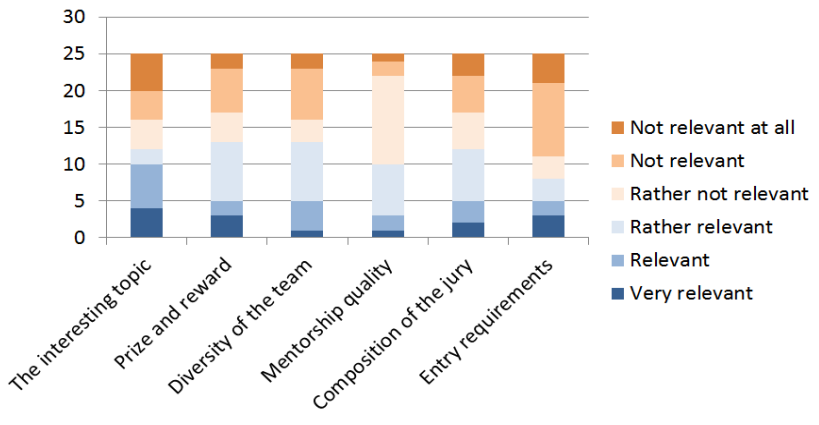
Table 4-10 Participant dimension of the DigiEduHack - Analysis of the results

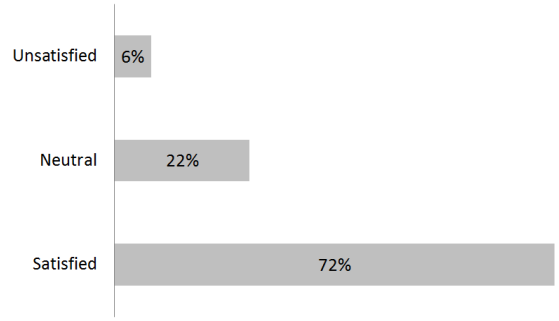
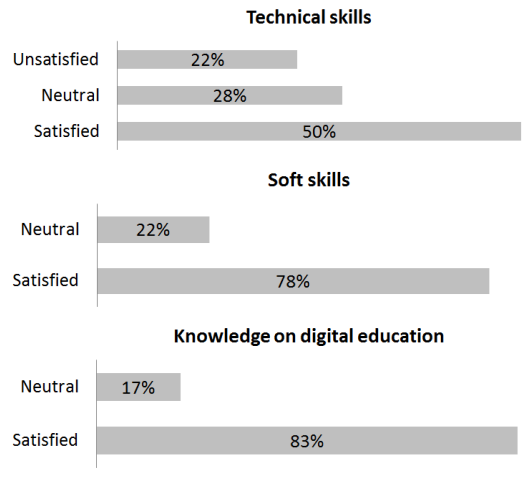
Strengths	Challenges
The relevant topic and the challenge increased the learning impact of the activity: the innovative process has encouraged the collaboration by allowing participants to develop new ideas efficiently and concretely (applicability and transferability of ideas). The two strengths pointed by the participants in the activity to create synergies were: the choice of the mentors who are qualified as professionals (cf. verbatim) and the user testing session, which is important to introduce the activity and explain the topic and the learning goals. 72 % of participants appreciated and judged that the session test was very useful and considerably impacted the group's synergies, which allowed them to interact and enhance their understanding and reach their expectations.	The dissatisfaction rate of about 6 % is due to insufficient time allocated to this session. Some participants met difficulties presenting robust solutions because of the lack of time. Other participants proposed to extend the Design Thinking session, and some teams could not really finish their tasks in the breakout sessions. Generally, more time to build a team or to meet each other would have the benefit of enhancing the collaborative dimension of the activity.

4.4.2Main impacts

Data grid

Table 4-11 Participant dimension of the DigiEduHack - part 2 (impacts

Objective 1: Develop personal learning and development	
Relevance of the topic/motivation rate *Source: pre-event survey* (What motivates you to participate in the activity?)	

Empowerment on the topic/Online Learning Method *Source: post-event survey*	
Objective 2: Motivate new skills and empowerment/fun	
Motivation throughout the event *Source: post-event survey*	
Empowerment rate/new skills acquisition *Source: post-event survey*	

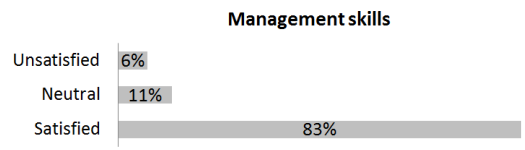
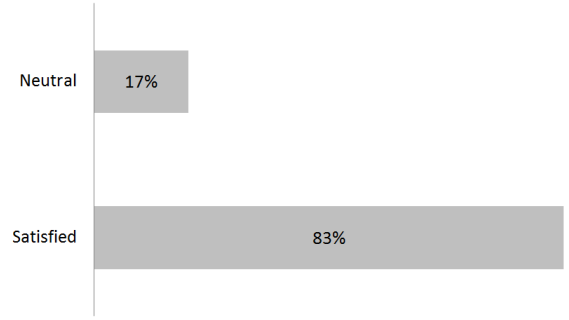
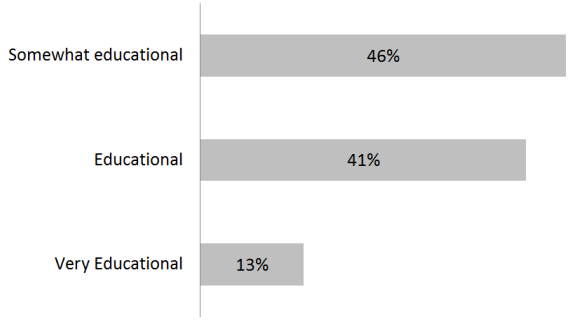
<table>
<tr><td></td><td> 
</td></tr>
<tr><td>Empowerment rate/design thinking and innovation
Source: post-event survey</td><td> 
</td></tr>
<tr><td>Verbatim/pedagogical impact
Source: Post-event survey
What other interesting things did you learn from this event?</td><td>1. “Life happens more often when you work in a group project.”
2. “Time management-Working under pressure - Team play.”
3. “Managing lack of motivation.”
4. “Openness and positivity of the event managers were great. Also, much love to our friends and lovely neighbours from Turkey! Greece <3 Philippines <3
5. Rules and concept</td></tr>
<tr><td colspan="2">

Figure 7 NVivo analysis of the empowerment of the participants – DigiEduHack</td></tr>
<tr><td>Empowerment rate/pedagogical impact
Source post-event survey
How would you rate the overall educational value of the hackathon?</td><td> 
</td></tr>
</table>

Objective 3: Innovative value of the project's outputs	
Motivation rate to continue the project/Verbatim *Source: Post-event survey*	1. "Open innovation promotes collaboration, and collaboration is always valuable." 2. "It broadens your horizon, and you can step out of your filter bubble." 3. "The thinking of each individual is unique and brings in ideas which alone would have been not yet thought of. That is the future of collaboration." 4. "Because bringing a plethora of different people together to work on something, will force them to combine their different ways of thinking." 5. "Because with Open Innovation, new perspectives and mindsets come together. The examples given become diverse." 6. "I find it to be extremely valuable. I am looking forward to opportunities such as this one. Perhaps one day in person! Knowledge should be free!"

Figure 8 NVivo analysis of the motivation of the participants – DigiEduHack

Analysis

Table 4-12 Participant dimension of the DigiEduHack - Analysis of the impacts

Strengths	Challenges
Despite the disparity in expectations, the challenge remains one of the strong motivations in this type of activity. A large majority of participants reported increased personal learning in the topic. The high rate of empowerment can be explained by the diversity of communication tools used and the Design Thinking tools (the participants could choose their own). The innovative approach of the DigiEduHack	The pedagogical impact is optimised on a short activity that responds to the organisers' needs.

empowered several skills of the participants: 85 % in Project management, 85 % in Digital Education, 78 % in Soft skills and 50 % in Technical skills. The gain of familiarity and interaction with available open data is one of the key aspects that especially stimulate students' curiosity. The hackathon is globally seen as a pedagogical activity on innovation and Design Thinking thanks to the mentoring and the available resources. Participants are accompanied into learning steps and collaborative work, but they stay autonomous by choosing their own process.	

4.5 Conclusion (socioeconomic dimension of the activity)

The event was considered transformative by changing mindsets, notably concerning collaborative work and innovation. They realised that collective intelligence and work are ways to be more proactive and efficient. From a learning perspective, it also proves the interest of the Learning Design Framework and the co-designing of the activity, which creates the conditions to produce quality work thanks to the emotional commitment. In that sense, self-monitoring empowerment is a good practice to engage a virtuous pedagogical circle.

The Hackathon is a very replicable format. The lessons learnt are concrete and will be very useful for the institution and all other HEIs (international publications). By the way, the resources were notably used for the Climackathon successfully.

Table 4-13 Socioeconomic dimension of the DigiEduHack (long-term impacts)

Level of understanding of open innovation and the social impact of citizen science *Source: post-event survey*	Do you think open innovation is valuable from that experience? 94 % yes
Understanding of open innovation and social impact – verbatim *Source: post-event survey*	1. "Open innovation promotes collaboration, and collaboration is always valuable." 2. "It broadens your horizon, and you can step out of your filter bubble." 3. "The thinking of each individual is unique and brings in ideas which alone would have been not yet thought off. This is the future of collaboration." 4. "Because bringing a plethora of different people together to work on something, will force them to combine their different ways of thinking." 5. "Because with Open Innovation, new perspectives and mindsets come together. The examples given become diverse."

	6. “I find it to be extremely valuable. I am looking forward to opportunities such as this one. Perhaps one day in person!” 7. “Knowledge should be free!”

5 Thessaloniki Citizen Science INOS – Web2Learn

Summary of the activity			
Extra-curricular	Focus: Education	Duration: Two days (+ half a day for a short presentation and another for the presentation session)	Short CEI
12 and 13 November 2020	Online (Zoom)	39 + 4 mentors/jurors (3 academics and 1 host)	Six groups (4-6 people and one group of 14 people), one mentor per group
Results expected: innovative solutions		Topic and challenge: Language learning to strengthen active citizenship/social skills	
List of pedagogical resources available for the participants			
Before the event: - information meeting: one hour webinar with bibliography, references, and inspirations		During the event: - open-education resources from Web2Learn - Canvas and tools from DigiEduHack	
Data analysed within the INOS framework			
Learning Design Framework	Completed	Identity sheet	Completed
Pre-event survey	Missing	Post-event survey	Response rate: 92 %
Other data and resources	Complementary survey completed Planning resources from DigiEduHack: IP guidelines & Hackathon rules, filled evaluation canvas Communication resources: slides presented during the webinar Dissemination resources: mailing and communication on forums Two video testimonials Three project pitch videos		

5.1 Description of the activity as an open-innovation activity (innovation dimension)

5.1.1Context and programme

Punctual event

Framework: part of an optional course. In the framework of the DigiEduHack (see the previous section for more details).

Organiser/Coordinator: Katerina Zourou (Web2Learn)

Mode of engagement of the participants: no special registrations needed, mailing to some teachers involved in designing the activity.

Funding: no funding

Format non-replicable and non-transferable

Challenge: "Elaboration of pedagogical activities, scripts and other materials for language learners who, in parallel with the acquisition of language skills, will become familiar with their active role as citizens and with the contribution of scientific data in the context of digital activism."

Planning/programme:

Citizens locally and globally are increasingly committing to social actions (climate change, anti-harassment, anti-corruption, etc.). These actions can take many forms and are enhanced by digital technologies (social networks, geotagging, open collaboration spaces, etc.). Participants are highly motivated, self-organised, and committed to the common goal in these citizen-enhanced actions. Yet, the potential is very little explored in the language education sector, where the motivation to learn a foreign language may be missing. This Challenge is about social participation in language education.

- Who: University students, Departments of Social and Educational Policy & Political Science and International Relations of the University of Peloponnese and Aristotle University. Also: graduate language teachers. Framed by mentors (one mentor/group of 3-4 people)
- How: They form small working groups and collaborate remotely.
- Where: In the e-learning system of the University of Peloponnese and in the digital telecollaboration space that we will provide you.
- When: Tuesday 10/11 for the students of the Department of Social and Educational Policy and Wednesday 11/11 for the students of the Department of Political Science and International Relations
- Attention: your work ("Solutions") must be submitted in the most complete form possible by Friday 13th at 10 p.m.

- That is? Elaboration of pedagogical activities, scripts, and other materials for language learners who, in parallel with the acquisition of language skills, will become familiar with their active role as citizens and with the contribution of scientific data in the context of digital activism.
- Final goal? In groups of four students, we aim to produce multilingual activities utilising one of the platforms or applications of Citizen Science.
- Each team must submit a Solution (the result of their work) to the digital system DigiEduHack to ensure transparency, evaluation, and reward.
- Technical/collaboration support: Slack (one channel per group) and public folder for participants on google drive.
- Experiment with students of the Departments of Social and Educational Policy & Political Science and International Relations of the University of Peloponnese

5.1.2Main characteristics

The event coordinator is not one of the universities, which means that the mentors were associated with the organisation of the activity (notably by engaging the students) and designing the activity thanks to the specificities of each curriculum. The general framework and challenges remain the same, but the participants' backgrounds orient the perspective.

The participants are all students from two different universities, and they are not mixed. Despite the framework, the activity is supported by some pedagogical tools from universities: Web2Learn provides, in addition to coordination resources, important expertise in pedagogical tools.

It has to be noted that the activity is conducted for a longer period of time than described on the website.

5.1.3Results

ECOLangues - Multi-linguistic approaches on Ecology

The project includes interactive multi-linguistic processes aiming to raise awareness around the topic of sustainability from a citizen science perspective.

French language learning and digital activism (I) + French language learning and digital activism (II)

On the one hand, sixteen university students of the Department of Social and Education Policy of the University of the Peloponnese and six university students of the Department of Political Science of the University of the Peloponnese participated in this Challenge as an opportunity to develop their language skills (in French). Their digital activism skills participated in this Challenge as an opportunity to develop their language skills (in French) and their digital activism skills.

Remove pollution in a multilingual way

This project combines interactive multilingual activities aiming to raise awareness around the topic of marine ecology.

Language Learning for Social Purposes - Winner

To raise awareness on environmental issues and multilingualism, five university students created a variety of interactive educational activities to inspire students to take an active role in a sustainable lifestyle.

Healthy diet and multilingualism

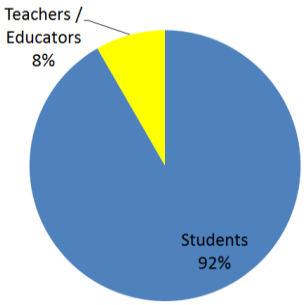
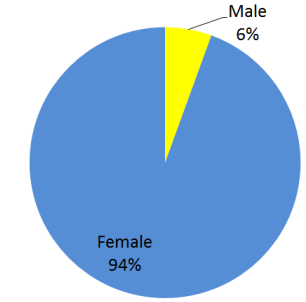
The project aims to create interesting exercises related to a healthy diet for children worldwide. Through a variety of audio-visual materials, the university students tried to capture the interest of children in healthy eating, with more than five languages, including English, Korean, Russian, Italian, and Arabic

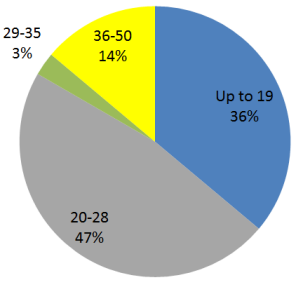
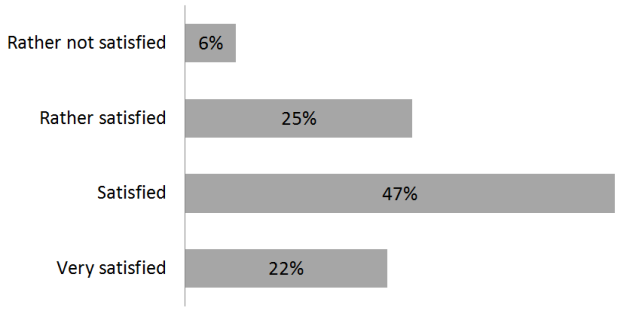
5.2 Review of the open-innovation activity (innovation dimension)

5.2.1Main achievements

Data grid

Table 5-1 Innovation dimension of the Thessaloniki CS INOS – part 1 (results)

Objective 1: Assure the quality of the activity as an open-innovation event			
Participants expected **Participants achieved**	30 (estimation) 39	**Participation rate**	100 %
Inclusivity rate/Variety of the backgrounds *Source: post-event survey*			
Inclusivity rate/Gender of the participants *Source: post-event survey*			

Inclusivity rate/Age of the participants *Source: post-event survey*	
Objective 2: meet the interest of the participants	
Overall satisfaction of the activity *Source: post-event survey*	
Verbatim/Overall satisfaction of the activity *Source: post-event survey*	1. "I think that was one of the most useful things searching for one organism, and then we have to connect this research with the foreign language. It is very helpful for learning foreign languages and cooperating with other people for a research." 2. "It would be more convenient for the participants if they were given more time to prepare the activities." 3. "The activities demand on much more time than a few days that we have." 4. "More time to explain the topics" 5. "We participated during our French class, and at the end, we had to give our exercise. I found this time short". 6. "I suggest spending more time in discussions with students". 7. "Addition of more topics" > larger topics?" *8.* "I think there should be a bigger variety of topics."
Objective 3: Create the conditions of the sustainability of collaborations and results	
Diversity of the results/Number of	Four projects were evaluated: "ECOlangues" (88/100), "Healthy diet and multilingualism", "The Multilingual and Nature Explorers" (91/100) and "Plurilingual

projects (and scores) *Source: evaluation canvas*	Marine Rescue" (90/100)

Analysis

Table 5-2 Innovation dimension of the Thessaloniki CS INOS - Analysis of the results

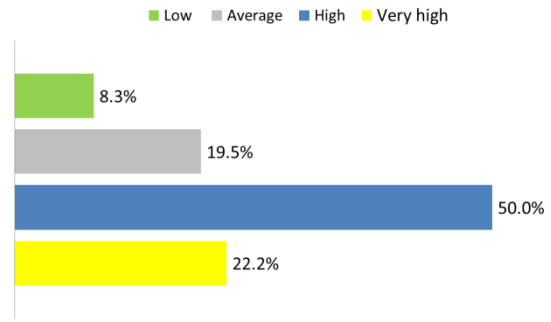
Strengths	Challenges
Globally, the activity has a good satisfaction rate. It is due to the very supportive mentorship. Teachers knew their students and were able to support, adapt and run the activity through the difficulties due to the group's heterogeneity. The interdisciplinary dimension was brought by Web2Learn, who provide inspiration, innovative tools and citizen science insight which ensure the "innovative dimension" complementary to the DigiEduHack Central Service (use of evaluation canvas, for instance). Even if one team did not manage to go to the end of the exercise, the applied projects had high marks, and the pitch session was really valuable.	Participants have globally the same profile: all students between 18 and 28, and most of them are women. Although the hackathon was part of an umbrella megaproject and consequently open to all "University students learning languages and teachers of languages", the inclusivity rate is low. The students were not mixed, and the mentors were also teachers from the same university (one teacher was an external academic). Two cohorts of students, very different from each other, participated in the activity and had different expectations. The University of Thessaloniki, highly active, produced solutions, but the University of Peloponnese, did not produce one. The event's promotion has been done via institutional networks (see resources). It shows that the activity was not that open in terms of participants. On the one hand, it was more built on a "classical format". For instance, a more shared method (Design Thinking) within the groups would have been useful.

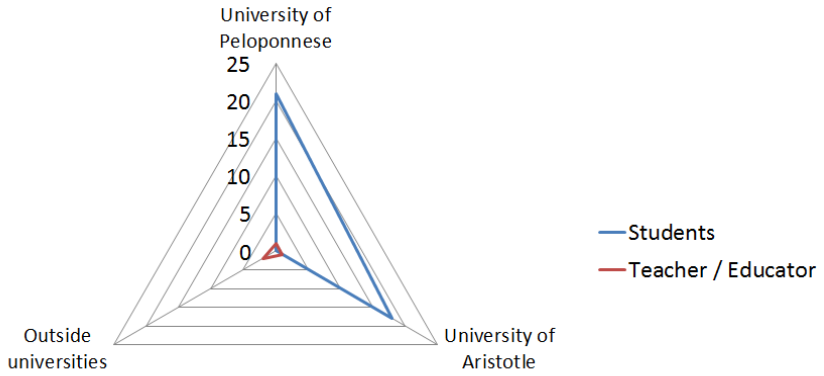
5.2.2Main impacts

Data grid

Table 5-3 Innovation dimension of the Thessaloniki CS INOS - part 2 (Impacts)

Objective 1: create new projects and collaborations

IP terms	Shared publicly
Motivation to continue the project *Source: post-event survey* How would you rate your motivation to continue the project?	
Role of the university in the community management *Source: complementary survey*	
Dissemination level of the outputs *Source: complementary survey*	
Dissemination level of the outputs *Source: complementary survey*	**International level (DigiEduHack project website)** A recorded session pitch accessible on YouTube The presentation of the solutions (DigiEduHack website)

Community-level *Source: post-event survey*	
Objective 2: create new knowledge resources	
Creation of new resources *Source: planning of resources*	• Practical/planning resources for the organisers (available on the megaprojects website): see the Host Guide • Open resources provided by the institution and Web2Learn (webinar and other documents available) • One publication
Objective 3: Develop and enrich the innovation processes in the institution	
Transferability of the activity *Source: complementary survey*	Not replicable
Dissemination level of the activity/media: institution level *Source: complementary survey*	

Analysis

Table 5-4 Innovation dimension of the Thessaloniki CS INOS - Analysis of the impacts

Strengths	Challenges
This one-time event did not aim to have a second edition. Participating in a megaproject brings an interesting insight into the projects: by encouraging the achievement of the solutions, the student's motivation to pursue the project is quite high. For the organisers, the short format using online pedagogical tools was experimental. Thanks to the evaluation tools and the resources from these partners, the educators could capitalise on its benefits.	As a one-time event, the community is composed of separated university communities and no new projects, collaborations or practices are expected through these kinds of events. Citizen Science insight is an innovative way to consider the topic, but the format of the activity was somehow more classical, notably in the collaboration and the designing aspects. The original, linked to a common course, needs adjustments to be more than an education-focused activity based on innovative tools. As an experience for the students, the benefits will be explored in reviewing the activity as a learning activity.

5.3 Description of the activity as a project-based learning activity (participant dimension)

5.3.1 Description of the learning design process (cf Learning Design Framework)

Unlike other activities, this activity follows the general framework (unclassified format) of the Learning Design Framework template. Consequently, the different phases will not be the same as the project-based learning activities that use the Design Thinking process.

Goal setting

Participants were involved in the post-evaluation of the activity.
The activity was co-designed with the teachers/mentors who are not the main organisers of the event.

Participants: anyone interested in the challenge, but mainly a cohort of university students (for which the hackathon was part of the curriculum)

Participants' pre-activity knowledge of the topic: Limited knowledge of the topic on the side of participants- the hackathon was an opportunity for upskilling

Learning goals: To learn about citizen science, To learn about social learning, To learn about technical skills

Education goals (the event is associated with student's curricula)

Openness: open software, different backgrounds of participants (groups of students belonging to different years of their studies), outputs are made open access

Activity development

Coordinator: Web2Learn

Composition of the group/collaborators: students belonging to two universities and mentors (academics)

Learning objectives: A degree of awareness of citizen science among students in Social Sciences and Humanities and a degree of familiarity with open science

Table 5-5 Learning Design Process of the Thessaloniki CS INOS (step by step) - Source: Learning Design Framework

Steps	How?	Comments of the coordinator
Pre-training phase	Webinar: Background of project, Basic/necessary knowledge of the topic to perform the main task, technical instructions for main tasks Method: Live demonstration and Q/A sessions	No comments
Learning task	Participants with guidance by mentors and facilitators Online (Zoom and Slack)	Create learning scenarios (creators are university students carrying out studies in Languages or the Social Sciences and Humanities sector at large) that embed a citizen science dimension and translate the scenario for a social purpose.
Complementary task	Method: Group reflection exercise to summarise learning outcomes	

5.3.2Description of the resources

The mentoring

Table 5-6 The mentoring in the Thessaloniki CS INOS - source: complementary survey

Who are the mentors?	Guest Teachers from other universities
What is their role?	Teacher - educator, facilitator
What are the criteria for choosing mentors?	Motivation and volunteer
How were the mentors involved in the activity?	They are involved in the training, just before the activity

The typology of skills

Table 5-7 The typology of skills developed in the Thessaloniki CS INOS - source: identity sheet

Knowledge of the topic	No previous participation to hackathons, good knowledge of language learning methodologies
Technical skills (e.g. using software)	Better mastery of digital tools for online collaboration and interaction
Soft skills (e.g. project management)	Group work, alignment to group objectives
Open innovation skills (e.g. innovation process)	No
Others, please specify	

The tools

Table 5-8 The tools in the Thessaloniki CS INOS – source: The Learning Design Framework

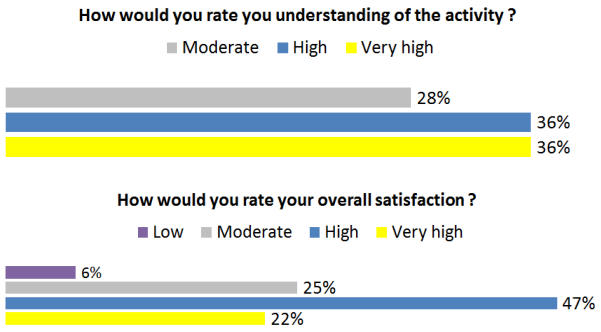
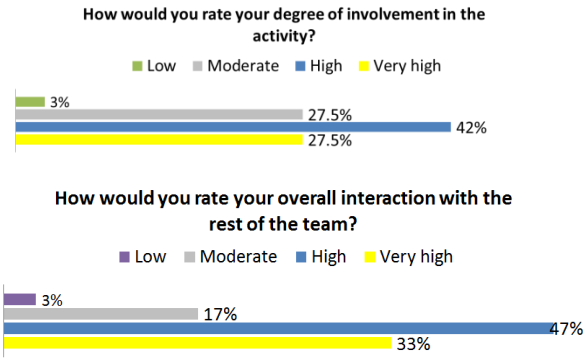
Collaboration tools	
Each participant used his own tools	
Communication tools	
Zoom and slack Provided by the organiser, developed by the participant, and used for: ★ introducing the topic ★ guiding the participants ★ presentations ★ And the final session.	
Resources	Web conferencing software (e.g., Zoom, Adobe Connect, Microsoft Teams, Skype) Collaboration and file-sharing software (e.g., Miro, Google Drive) Tips from last year winners An introductory presentation (see slide presentations) Use of open-source software and hardware in tasks.

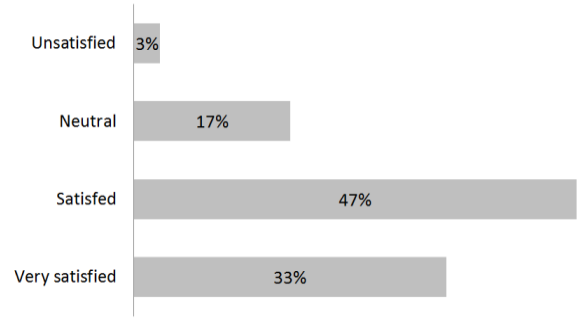
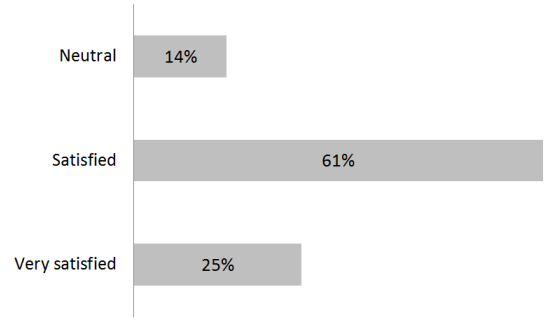
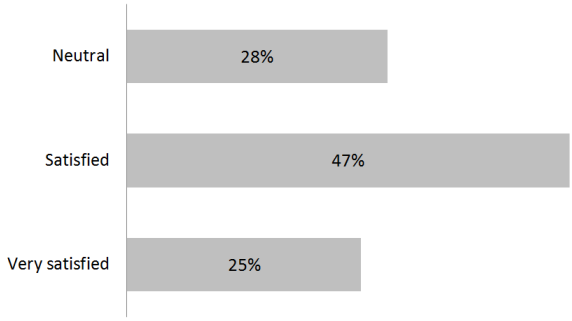
	Pedagogical resources: Platform Moodle Tools: elearning.auth.gr

5.3.3Main achievements

Data grid

Table 5-9 Participant dimension of the Thessaloniki CS INOS - part 1 (results)

Objective 1: Encourage the personal engagement/involvement	
Rate of engagement regarding the understanding of the activity *Source: post-event survey*	
Interactivity rate/general engagement and team engagement *Source: post- event survey*	
Objective 2: Facilitate the synergies between the participants	

Satisfaction rate regarding the mentoring/training *Source: post-event survey*	
Satisfaction rate regarding the accessibility to knowledge (resources and tools) *Source: post-event survey*	
Objective 3: Create the conditions of networking/partnerships	
Number of social network events/social networks interactions	No data
Rate of satisfaction regarding the networking dimension of the event *Source: post-event survey*	

Analysis

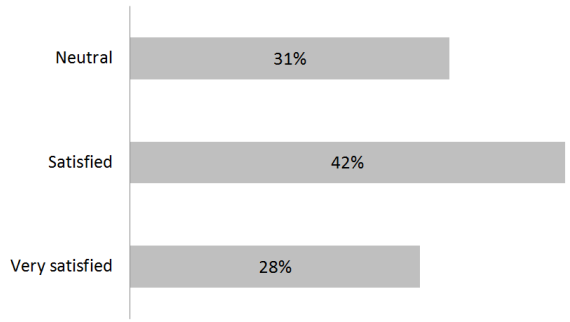
Table 5-10 Participant dimension of the Thessaloniki CS INOS - Analysis of the results

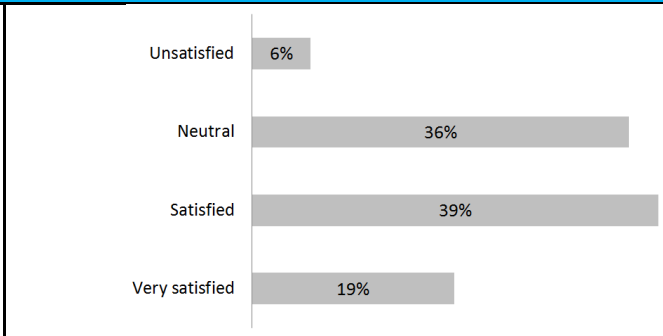
Strengths	Challenges
Despite the differences in the fields of studies (students in political and social sciences learning languages and university students carrying out studies in the foreign languages field), the rate of satisfaction are very high (83 %). 72 % of participants expressed their greater understanding of the goal, significantly increasing engagement. The rate of engagement of these students can be confirmed by the high rate of interactivity surrounding 80 % with peers and the rate of involvement at about 65 %. About 87 % of participants also expressed their satisfaction regarding the access to the training and mentors: the online tools were a key factor in this hackathon project as recognised by teachers and students. The multitude of digital tools was an opportunity and a challenge from a practical standpoint, notably by enhancing the confidence in handling technology.	47 % of participants were very satisfied, and 31 % were satisfied with their networking. 21 % were neutral: this rate can be explained by the difficulty expressed by some participants after the event to have access to the correspondence of the other separate groups. One of the main suggestions was enhancing intergroup communication to facilitate networking.

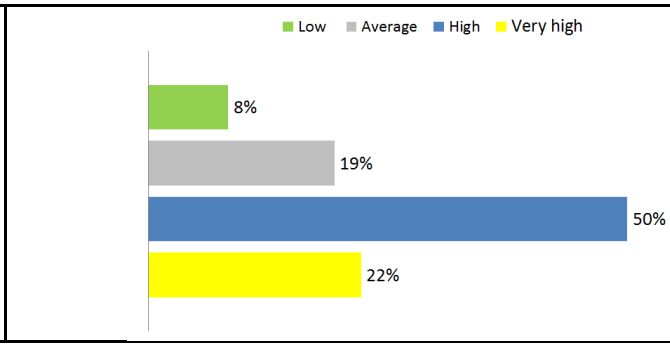
5.3.4Main impacts

Data grid

Table 5-11 Participant dimension of the Thessaloniki CS INOS - part 2 (impacts)

Objective 1: Develop personal learning and development	
Satisfaction rate/empowerment on the topic *Source: post-event survey*	

Objective 2: Motivate new skills and empowerment/fun	
Empowerment rate/new skills acquisition *Source: post-event survey*	
Verbatim/empowerment *Source: post-event survey*	1. "Learning more socially oriented, in a way that language learners both develop their language skills and engage in some form of action for a social purpose." 2. "Enhancing and increasing the committing to social actions (climate change, anti-harassment, anti-corruption, etc.)." 3. "Enhancement of these social actions can take many forms and are enhanced by digital technologies (social networks, geotagging, open collaboration spaces, etc.)." *4.* "To learn a foreign language may be missing. active citizenship and broaden perspectives of social participation."
 Figure 9 NVivo analysis of empowerment – Thessaloniki CS INOS	
Objective 3: Innovative value of the project's outputs	
Motivation rate to continue the project *Source: post-event survey*	



Analysis

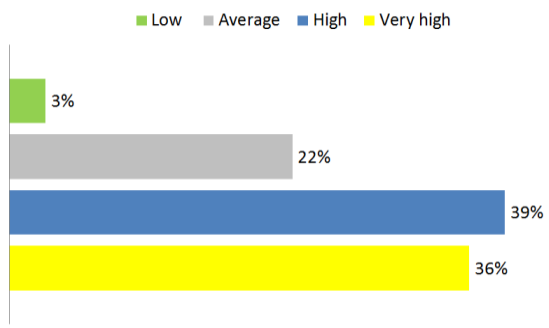
Table 5-12 Participant dimension of the Thessaloniki CS INOS - Analysis of the impacts

Strengths	Challenges
Over 68 % of participants were satisfied with the impact of the activity to enhance their skills. This group of participants confirmed that the topic was completely relevant to their studies and had basic knowledge about it. It is the same group of participants that had noted empowerment in soft skills. The participants underline different specific and original learnings: "a way to learn more socially oriented": learners both develop their language skills and engage in some form of action for a social purpose (climate change, anti-harassment, anti-corruption, etc.). When the challenge corresponds to the students' interests, the pedagogical impact of the activity is boosted, and the participants highlight the original approach of a hackathon. Indeed, the rate confirms that students engaged in topics of interest developed positive feelings, increased attentiveness, and heightened focus. Students who displayed interesting topics were more likely to remain committed to the activity and persevere through areas of difficulty. Students involved in interest-based activities were also more likely to independently explore the topic of interest (cf. motivation to continue the project).	The group was not aligned, as explained before. Hence, the activity was not so impactful for some participants (neutrality regarding the empowerment rate, even dissatisfaction regarding the empowerment and the acquisition of soft skills). These students regretted the lack of time and the fact that there were few topics to pick. Co-designing the activity with students by collecting more expectations and motivations would have improved the whole design process.

5.4 Conclusion (socioeconomic dimension of the activity)

The same difference between the two groups and two cohorts of students is visible here. The level of understanding of open innovation and social impact is much contrasted. This rate is very relative: it shows that even open science is a topic itself, the necessity of empowerment feeling, especially in soft skills, is very important to change the mindset of the participants and to open up their knowledge on open science. The project-based learning process with its co-designing principle is a very good way to reach this objective and make the activity as open as possible.

Table 5-13 Socioeconomic dimension of the Thessaloniki CS INOS (long-term impacts)

Rate of understanding of open innovation and the social impact of citizen science *Source: post-event survey*	

6 SPIRIT – Oulu University

Summary of the activity			
Intra curricular	Focus : innovation, education and entrepreneurial	Duration :Half a day	Short CEI
26 November 2020	Online	23 participants + 2 mentors	Three groups of five people
Results expected: innovative solutions		Topic and challenge: Entrepreneurial Mindset in Education trends and collaborative learning	
List of pedagogical resources available for the participants			
Before the event: - pre-event survey (on a specific template focusing on the expectations/not INOS template)		During and after the event: - a general presentation focusing on the gains of the activity - toolbox: canvas, empathy map (Jamboard)	
Data analysed within the INOS framework			
Learning Design Framework	Completed	Identity sheet	Completed
Pre-event survey (special template)	Response rate: 95 %	Post-event survey	Response rate: 21 % (non-representative, just trends)
Other data and resources	Complementary survey completed Communication resources: PowerPoint presentations as an introduction to the session Dissemination resources: communication tools for social networks Two video testimonials Outputs are empathy maps and Jamboards (see pedagogical resources) Screenshots of the event		

6.1 Description of the activity as an open-innovation activity (innovation dimension)

6.1.1Context and programme

Part of a course (open badge)/regular activity

Framework: the course is entitled "Entrepreneurship in education."

Organiser: LET master's degree programme (Learning and Educational Technology)

Mode of engagement of the participants: no special registrations needed and communication tools

Funding: no funding

Format replicable and transferable

Challenge: "SPIRIT is an event for creating innovative solutions for the changing world in the field of education."

Motivation: Curiosity (inspirations and meet new people), be a part of a group/innovation in the field of education, challenge and learn innovation, take part in a co-creation process, broaden my thinking (entrepreneurial mindset), gain insight from a global audience, learn about the field of Ed Tech/explore the opportunities.

Technique: megatrends in learning (the population is ageing, relational power is strengthening, the economy is seeking direction, technology is becoming embedded in everything).

Planning:

SESSION 1: 8:45-9:00

- Check in 9:00-9:30 (30 min) Introduction
- Break (10 min)
- SESSION 2: 9:40-11:10 (1 hour 30 min) Team working in breakout rooms
- Break (10 min)
- SESSION 3: 11:20-12:00 (40 min)
- Conclusion

Learning & Educational Technology Research Unit (LET)

The LET programme is built on over 20 years of ground-breaking research in the Learning and Educational Technology Research Unit. The unit performs top research on learning sciences in collaboration with international networks by investigating how people learn. LET students are closely connected with the latest research in their everyday studies.

6.1.2Main characteristics

SPIRIT is a very short and open activity (the shortest one). This format, led by the LET master's degree programme, allows to communicate broadly and welcome a large panel of participants.

"The event was a great way to bring together students, their invited colleagues/friends and alumni. There were altogether 22 registered participants, but only 15 showed up at the beginning of the event. They were divided into three groups of five people. During the event, two more participants showed up, and because they were alumni, they were given a role of a facilitator in the event. One of them visited all the breakout rooms in Zoom where the groups worked and gave input to their innovation process. The other one was asked to comment on the groups' final presentations." Karoliina Hautala – Oulu University

Other characteristics, participants submitted to have an open badge after the event.

6.1.3Results

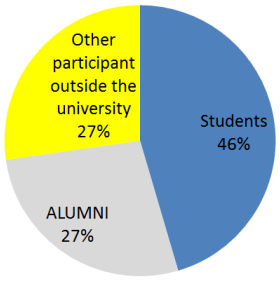
The results are the Jamboards accessible online and shared on Instagram via the LET programmes Instagram.

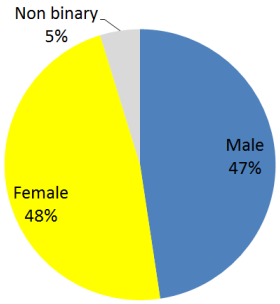
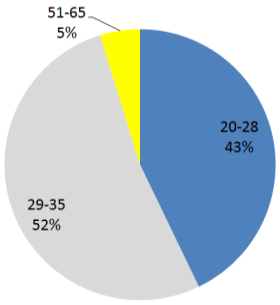
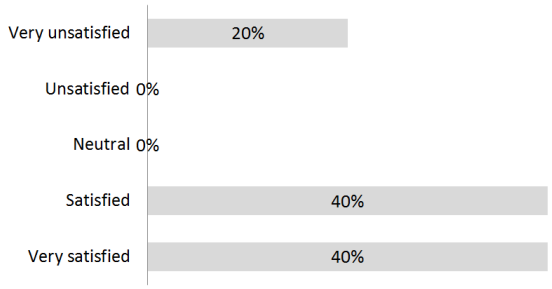
6.2 Review of the open-innovation activity (innovation dimension)

6.2.1Main achievements

Data grid

Table 6-1 Innovation dimension of the SPIRIT - part 1 (results)

Objective 1: Assure the quality of the activity as an open-innovation event			
Participants expected **Participants achieved**	25 15	**Participation rate**	60 %
Inclusivity rate/Variety of the backgrounds *Source: pre-event survey*			

Inclusivity rate/Gender of the participants *Source: pre-event survey*	
Inclusivity rate/Age of the participants *Source: post-event survey*	
Interdisciplinarity and resources	One unique resource: slide presentations presenting the trends of the future of education
Objective 2: meet the interest of the participants	
Overall satisfaction of the activity *Source: post-event survey*	

Relevance of the topic/motivation rate *Source: pre-event survey* (What motivates you to participate in the activity?) - open question	 *Figure 10 NVivo analysis motivation of the participants verbatim - SPIRIT*
Verbatim/Suggestions of improvements *Source: post-event survey*	**General** 1. "facilitation" 2. "incorporate ice-breaking activity." 3. "access to more resources for a creative session" 4. "structure for collaboration" 5. "It was a spontaneous interruption of expert talk in the working group activities. We felt a little time pressure from that." 6. "Getting to know the people you'll be collaborating with before the event or having more time to interact with each other during the event, could improve the quality of the collaboration." **Suggestions of improvements on the content:** 7. "How to prepare learners for jobs not existing yet." 8. "Instead of emphasising the "trends", one can focus more on the importance" of that specific topic. It could just be the choice of words, but it is much more impactful if it is properly used." 9. "guidelines for intercultural collaboration could be an interesting idea to explore." **Suggestions of improvements on the implementation of OIAs:** 10. "Just do it exactly like in the SPIRIT." 11. "When breaking up into groups, each group should have at least one facilitator or someone with expertise on the topic at hand; this could make collaboration during the event more engaging and productive
Objective 3: Create the conditions of the sustainability of collaborations and results	
Diversity of the results/Number of projects	Not specified. This factor was determined according to the number of groups.

Analysis

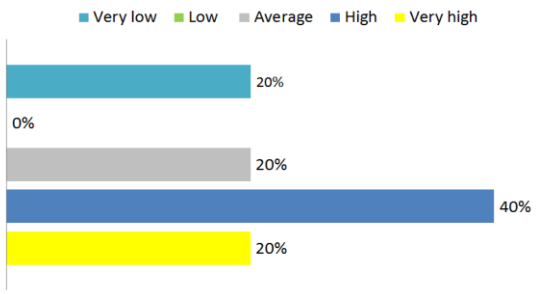
Table 6-2 Innovation dimension of the SPIRIT -Analysis of the results

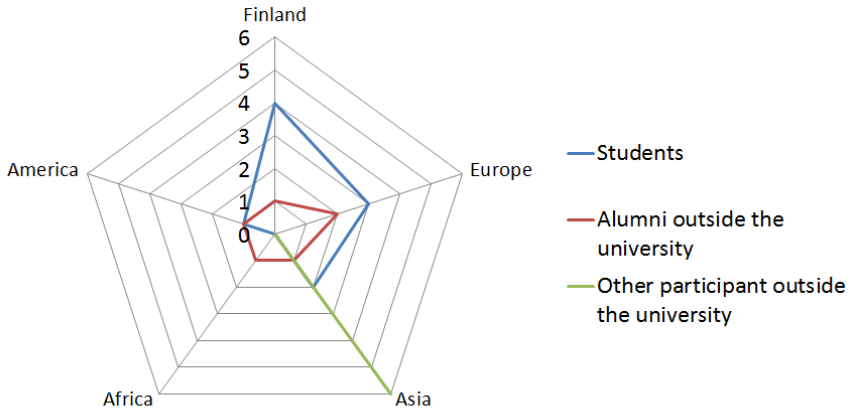
Strengths	Challenges
Because of the low response rate of post-event surveys, this snapshot of participants' profiles is based on the pre-event survey. Due to the short format, and the social network communication, the activity demonstrates a high level of inclusivity: genders, ages... The LET community comprises students, persons external from the university, and ALUMNI who have a specific role in open innovation. The short format is not too engaging for people, especially workers: this activity can be seen as a networking event. As resources, a quick introduction defines a starting point for all participants, whatever their backgrounds are.	The response rate does not conclusively determine if the activity meets the participants' interests, but the participants' comments can give an overview of the possible improvements of this activity. Some participants wanted more "structure", "facilitation", or "ice-breaking sessions". The results have not been "achieved" (Jamboard presentations), but they are still available online. The networking dimension of such an activity is really important in such a short session, so the activity has to target precisely and efficiently the needs of a specific community united by the training and topic (see the cloud words).

6.2.2Main impacts

Data grid

Table 6-3 Innovation dimension of the SPIRIT - part 2 (impacts)

Objective 1: create new projects and collaborations	
IP terms and conditions on the output Available to all participants via Google Drive	
Motivation to continue the project *Source: post-event survey* How would you rate your motivation to continue the project?	

Role of the university in the community management *Source: complementary survey*	
Dissemination level of the outputs *Source: complementary survey*	**LET Community level** (Social networks like Instagram, for instance)
Community-level *Source: pre-event survey*	
Objective 2: create new knowledge resources	
Creation of new resources *Source: identity sheet*	- Jamboard resources - take away resources
Objective 3: Develop and enrich the innovation processes in the institution	
Transferability of the activity *Source: complementary survey*	**Yes**

Dissemination level of the activity *Source: complementary survey*	

Analysis

Table 6-4 Innovation dimension of the SPIRIT - Analysis of the impacts

Strengths	Challenges
As a very short event, the activity allows for various backgrounds, especially concerning nationality. The communication, centred on the LET community composed of students, Alumni and people interested in the future of education in general, have some common expectations on the long-term impacts, notably concerning networking. As a coordinator, OU proposes to ensure an animation role (information, publication of the direct outputs). The short event has no vocation to produce workable results; the interest is in the process. But the Jamboard resources are made available for the community as "take-away resources". As said by one participant, the takeaway resources are an important thing to keep track of the experience.	With this kind of short event, the focus is not on the sustainability of collaborations and results in the short term. Participants are free to keep in touch after the event, but the role of the coordinator does not go that far. This regular activity feeds, with this exercise, the animation of a specific community composed of students and ALUMNI who can take an unexpected role in mentoring and community-building. As a perspective of improvement, the coordinator, which has an informational role, can create networking tools by taking most of the ALUMNI. Some efforts are made to valorise the corporations by the outputs, and some take away resources.

6.3 Description of the activity as a project-based learning activity (participant dimension)

6.3.1 Description of the learning design process (cf Learning Design Framework)

Goal setting

Participants are involved in the evaluation part (survey before and after the activity)

Participants: anyone interested in the future of education, LET Master students and ALUMNI, entrepreneurs in education course students

Participants' pre-activity knowledge of the topic: from limited to advanced

Learning goals: To learn about the future of education, To learn about collaborative learning

Research and innovation goals: innovation goals

Sustainability goals: Quality education

Openness: open software, different backgrounds of participants, outputs are made open access

Activity development

Coordinator: LET teachers and staff

Composition of the group/collaborators: University post-graduate and under-graduate students, citizens, and non-experts

Learning objectives: To learn about collaboration learning skills

Table 6-5 Learning Design Process of the SPIRIT (step by step) - Source: Learning Design Framework

Steps (Design thinking method)	How?	Comments of the coordinator
Ideation phase (topic exploration, need-finding, brainstorming solution ideas)	Participants choose the topic from a domain provided by the organiser(s) **Participants with guidance by mentors and facilitators** **Online (Zoom and Jamboard)** **Method:** group discussion/brainstorming	PHASE 1: Introducing (10 min) PHASE 2: Selecting trend (20 min) 1. Read the trends from Jam Board. 2. Select one trend and mark your name beside the trend. 3. When all team members have marked the trend, have a round one by one and describe your reasons to select this specific trend. 4. Prioritise together selected trends and select one trend for further working. PHASE 3: Brainstorming (20 min) ● Discuss the selected trend and highlight the meaning of the trend. ● Make sticky notes on Jam Board. ● After discussion, conclude together 3-5 notions.
Design phase (Design model(s) and prototype design(s))	**Participants with guidance by mentors and facilitators** **Online (Zoom and Jamboard)**	PHASE 4: Towards your solution (30 min) ● Based on the ideas you get from the trend, create a future service, solution, product, or procedure related to your subjects of interest that would make it better. ● Discuss, share your ideas, and make sticky notes on Jam Board.

		PHASE 5: Solution in a nutshell (10 min) Describe your solution on Jamboard.
Implementation phase (User testing, Reiterative design)	Online (Zoom and Jamboard) **Method:** Facilitators give feedback to groups about their solutions	
Communication phase (presentation and discussion of final outputs, Dissemination of final outputs for real-world application)	Online (Zoom and Jamboard) **Method:** presentations, Publication and Documentation of project outcomes)	Groups present their solutions to all the participants and get feedback from the facilitators. The solutions are also published online on social media.
Evaluation method	Online (Zoom and Jamboard) **Method**: Empathy Map	Participants are asked to share their thoughts about their take-homesfrom the event by filling the empathy map on Jamboard.

6.3.2Description of the resources

The mentoring

Table 6-6 The mentoring in the SPIRIT - source: complementary survey

Who are the mentors?	OU teachers
What is their role?	Facilitate and provide guidance, evaluate the artefacts
What are the criteria for choosing mentors?	Teaching expertise (specialisation in a field), Teacher involved in the courses, engaged, and motivated teacher.
How were the mentors involved in the activity?	They are organisers (involved in all stages described) and the training/assessment phase.

The typology of skills

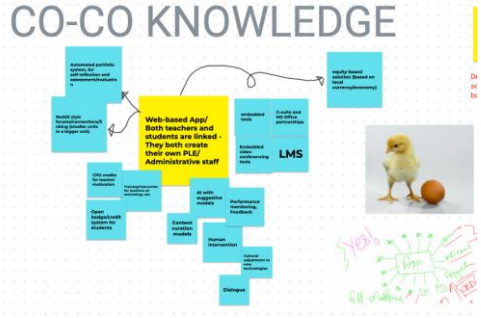
Table 6-7 The typology of skills developed in the SPIRIT - source: identity sheet

Knowledge of the topic	Trends in education

Technical skills (e.g., using software)	Distance learning with specific online tools (Zoom and Jamboard)
Soft skills (e.g., project management)	Collaboration skills, problem-solving and entrepreneurial mindset
Open innovation skills (e.g., innovation process)	Innovation process, cross-border teamwork
Others, please specify	

The tools

Table 6-8 The tools in the SPIRIT - source: Learning Design Framework

Collaboration tools	
Jamboard used as a collaborative tool to: ★ create solutions and disseminate them online after the event ★ share the outputs between the participants	 *Figure 11 Screenshot of the Jamboard 1 – SPIRIT*  *Figure 12 Screenshot of the Jamboard 2 - SPIRIT*
Communication tools	
Zoom	

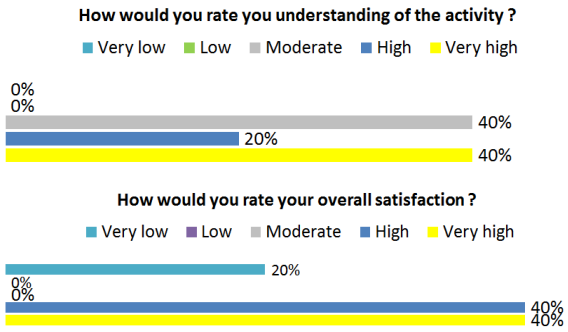
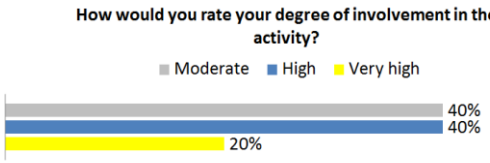
Provided by the organiser, developed by the participant, and used for: ★ introducing the topic ★ guiding the participants ★ presentations ★ And the final session.	
Resources	Introductory presentation on megatrends Use of open-source software and hardware in tasks

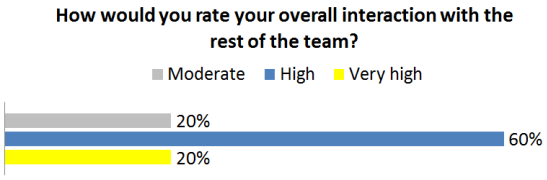
6.4 Review of the project-based learning activity (participant dimension)

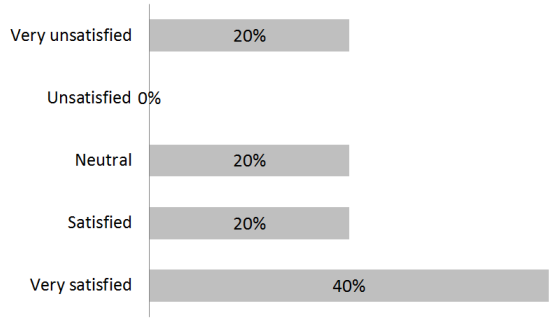
6.4.1Main achievements

Data grid

Table 6-9 Participant dimension of the SPIRIT - part 1 (results)

Objective 1: Encourage the personal engagement	
Rate of engagement regarding the understanding of the activity *Source: post-event survey*	
Interactivity rate/general engagement and team engagement *Source: post-event survey*	

	
Verbatim/expectations *Source : pre-event survey* *Figure 13 NVivo analysis of the expectations of the participants - SPIRIT*	
Objective 2: Facilitate the synergies between the participants	
Rate of satisfaction regarding the mentoring	No data
Rate of satisfaction regarding the tools	No data
Feedback on tools/verbatim *Source: complementary survey*	"Online mode of delivery allowed to bring people together to collaborate globally" - the coordinator
Objective 3: Create the conditions of networking/partnerships	

Rate of satisfaction regarding the networking dimension of the activity *Source: post-event survey*	
Networking dimension with the activity/verbatim *Source: post-event survey*	"Great way to bring together students, alumni and other stakeholders to create networks" - the coordinator

Analysis

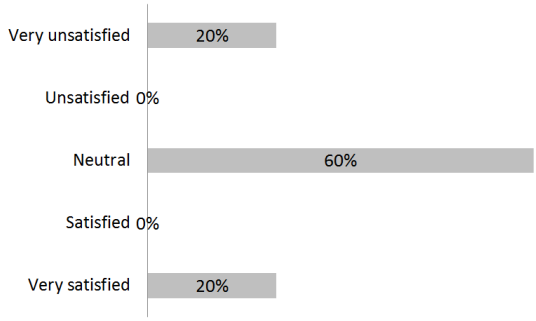
Table 6-10 Participant dimension of the SPIRT - Analysis of the results

Strengths	Challenges
This In Vivo analysis shows the main interests of the learners in participating in this activity: the scope of learning (social innovation and the use of the EdTech), the collaborative aspect, the topic and challenges related to real life, the desire to be part of the community interested to change the educational method and approach, to think out the box and to develop a critical thinking and some new skills. At least, the engagement and the interactivity rate are not negative in the few surveys collected. But due to the low answer rate of the post-event survey, it is very difficult to analyse the engagement.	The networking dimension, which seems to be important for the participants, is deceptive for at least one participant. This dimension has to be worked out.

6.4.2Main impacts

Data grid

Table 6-11 Participant dimension of the SPIRIT - part 2 (impacts)

Objective 1: Develop personal learning and development	
Empowerment on the topic	no data
Empowerment rate/ Technical skills acquisition	no data
Objective 2: Motivate new skills and empowerment/fun	
Empowerment rate/new skills acquisition *Source: post-event survey*	
Verbatim/empowerment	no data
Objective 3: Innovative value of the project's outputs	
Quality of the outputs (life of the product, publications...)	no data

Analysis

Table 6-12 Participant dimension of the SPIRIT - Analysis of the impacts

Strengths	Challenges
In a very short activity, empowerment is very difficult to evaluate for the participants. The activity is not seen as a pedagogical activity but more as a "teaser event" on open innovation, learning trends, and the importance	The heterogeneity of participants generates heterogeneity of satisfaction rate regarding the acquisition of new skills. As an innovation-focused activity, work on aligning the

of collaborative work. It is really an "experimental time" to open up the participant's mindset and create networking conditions, notably with the alumni and external partners. Therefore, the format is interesting to develop, but without data, the improvements can be only hypothetical.	participants' expectations has to be done.

6.5 Conclusion (socioeconomic dimension of the activity)

The socioeconomic impact is based on community-building. The short format is adapted to a certain objective about making new relationships useful from a professional perspective. The development of a link between Alumni and students can be really impactful in the long term.

7 Civic engagement project – Tallinn University

<table>
<tr><td colspan="4">Summary of the activity</td></tr>
<tr><td>Extra-curricular</td><td>Focus : education</td><td>Duration : 10 days</td><td>Short CEI</td></tr>
<tr><td>10-20 January 2021</td><td>Online</td><td>12 + 5 mentors</td><td>Three groups of 3-5 people</td></tr>
<tr><td colspan="2">Results expected: public engagement project planning advanced with design thinking canvases</td><td colspan="2">Topic and challenge: Civic engagement technologies and approaches</td></tr>
<tr><td colspan="4">List of pedagogical resources available for the participants</td></tr>
<tr><td colspan="2">Before the event:
- Not precise</td><td colspan="2">During and after the event:
- Values mapping on Trello Board
- Canvas - Future wheel on Mural
- Canvas - Persona mapping on Mural
- Canvas - Journey map on Mural
- Canvas - Threat mapping in civic engagement activities in Miro
- Canvas - Impact mapping on Mural
- Business canvas on Mural</td></tr>
<tr><td colspan="4">Data analysed within the INOS framework</td></tr>
<tr><td>Learning Design Framework</td><td>Unfilled</td><td>Identity sheet</td><td>Completed</td></tr>
<tr><td>Pre-event survey</td><td>Response rate: 58.82 %</td><td>Post-event survey</td><td>Response rate: 58.82 %</td></tr>
<tr><td>Other data and resources</td><td colspan="3">Presentations of the results (in PDF)
Screenshots</td></tr>
</table>

7.1 Description of the activity as an open-innovation activity (innovation dimension)

7.1.1Context and programme

Framework: part of winter school organised together with CItizenos.com and digital civic engagement community

Organizer/ coordinator: Tallinn University (Kai Pata, Associate Professor of Educational Technology, School of Digital Technologies) and Citizenos.com

Inspiration: Value-based design activity, innovation service design activity

Mode of engagement of the participants' Communication tools: mailing, social networks, External calls of participation, Networking

Funding: No financial contribution, the human contribution from the sponsor

Activity can be reiterated and format replicable

Online format: allow to add more mentors who could attend online

No detailed planning

7.1.2Main characteristics

As a long-run Hackathon, the participants could work on their own project's ideas and go far on documenting the artefacts thanks to different Design Thinking tools. As an innovation service design activity, the participants could go through different stages of a prototype development: definition of the persona, impact and business issues, mapping on civic engagement, etc.

The co-organisation with Citizen OS, an open-source civic tech non-profit based in Tallinn, contributed to the realisation of the projects. As explained by the coordinator, "the participants advanced their project ideas. One of those was conducted on a large scale in Malaysia."

7.1.3Results

Source: OIA - Civic engagement projects

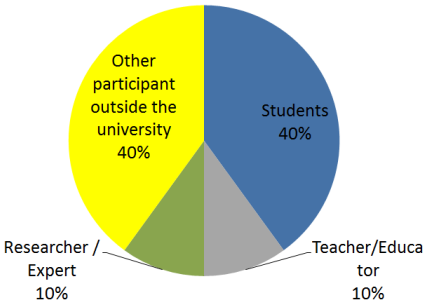
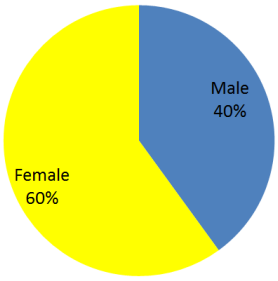
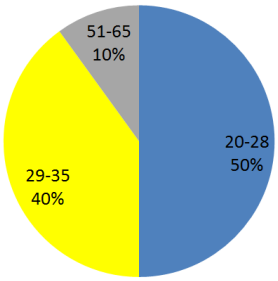
- TEAM 1/Street, vendor's community, empowering in Indonesia
- TEAM 2/Opinion festival to empower women in Indonesia
- TEAM 3/Digital transformation of vulnerable young women

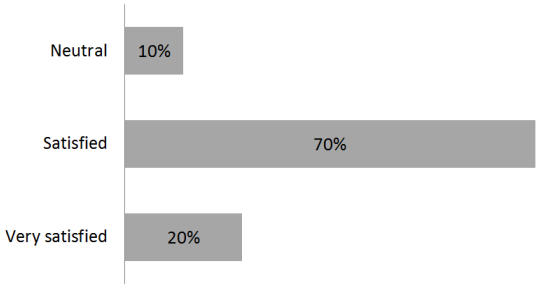
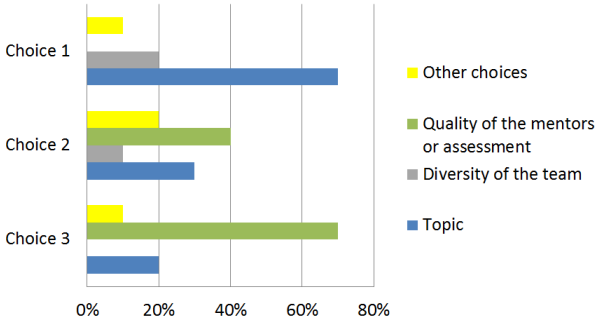
7.2 Review of the open-innovation activity (innovation dimension)

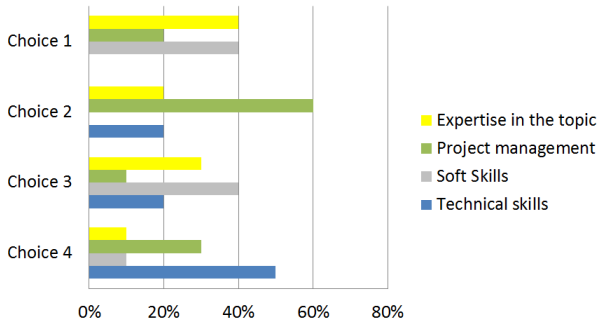
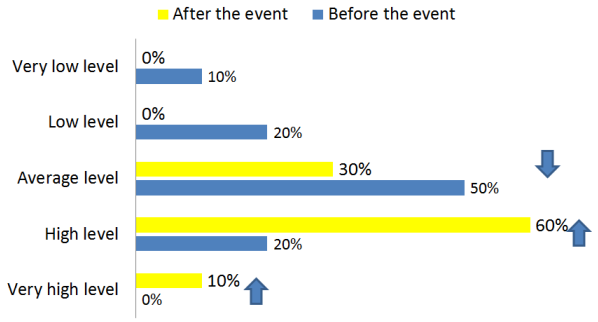
7.2.1Main achievements

Data grid

Table 7-1 Innovation dimension of the Civic Engagement activity - part 1 (results)

Objective 1: Assure the quality of the activity as an open-innovation event			
Participants expected **Participants achieved**	12 + 5 12+5	**Participation rate**	100 %
Inclusivity rate/Variety of the backgrounds *Source: pre-event survey*			
Inclusivity rate/Gender of the participants *Source: pre-event survey*			
Inclusivity rate/Age of the participants *Source: pre-event survey*			
Variety of the results *Source: presentation of the results*	Three different services on three different territories Three different social topics linked to inclusivity		

Objective 2: meet the interest of the participants	
Overall satisfaction of the activity *Source: post-event survey*	
Verbatim/overall satisfaction of the activity *Source: post-event survey*	1. "Mentoring goals and the mentoring process could be made more visible at the beginning of the group forming phase. :)" 2. "Lack of practical participation" 3. "I would increase time for practical work in the first week. Especially I felt the lack of time with Theory of Change and Impact. Also, I recommend creating a space for the team to get to know each other in a more relaxed mode. It is difficult to agree on roles and start teamwork without having a good understanding about each other and the motivation of each other." 4. "it's good enough." 5. "Impact part could be longer." 6. "Maybe a bit more lectures, but all in all, it was super!" 7. "Would be cool if we also play games together sometimes using online tools etc."
Relevance of the topic/motivation rate *Source: pre-event survey* (What motivates you to participate in the activity?)	

Relevance of the topic/expectations and achievements *Source: pre-event survey* What are your expectations in terms of learning?	
Level of knowledge of the topic before and after the activity *Source: pre and post-event survey*	

Objective 3: Create the conditions of the sustainability of collaborations and results			
Diversity of the results/Number of results or projects	Project 1 - Pecha Kucha - Street Vendors Indonesia Our story is from vendors running in the streets to Vendor Networks running the streets.	Project 2 - Opinion festival to empower women in Indonesia	Project 3 - Digital transformation of vulnerable young women

Analysis

Table 7-2 Innovation dimension of the Civic Engagement Activity - Analysis if the results

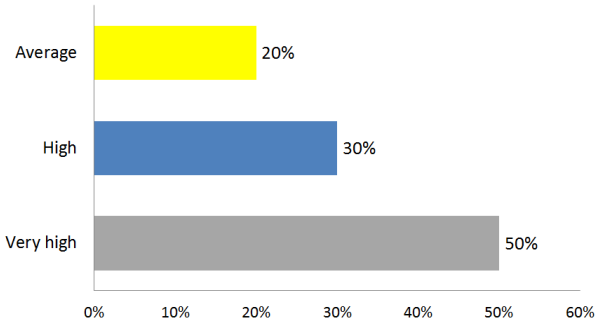
Strengths	Challenges
The activity is very inclusive. The openness of the format, enhanced by the online dimension, which engaged more mentors, attracted different backgrounds with different interests. For instance, the activity involved a majority of women, which is	**The main suggestions for improvement concern adjustments: session time, more conviviality time to add or even visibility of mentoring. The mentoring and the use of open data maximised the conditions of sustainability of the resources.**

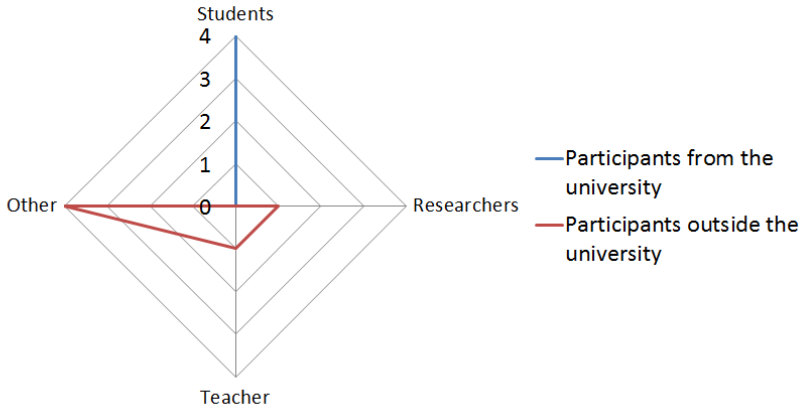
reflected in the topic chosen. **Moreover, the impact on the results is tangible: the projects were based on different territories which have their own social issues. The pre-event survey shows how important it is for participants to increase their competencies on the topic. The satisfaction rate is generally very high: the response to the expectations formulated is a determining element of the response.**	**The participants, mainly professionals already in the labour market, have a particular appetite for networking and project management.**

7.2.2Main impacts

Data grid

Table 7-3 Innovation dimension of the Civic Engagement Activity - part 2 (impacts)

Objective 1: create new projects and collaborations	
IP terms	Not defined, shared openly in a Facebook group
Motivation to continue the project *Source: post-event survey* (How would you rate your motivation to continue the project?)	
Motivation to continue the project/verbatim *Source: post-event survey* (How would you rate your motivation to continue the project?)	1. I do love the project but wouldn't be probably able to lead it. 2. I would be happy to work on projects across borders. 3. My team was amazing 4. If the others are also motivated, it would be great to realise it

Role of the university in the community management *Source: complementary survey*	
Dissemination level of the outputs *Source: complementary survey*	Other
Community-level *Source: post-event survey*	 **Participants came from all other the world (no precise statistics)**
Objective 2: create new knowledge resources	
Creation of new resources *Source: identity sheet*	• The pitching session used google slides or Sutori.com presentation • Educational resources are published on the university website
Objective 3: Develop and enrich the innovation processes in the institution	
Transferability of the activity *Source: complementary survey*	**Yes** (“We plan to run it again with civic engagement groups” - the coordinator)

Dissemination level of the activity *Source: complementary survey*	

Analysis

Table 7-4 Innovation dimension of the Civic Engagement Activity - Analysis of the impacts

Strengths	Challenges
The diversity of the team was not a primary criterion of participation for the participants, but it seems that this community-building succeeded. Some community management tools were developed: we know that one of the projects is going further in its realisation. A large number of participants would be motivated to pursue the projects, which is very satisfying. This motivation is undoubted because of the community animation offered by the university and the very involved mentors. **Moreover, the results are harmonised: a standard canvas was furnished to the participants and participants could share their presentations with each other and compare them. The Facebook group was allowed to share these results with the entire community.**	**The participants could be diversified (see the network scheme) and the community consolidated with social events, but these are small adjustments.**

7.3 Description of the activity as a project-based learning activity (participant dimension)

7.3.1Description of the learning design process (cf Learning Design Framework)

Goal setting

Participants co-design the activity

Participants: civic activists from different countries

Participants' pre-activity knowledge of the topic: intermediate level

Learning goals: To learn online teamwork and collaboration, To learn about civic engagement practices, To learn about the innovation process and Design Thinking

No research and innovation goals

Openness: open software, different backgrounds of participants, outputs are made open access

Activity development

Coordinators: Tallinn University (Kai Pata)

Composition of the group/collaborators: Academic researchers, students, entrepreneurs

Learning objectives: To learn online teamwork and collaboration, To learn about civic engagement practices, To learn about the innovation process and Design Thinking

Table 7-5 Learning Design Process of the Civic Engagement Activity (step by step) - Source: Learning Design Framework

Steps (Design thinking method)	How?	Comments of the coordinator
Ideation phase (topic exploration, need-finding, brainstorming solution ideas)	**Participants and mentors** **Online (Zoom)** **Method: s**econdary research, observing and consultations with target end-users, group discussion/brainstorming	Guided discussion and independent teamwork (supported by online tools). Mentors created the method. Tools were chosen by the mentors and by the participants. See resources below
Design phase (Design model(s) and prototype design(s))	**Participants and mentors** **Online (Zoom)**	Guided discussion and independent teamwork (supported by online tools). Mentors created the method. Tools were chosen by the mentors and by the participants. See resources below
Implementation phase (User testing, Reiterative design)	**Participants and mentors** **Online (Zoom)** **Method:** test runs with target users, Consultation with experts	Guided discussion and independent teamwork (supported by online tools). Mentors created the method. Tools were chosen by the mentors and by the participants. See resources below
Communication phase (presentation and discussion of final outputs, Dissemination of final outputs for real-world	**Online (**Zoom and Facebook groups**)** **Method:** presentations, Group discussions, Consultation with experts and Documentation of	Mentors will view pitches on Zoom and ask teams questions after the presentations. Teams presentations are published

application)	project outcomes)	on Facebook groups

7.3.2Description of the resources

The mentoring

Table 7-6 The mentoring in the Civic Engagement Activity - source: complementary survey

Who are the mentors?	External partners, consultants, freelancers: mentors from the civic technology area
What is their role?	Share advice and give insight on their specific expertise, facilitate, and provide guidance
What are the criteria for choosing mentors?	Motivation and volunteer, the field of expertise, specialisation in a field
How were the mentors involved in the activity?	They are involved in the preparation of the activity, in the pre-training (tool) and the evaluation of the activity (assessment phase)

The typology of skills

Table 7-7 The typology of skills developed in the Civic Engagement Activity - source: identity sheet

Knowledge of the topic	Civic engagement practices
Technical skills (e.g., using software)	Online teamwork, online collaborative software, online innovation tools
Soft skills (e.g., project management)	Online teamwork and collaboration
Open innovation skills (e.g., innovation process)	Innovation process (open-innovation), Design thinking
Others, please specify	Argumentation practices

The tools

Table 7-8 The tools in the Civic Engagement Activity - source: Learning Design Framework

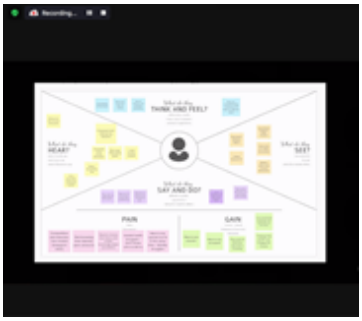
<table>
<tr><th colspan="2">Collaboration tools</th></tr>
<tr><td>Trello.com, Mural.co, miro.com, answergarden, sutori.com
★ used as a collaborative tool for teams and design thinking application
Google Drive folder
★ Used as a collaborative tool to share files within the teams</td><td> 
Figure 14 Screenshot of the Mural Board - Civic Engagement Activity

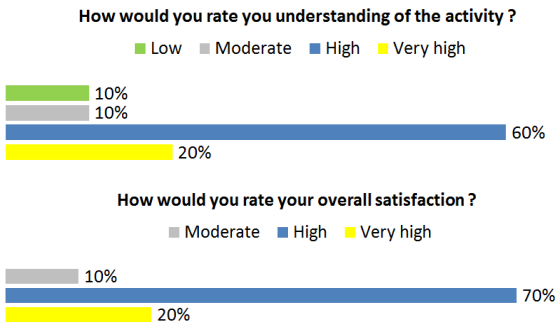
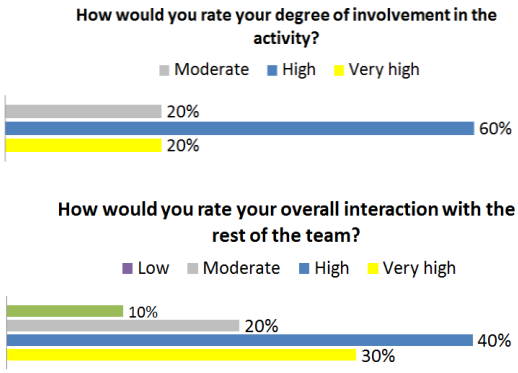
Figure 15 Screenshot of the Trello board - Civic Engagement Activity</td></tr>
<tr><th colspan="2">Communication tools</th></tr>
<tr><td colspan="2">Zoom
Provided by the organiaer, developed by the participants, and used for:
★ Presentations
★ General interactions
★ Each team established their own team space in messenger or WhatsApp
A Facebook group was used for the whole community</td></tr>
<tr><th>Resources</th><td>Open data (Citizen OS)
Use of open-source software and hardware in tasks.</td></tr>
</table>

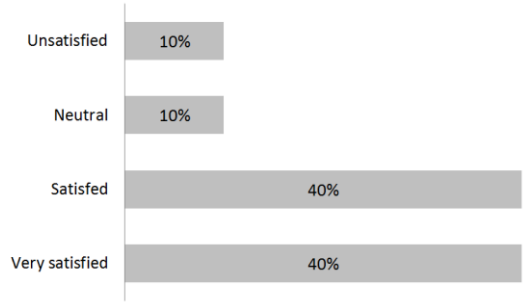
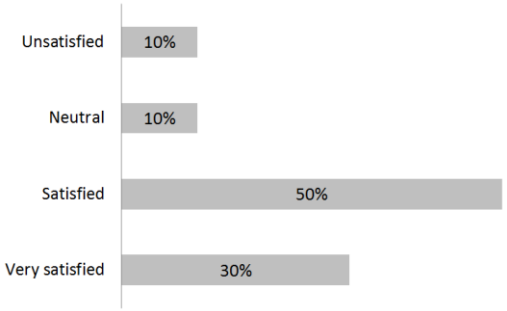
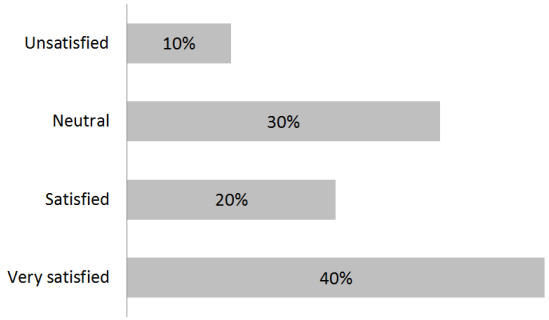
7.4 Review of the project-based learning activity (participant dimension)

7.4.1Main achievements

Data grid

Table 7-9 Participant dimension of the Civic Engagement Activity - part 1 (results)

Objective 1: Encourage the personal engagement	
Rate of engagement regarding the understanding of the activity *Source: post-event survey*	
Interactivity rate/general engagement and team engagement *Source: post-event survey*	
Objective 2: Facilitate the synergies between the participants	

Rate of satisfaction regarding the mentoring and the training *Source: post-event survey*	
Rate of satisfaction regarding the accessibility of the tools *Source: post-event survey*	
Feedback on tools *Source: complementary survey*	1. "easy access to the tools" 2. "the same tools would be used if there was no pandemic context (rate exceeding 85 % of satisfaction)."
Objective 3: Create the conditions of networking/partnerships	
Number of social network events/social networks interactions *Source: identity sheet*	Social networks tools between the participants: Facebook group
Rate of satisfaction regarding the networking dimension of the activity *Source: post-event survey*	
Verbatim regarding the	1. "I didn't see much space to network with people outside my team."

networking dimension of the activity *Source: post-event survey*	2. "Also, as mentioned before, more space for informal get to know each other with the team would be good to build trust." 3. "maybe some methods about how to get a team running." 4. "It was a great opportunity to get to know motivated people from all over the world." 5. "The people were very inspiring it was super hard because there was kind of little time to talk about other things than the work."

Analysis

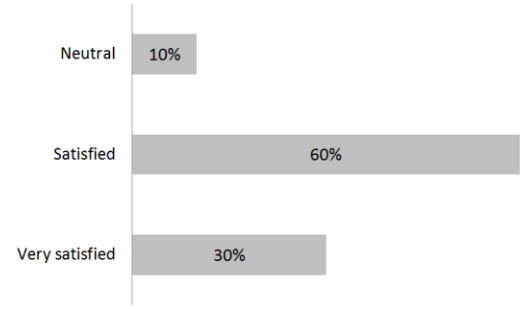
Table 7-10 Participant dimension of the Civic Engagement Activity - Analysis of the results

Strengths	Challenges
The high rate of engagement and interactivity can be explained by the approach used in this project which develops the autonomy and the self-efficiency work: the participants advance their own project ideas and progress step by step in the documentation of the artefact. The use of the design thinking method encourages students to be actors through different phases: definition of the persona, impact and business issues, mapping on civic engagement. The collaborative and co-creator frame was enhanced by digital tools, diverse and mastered, which created more engagement and learning through communication. This communication was an issue because of the large variety of backgrounds and the multicultural aspect of the activity (12 participants, five countries). All the outputs were shared between different participant groups. **The quality of the mentoring was underlined, and their expertise considerably increased the motivation and the engagement of participants due to the proactive synergies between mentors and participants. It participated in developing autonomy and independent teamwork. This activity has been a great opportunity to get to know motivated people from all over the world. The participants with their multicultural diversity stimulate the curiosity and the implication of each other.**	**The dissatisfaction is due to the misunderstanding of the attribution of the role inside the team and somehow the lack of informal moments, which is very difficult in online formats.** **Students from the five universities work together as peers to improve the benefits of the explorative engagement with the topic "civic engagement topic." The strategy refers to networking students at equal educational levels whose learning process should benefit from the different levels of knowledge available within the student body (peers) and the collaboration. The position of the teacher, between educator and mentor, could have been clearer, maybe to take more time to support the "peer to peer" exchanges inside the team and the positioning essential in a design learning process.**

7.4.2Main impacts

Data grid

Table 7-11 Participant dimension of the Civic Engagement Activity - part 2 (impacts)

Objective 1: Develop personal learning and development	
Satisfaction rate/empowerment on the topic *Source: post-event survey*	
Verbatim/general empowerment *Source: post-event Survey*	1. "New methods" 2. "A lot of new tools were introduced to me!" 3. "All the methods of design thinking were new to me!" 4. "I learnt a lot about how to formulate a problem and a solution in a more precise and understandable manner." 5. "It was great to connect with other people from other universities."
Objective 2: Motivate new skills and empowerment/fun	
Satisfaction rate/empowerment regarding the skills acquired *Source: post-event survey*	
Objective 3: Innovative value of the project's outputs	
not specified	

Analysis

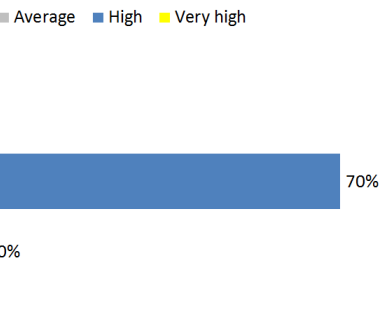
Table 7-12 Participant dimension of the Civic Engagement Activity - Analysis of the impacts

Strengths	Challenges
90 % were satisfied with the educational method, which is based on the innovative learning process of the students involved. Indeed, based on their own experiences, the students can develop their own way of learning thanks to the design thinking process. The discovery of a method and new and innovative tools embodies the empowerment and the acquisition of new skills. **Moreover, throughout this process, Design Thinking can reflect on the information they are learning, their own abilities to consume and produce relevant information, and their meaningful contributions to the team.**	**The personal learning regarding the topic is not rated, and the empowerment regarding the skills (but stays high rated). The activity develops many technical tools and expertise on the Design Thinking method. In these kinds of activities and open innovation activities in general, participants always have high expectations of improving their knowledge about the topic. The empowerment of technical/soft skills on one side and topic learning on another side could have been balanced.**

7.5 Conclusion (socioeconomic dimension of the activity)

The activity is very replicable: as a successful activity, the organisers planned to reorganize it: the partnerships were worked during the activity. It has to be noted that the activity gave rise to new practices which, based on a transferable format, could enrich the institution's innovation processes in the long term.

Table 7-13 Socioeconomic dimension of the Civic Engagement Activity (long-term impacts)

Rate of understanding of open innovation and the social impact of citizen science *Source: post-event survey*	
Verbatim (see above)	1. "I don't think we discussed citizen science much." 2. "My understanding was certainly improved because I got to hear from three teams who were operating in different spheres, civic engagement, youth mobilisation, socio-economic issues."

8 Cultural data interaction in spatial location – Tallinn University

Summary of the activity			
Intra curricular	Focus : education	Duration: 3 weeks	Short CEI
26 September to 10 October 2020	Mixed (online, classrooms, outdoors in the field)	19 + 1 mentor	Four groups (3-5 people)
Results expected: innovative solutions. Testing activity outdoors with mobile tools.		Design thinking activity students creating a solution to open up data from music and theatre museum in Tallinn Old town	
List of pedagogical resources available for the participants			
Before the event: - Not precise		During and after the event: - Google Classroom (supplemental materials) - Activity track questions that use open cultural data	
Data analysed within the INOS framework			
Learning Design Framework	Unfilled	Identity sheet	Completed
Pre-event survey	Missing	Post-event survey	Response rate: 84.21 %
Other data and resources	Complementary survey completed Four presentations of the results (Sutori.com)		

8.1 Description of the activity as an open-innovation activity (innovation dimension)

8.1.1Context and programme

Framework: part of a course entitled "The community inclusion technologies (MA), assessment of group projects."

Organiser/coordinator: Kai Pata, Associate Professor of Educational Technology, School of Digital Technologies

Mode of engagement of the participants: Part of a course, no special registrations needed

Funding: No financial contribution but data, equipment and tools were provided by the sponsors

The activity is already a regular activity and replicable

Planning: (see learning design process)

8.1.2Main characteristics

As a regular activity, the learning process is well defined, and many resources are available for the participants. The partner is also involved in providing relevant data. As a concrete use case for the students, the presentations are very detailed. Finally, the three weeks format, which is long and intense, allows the learners to explore the different phases of design thinking with many tools. The mentor, the teacher, centralises different roles for different groups.

8.1.3Results

Four presentations on Sutori.

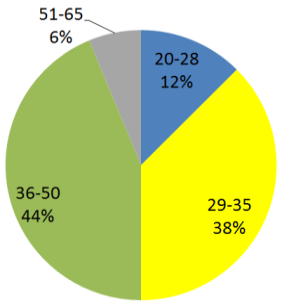
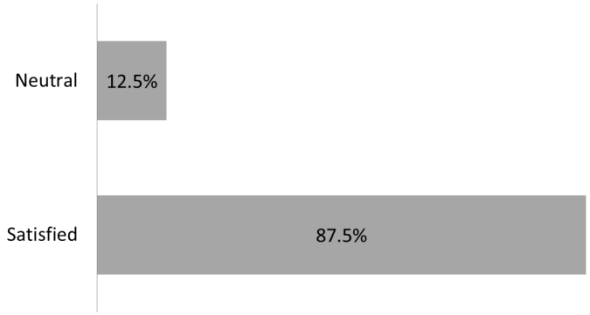
8.2 Review of the open-innovation activity (innovation dimension)

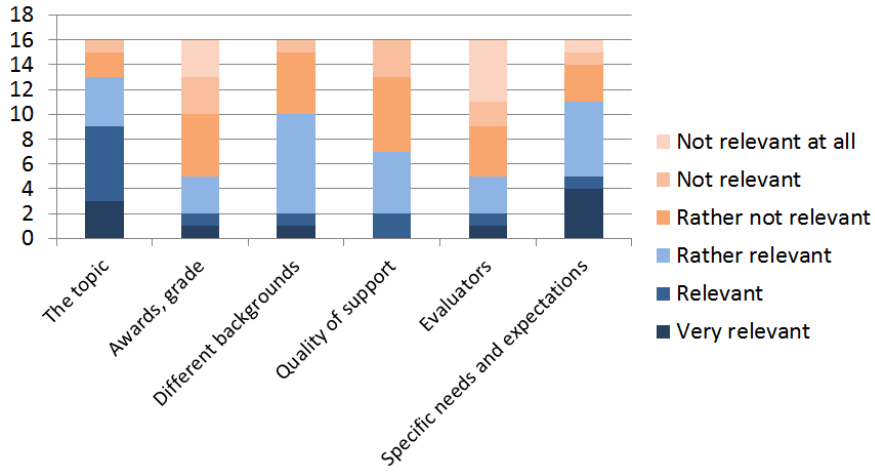
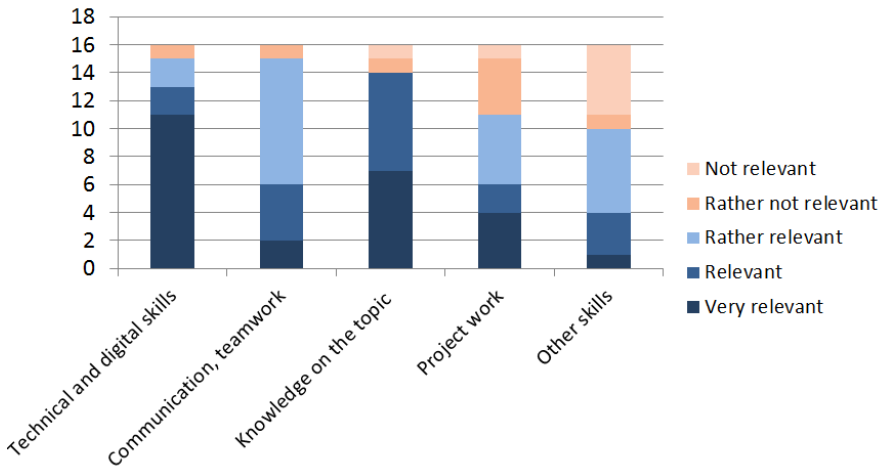
8.2.1Main achievements

Data grid

Table 8-1 Innovation dimension of the Cultural data activity - part 1 (results)

Objective 1: Assure the quality of the activity as an open-innovation event			
Participants expected **Participants achieved**	19 19	**Participation rate**	100 %
Inclusivity rate/Variety of the backgrounds *Source: post-event survey*	100 % students		

Inclusivity rate/Gender of the participants *Source: post-event survey*	100 % female
Inclusivity rate/Age of the participants *Source: post-event survey*	
Variety of the results *Source: identity sheet*	Four digital tools/four track prototypes: three groups created games.
Objective 2: meet the interest of the participants	
Overall satisfaction of the activity *Source: post-event survey*	
Verbatim/Overall satisfaction of the activity *Source: post-event survey*	1. All teams should make contributions to the joint track. 2. We did big plans in Sutori, but we could use a little for our geolocative task. More information on how to work. But we learnt to use Sutori well. 3. We should prepare a track jointly, not enough time and guidance for technical activities. 4. I would have like to know before design thinking in what environment we do the final product to consider its functionalities. 5. We needed more time to prepare geolocative tracks better. 6. More concrete goals 7. Make more cross-teams work and better goal setting, knowing what the end product is. 8. Doing differently requires better digital competencies from me, but I do

	not have them. 9. More time to be 10. The whole group should have made the same track, adding their question items 11. All well 12. To finalise geolocative tasks, some did not work 13. Not enough time to focus in-depth on all design thinking process elements 14. More clear task definition 15. More focused structure to do all together instead of different teams
Relevance of the topic/motivation rate *Source: pre-event survey* (What motivates you to participate in the activity?)	
Relevance of the topic/expectations and achievements *Source: pre-event survey* (What are your expectations in terms of learning?)	
Objective 3: Create the conditions of the sustainability of collaborations and results	

Number of results/projects	Four projects presented on Sutori and the developed prototypical solutions are shared as open access resources

Analysis

Table 8-2 Innovation dimension of Cultural data activity - Analysis of the results

Strengths	Challenges
In terms of inclusiveness, the variety of profiles is marked by age, which is more linked to the discipline than the activity itself, which is part of a curriculum. Likewise, the nature of the results is induced by the tools used and the precise objectives in a defined learning context. **The openness of the backgrounds is brought about by the partnership with the Theatre and the Museum. Overall, the satisfaction rate is very good. The projects developed are finalised and valued through their sharing as an open resource. The question or not of ownership by the partner cannot be assessed here. But the maturation and application to the real world are widely put forward.**	**Learners' expectations focused on the topic and the design thinking practices, particularly through the online tools used. That is why the suggestions for improvement (which are numerous reflecting the participants' commitment) mainly concern the design thinking method, particularly the question of technical skills, which are at the heart of the expectations of students in andragogy. A large series of tools was thus made available to participants and included in the learning process.** **The group's alignment with these expectations makes it essential to understand the activity.**

8.2.2Main impacts

Data grid

Table 8-3 Innovation dimension of Cultural data activity - part 2 (impacts)

Objective 1: create new projects and collaborations	
Role of the university in the community management *Source: complementary survey*	
Dissemination level of the outputs *Source: complementary survey*	Other: New practices and new open-resources

Community-level	Only students from andragogy
Verbatim/New practices *Source: post-event survey* (How would you use this experience in the future?)	 *Figure 16 NVivo analysis of the verbatim concerning the new practices*
Objective 2: create new knowledge resources	
Creation of new resources *Source: complementary survey*	Creation of open resources about using cultural data for interaction "I brought the lessons learnt to the further development of rada2.smartzoos.eu tool that helps to use cultural data for interaction" Kai Pata - coordinator
Objective 3: Develop and enrich the innovation processes in the institution	
Transferability of the activity *Source: complementary survey*	Yes
Dissemination level of the activity: international level *Source: complementary survey*	https://rada2.smartzoos.eu/: an innovative community of best practices

Analysis

Table 8-4 Innovation dimension of Cultural data activity - Analysis of the impacts

Strengths	Challenges
In terms of inclusiveness, the variety of profiles is marked by age, which is more linked to the discipline than the activity itself, which is part of a curriculum. Likewise, the nature of the results is induced by the tools used and the precise objectives in a defined learning context. **The openness of the backgrounds is brought about by the partnership with the Theatre and the Museum. Overall, the satisfaction rate is very good. The projects developed are finalised and valued through their sharing as an open resource. The question or not of ownership by the partner cannot be assessed here. But the maturation and application to the real world are widely put forward.**	**Learners' expectations focused on two things: the topic and the design thinking practices, particularly through the online tools used. That is why the suggestions for improvement (which are numerous reflecting the participants' commitment) mainly concern the design thinking method, particularly the question of technical skills, which are at the heart of the expectations of students in andragogy. A large series of tools was thus made available to participants and included in the learning process.** **The group's alignment with these expectations makes it essential to understand the activity.**

8.3 Description of the activity as a project-based learning activity (participant dimension)

8.3.1 Description of the learning design process (cf Learning Design Framework)

Goal setting

Participants co-design the activity
Before fully designing the learning activity, previous experiences with technologies and adult learning situations were gathered in oral discussion. The whole setup for the activity is done in co-design mode.
The topics of interest were iteratively collected using a design thinking approach. The motivation is mostly related to understanding and maintaining adult informal learning with technologies. The students' are self-motivated learners. However, the course also has this activity as the exam task.

Participants: students from Andragogy (Tallinn University)

Participants' pre-activity knowledge of the topic: a basic level
They have competencies with adult learning, some digital competencies, but they are learning new digital competencies in this course. They are not familiar with design thinking practices.

Learning goals: To learn online teamwork and collaboration, To learn about open cultural data, To learn about the innovation process and Design Thinking

Research and innovation goals: To develop prototypical interaction modes for opening up cultural data in hybrid city space for public learning and interaction. To develop and validate new digitally enhanced design tasks in digital mode for online learning and service design for smart learning layers in the cities

Openness: open software and open data, open collaboration (with Tallinn Music and Theatre museum), outputs are made open access and open innovation practices

Sustainable development goals: quality education, good health, and well-being, reduced inequalities, partnerships for the goals

No pre-training: training was involved in the course

Activity development

Coordinator: Kai Pata (Tallinn University)

Composition of the groups/collaborators: Students and mentors (academics)

Learning objectives: Practicing design thinking competence with digital tools online mode
Practising the design of informal learning with digital tools in the hybrid city space
Understanding the challenges of opening up cultural data for public interaction and locative learning

Main task: Design thinking activities were run in blended mode. Some sessions were held completely online, the others were face-to-face in computer class, and some were in hybridised public space**.**

Table 8-5 Learning Design Process of the Cultural data activity (step by step) - Source: Learning Design Framework

Steps (Design thinking method)	How?	Comments of the coordinator
Leading the project work	**Participants and mentor** **Online (Zoom)** **Method**: Trello	Getting familiar with Trello.com for developing the project page.
Ideation phase (topic exploration, need-finding, brainstorming solution ideas)	**Participants and mentor** **Online (Zoom)** **Method: s**econdary research, observing and consultations with target end-users, group discussion/brainstorming	**Choosing the topic**: the problematization was done together with students. There is a lot of public data in Tallinn which needs to be reused, and there is the need to revitalise Tallinn old town for locals. **Setting goals together with students:** Introduction to open science principles. Ideation with tricider.com about the learning ideas with open data and selecting five ideas from which one has found support from the Music and Theatre Museum. Next, students were using coggle.it to create the problem tree.

		The breakout rooms were created in Zoom for teamwork with Persona canvases in Uxpressia. Four teams created each one persona. The results were discussed from the perspective of input to the design.
Design phase (Design model(s) and prototype design(s))	**Participants and mentor** **Online (Zoom)**	Design thinking lesson to design together with the outdoor track with questions with historic content. The training activities were designed by the teacher at Tallinn University and were conducted in face-to-face mode. Picking up from the last session: Sutori com - The teams map the interaction steps with the data on the map. Students created journey maps for the interactive questions in Sutori.com
Implementation phase (User testing, Reiterative design)	**Participants and mentors** **Online (Zoom)** **Method:** test runs with target users, Consultation with experts	The students designed four track prototypes with locative scavenger hunt tools and maps. Students explored how to use archived digital cultural data to open it to public space learning interactions. Particular aspects are the limitations of existing cultural data for interaction activities
Communication phase (presentation and discussion of final outputs, Dissemination of final outputs for real-world application)	**Online (**Zoom and Facebook groups**)** **Method:** presentations, Group discussions and Documentation of project outcomes	Playing the track to validate it for different types of users. The discussion session will be held with the students to evaluate the created learning design. Students evaluate themselves using the INOS survey in O4. Documenting the artefact. Shared space in google drive folder. Used tools tricider.com (ideation), Coggle.it (problem tree), Uxpressia.com (personas), and Sutori.com (storyboard). The scavenger hunt tools http://goosecahse.com/edu.

8.3.2Description of the resources

The mentoring

Table 8-6 The mentoring in Cultural data activity - source: complementary survey

Who are the mentors?	Academics
What is their role?	Share advice and give insight on their specific expertise, facilitate, and provide guidance
What are the criteria for choosing mentors?	
How were the mentors involved in the activity?	They are involved in the preparation of the activity, in the pre-training (tool) and the evaluation of the activity (assessment phase)

The typology of skills

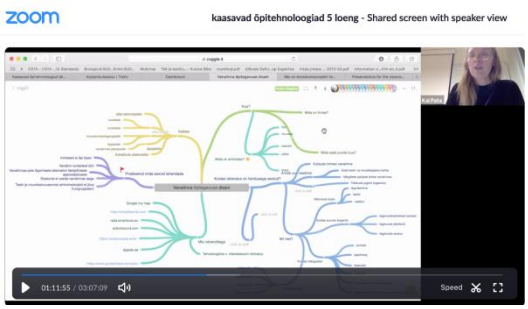
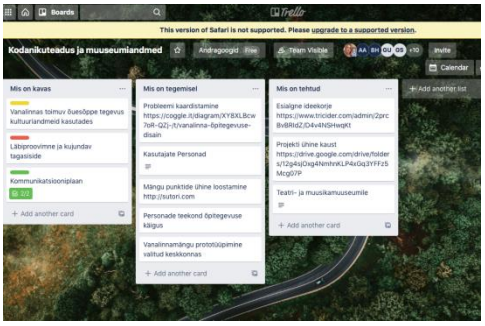
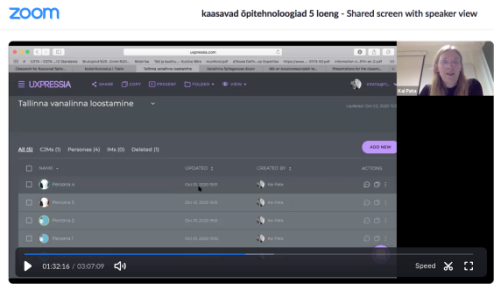
Table 8-7 The typology of skills developed in Cultural data activity - source: identity sheet

Knowledge of the topic	Understanding the challenges of opening up cultural data for public interaction and locative learning
Technical skills (e.g., using software)	Practising the design on informal learning with locative digital tools in the hybrid city space
Soft skills (e.g., project management)	Teamwork and collaboration
Open innovation skills (e.g., innovation process)	Practising design thinking competence with online digital tools
Others, please specify	

The tools

Table 8-8 The tools in Cultural data activity - source: Learning Design Framework

Collaboration tools

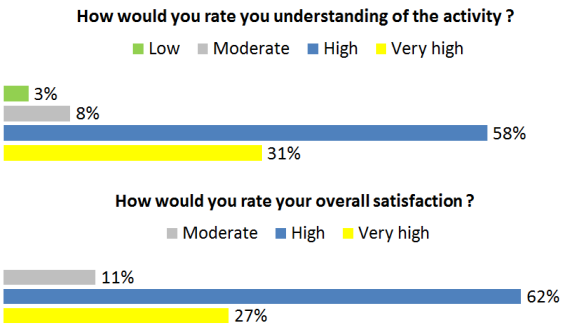
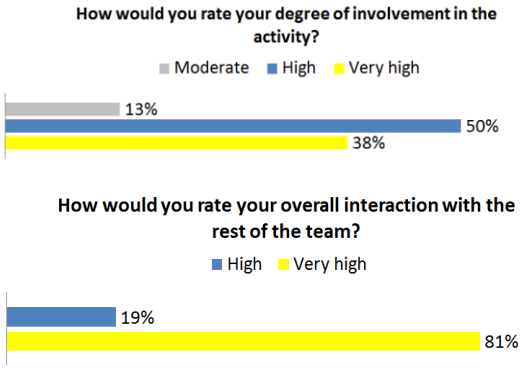
Google. Drive folder, Trello.com, Coggle.it (mind mapping, use as a problem tree), Tricider.com (web application to vote), Uxpressia.com, Sutori.com (collaborative instruction and presentation tool for the classroom) ★ Used as collaborative and design thinking tools for teams Radas.smartzoos.eu, actionbound.com, goosechase.com/edu (to organise a scavenger hunt), google my map, google forms ★ Used for designing the outdoor track and all the activities "on the field."	 *Figure 17 Screenshot of a mind mapping - Cultural data activity*  *Figure 18 Trello screenshot - Cultural data activity*
Communication tools	
Zoom.com for teams and each team established their own team space in messenger or WhatsApp, Facebook group for the whole community: ★ Introducing the sessions and the tools ★ Presentations and final sessions	 *Figure 19 Uxpressia screenshot - Cultural data activity*
Resources	Introductory presentation Use of open-source software and hardware in tasks.

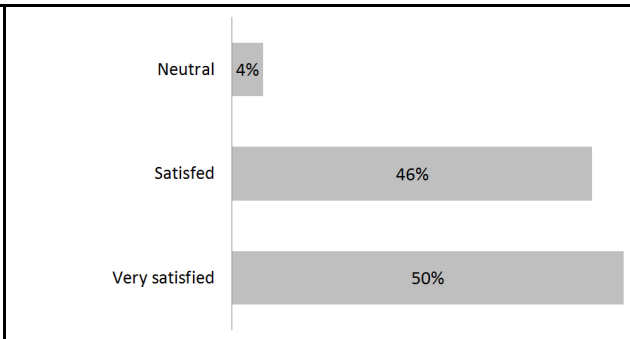
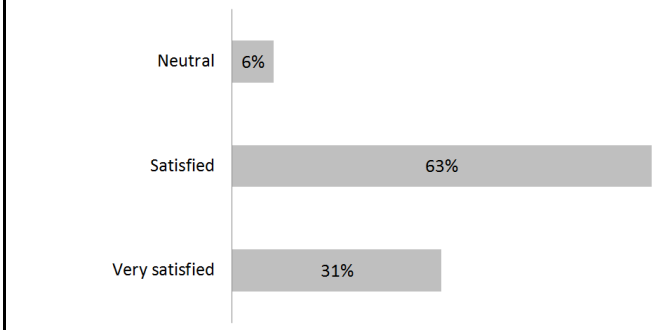
8.4 Review of the project-based learning activity (participant dimension)

8.4.1Main achievements

Data grid

Table 8-9 Participant dimension of Cultural data activity - part 1 (results)

Objective 1: Encourage the personal engagement/involvement	
Rate of engagement regarding the understanding of the activity *Source: post-event survey*	
Interactivity rate/general engagement in the activity and team engagement *Source: post-event survey*	
Objective 2: Facilitate the synergies between the participants	

Satisfaction regarding the mentoring Source: *post-Event Survey*	
Satisfaction regarding the access to knowledge (resources, tools) Source: *post-event survey*	
Objective 3: Create the conditions of partnerships	
Number of social network events/social networks interactions *Source: identity sheet*	Classrooms, outdoors in the field Social networks tools between the participants:
External partners	Partnerships with the Theatre and the museum of Tallinn

Analysis

Table 8-10 Participant dimension of Cultural data activity - Analysis of the results

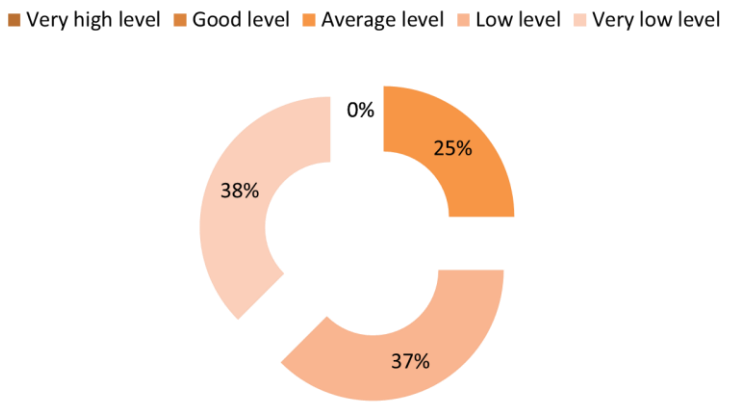
Strengths	Challenges
Participants are involved in the design of the activity from the start as co-designers. In order to compensate for a gap between the levels, a familiarisation with the tools is planned at the beginning of each sequence divided according to the method. In addition, the tools chosen are often both design thinking and collaboration tools, which make it possible to promote exchanges and interactions.	**The choice of doing a training session can polarise the participants. This disparity is found verbatim: some people deplored too much time spent in the technical environment, while others observed the opposite. "Too much time was spent learning the technical environment rather than design thinking" and "We should prepare a track jointly, not enough time and guidance for technical activities".**

The mentorship was greatly appreciated. Centralised around one person, it made it possible to combine theory and practice and grant different expectations and levels. The expertise of the mentor responsible for the participants' guidance impacts their involvement and motivation from the beginning to the end and contributes to autoregulating the learning process. **The context of the activity made it possible to maintain the moments in class, and the observations in the field, which undoubtedly helped to stimulate interactions between the learners, the mentors and external partners.**	**Time is always a subjective variable: mentoring helps reduce dropouts.** **Work on the format can harmonise the workshops according to participant needs.**

8.4.2Main impacts

Data grid

Table 8-11 Participant dimension of the Cultural data activity - part 2 (impacts)

Objective 1: Develop personal learning and development	
Design thinking level of the participants before the activity *Source: pre-event survey*	
Rate of satisfaction regarding the access to the knowledge *Source: post-event survey*	see above

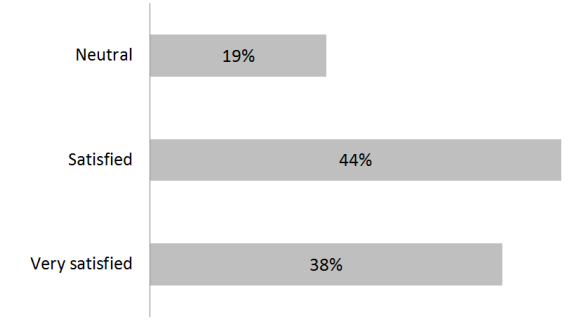
<table>
<tr><th colspan="2">Objective 2: Motivate new skills and empowerment/fun</th></tr>
<tr><td>Rate of satisfaction regarding the acquisition of knowledge about open innovation
Source: post-event survey</td><td> 
</td></tr>
<tr><td>Verbatim/general feedback
Source: post-event survey</td><td>

Figure 20 NVivo analysis on the general verbatim - Cultural data activity</td></tr>
<tr><td>Verbatim/fun & empowerment
Source: post-event survey</td><td>New methods
1. “new practices”
2. “How to narrow down after idea collection.”
3. “can use design thinking in the future.”
4. “how to use city space for learning.”
5. “more courage to work in city space”
6. “The steps of thinking and their order. Using Trello.”
7. “Design thinking process”
8. “How to better open up and connect activities.”
9. “Design thinking essence and process”
10. “How to address different needs of personas who need something (not who offer something) for services design.”
11. “Good canvases”
12. “It was a totally new topic for me.”

New tools
13. “new platforms and resources”
14. “understood different opportunities that digital tools offer.”</td></tr>
</table>

	15. "understood how to implement different activities with digital technologies." 16. "I learnt that a virtual journey needs to be well designed, tested. Everything must be in one digital environment, personas and tasks were made in different environments, and it was chaotic. Also, must set better the target group for design." Teamwork 17. "different solutions I was not aware of interesting methods and group work." 18. "how important it is to be as part of the group." 19. "to plan creatively and more broadly." 20. "collaboration and teamwork in digital space" 21. "Considering my teammates."
Objective 3: Innovative value of the project's outputs	
The scavenger hunt tools The outputs are put on open access on an opened website. So, the results can be evaluated, which is important for the learners.	

Analysis

Table 8-12 Participant dimension of Cultural data activity - Analysis of the impacts

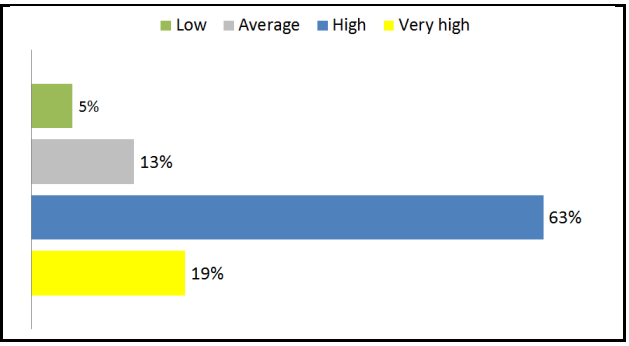
Strengths	Challenges
By combining access to resources and discoveries of various tools around design thinking, the activity meets the participants' expectations as learners. Mentoring development in the form of guidance enables the personal development of learning, which results in great personal satisfaction for the learner. The empowerment rate is very high. The novelty dimension comes up a lot in the verbatim of the learners, whether it is about the method, the tools or the teamwork. A lot of things seem to have been grasped, and the first pedagogical objective, which was related to design thinking, was generally achieved. A high rate of the applicability of the new skills acquired during the activity was achieved as	**The publication of the outputs on specific tools suggests that they are an innovative value (for example, scavenger hunt tools.** **A lot of effort is put into the tools and their quality, which are numerous. Optimising their utility and impact may be useful if not done already.**

over 56 % think that they will use all the new practices and tools in their work. This result confirms that the type of the pedagogical framework considerably empowers innovative skills that can further enhance employability. **The reference to teammates also suggests that the mood during the activity was good. The discovery of new tools and the homogeneity of backgrounds is a real plus for the opening up of open innovation practices. Moreover, it has to be noted that qualitative digital tools enhance the quality of collaboration.**	

8.5 Conclusion (socioeconomic dimension of the activity)

The activity is an example of the openness of tools, outputs, and resources. The potential of open science activities is explored via the data issue, which is important for the participants' feeling of empowerment. Indeed, more than 80 % of the participants feel more confident participating in open innovation activities.

Table 8-13 Socioeconomic dimension of Cultural data activity (long-term impacts)

Rate of understanding of open innovation and confidence in participating in open innovation activities *Source: post-event survey*	

9 Ocean I3 – University of Bordeaux (University of the Basque Country)

<table>
<tr><th colspan="4">Summary of the activity</th></tr>
<tr><td>Extra-curricular</td><td>Focus : education and research focus</td><td>Duration : one semester</td><td>Long CEI</td></tr>
<tr><td>From February 5 to 26 June 2021- 5 workshops</td><td>Online (Zoom)</td><td>38 students + 23 teachers tutors + 15 socio economic actors</td><td>Five groups of ten people</td></tr>
<tr><td colspan="2">Results expected: innovative contributions to challenges</td><td colspan="2">Topic: Ocean sustainability, plastic pollution and climate change.
Challenge: fight plastic pollution in the oceans to help reduce pollution along the Basque-Aquitaine cross-border coastline.</td></tr>
<tr><td colspan="4">List of pedagogical resources available for the participants</td></tr>
<tr><td colspan="2">Before the event:
- Not precise</td><td colspan="2">During and after the event:
- Use cases from the socioeconomic actors
- Data and pedagogical resources: resources provided by their tutors on individual project
- Pedagogical resources: templates of activities available (Oktonine Platform)</td></tr>
<tr><td colspan="4">Data analysed within the INOS framework</td></tr>
<tr><td>Learning Design Framework</td><td>Completed</td><td>Identity sheet</td><td>Completed</td></tr>
<tr><td>Pre-event survey (sent only to the students - 39 people)</td><td>Response rate: 81.58 %</td><td>Post-event survey (sent to all the community - 76 people)</td><td>Response rate: 11.84 %</td></tr>
<tr><td>Other data and resources</td><td colspan="3">Oktonine platform: general resources like referential of skills and all resources deposited by the participants</td></tr>
</table>

9.1 Description of the activity as an open-innovation activity (innovation dimension)

9.1.1Context and programme

Framework: POCTEFA project (European funding), third edition of an optional course entitled "Ocean I3: Blue skills for the development of the blue economy on the Basque-Aquitaine cross-border coastline."

Organisers: the University of Bordeaux (via Innovation Department), University of the Basque Country and Euskampus

Engagement mode: Communication tools: mailing, social networks, External calls of participation

Funding: Financial contribution (POCTEFA) and other resources (Equipment/tools, Human contribution: the sponsor participates (with one or several employees) in the OIA and other funding

The activity is replicable. Its continuity depends on its integration into universities and new external funding.

More: "Online format due to the pandemic context: In the case of the collaborative platform for challenge-based learning, we had to launch a public tender for the contract and set up a user-driven design process to adapt it to the needs of the project. It has accelerated the process we had already planned to incorporate collaborative tools and distance working habits, which in our case (a project shared between two cross-border universities 400 km apart) helps to support and give continuity to the collaborative work of inter-university student teams and with social agents." Julieta Barrenechea - coordinator

Planning: Ocean I3 Project is focused on the challenge of "oceans plastic pollution", and its mission is to reduce pollution on the Basque-Aquitaine transboundary coast.

Five workshops occur during the period: 05/02, 12 /03, 16/04, 28/05 and 25/06 2021

General presentation
Ocean i3 is an interdisciplinary, cross-border and intercultural educational innovation project aimed at the university community of levels I and II (second and third cycle) of the Universities of Bordeaux and the Basque Country UPV/EHU.

It was created in 2018 as part of the "Campus Euskampus-Bordeaux" partnership under the Education and Employability strategic axis. This project contributes to the positioning of the University of Bordeaux and the University of the Basque Country (UPV/EHU) with the blue economy, sustainability, and enhancement of the oceans.

It aims to develop an inter-university intensive training course and an employability plan in "blue skills" in the cross-border employment area linked to the blue economy.
The community works in a spirit of "Mission-Oriented Research and Innovation" to set up learning projects based on research and intervention, thus responding to a shared mission: to reduce plastic pollution on the Basque Aquitaine coast.

Ocean i3 operates as a living lab that welcomes interdisciplinary teams of students and teachers working around different challenges in collaboration with public and private entities in the blue economy sector of the cross-border coastline.

The interdisciplinary community of Ocean i3 contributes to developing a civic university committed to territorial issues and promoting quality teaching and research serving the public good in terms of sustainability.

9.1.2Main characteristics

Ocean i3 wants to involve the university community and the socio-economic actors of the territory in highly complex sustainability education experiences due to their interdisciplinarity, multilingualism (Spanish, French, Basque and English), and interculturality and their cross-border-international territorial scope. The project pursues four types of objectives:

- Learning objectives based on a project-based learning process and active pedagogy
- Employability: Following a process called “ongoing blue skills”, teachers and socio-economic actors jointly identify the needs, dynamics, and challenges specific to the sector in order to orient and ensure training adapted to blue skills, including the blue economy and cross-border needs that are already and will be required in the future.
- Pedagogical innovation is based on a methodology elaborated by a team dedicated to (and composed by) teachers and administrators.
- Civic university by building a large community to disseminate the results and socioeconomic impact.

Methodologically, this involves working on specific tools and resources. Two external service providers supported the project: the Oktonine educational platform team and a service provider for the design of the Design Thinking sessions. A UPUV research laboratory is also supporting the project on the skills framework around the "blue economy."

9.1.3Results

An evaluation and presentation session took place online and collected the results, impacts and feedback from the socioeconomic actors:

Challenge with the socio-economic actor “Rivages Protech”: How to collect plastics in a non-intrusive way in the Urdaibai reserve?

Results: Identification of the actors involved, and their actions implemented in the preservation of the site, identification of “hotspots” potentially vectors of pollution, benefits, and actions in favour of insects.

Challenge with the socio-economic actor “UNSS”: “Sensibilisation of schoolchildren to blue and green skills and professions.”

Results: A communication plan with strategic actions for UNSS 64 - DFG, Report on Competent Professions in the Blue and Green Economy Sectors, and a card game on professions of the blue and green economy sector aimed at schoolchildren (awareness of green-blue employment)

Challenge with the socio-economic actor “Surfrider foundation: “Multiply communication actions to raise awareness among a wider audience.”

Results: the identification of the possible audiences of Surfrider foundation with a specific/detailed segmentation: childhood-Youth/Adults/Seniors, think of different generations and create different proposals, messages, actions etc. for them, build theoretical frameworks that frame individual works where the problem of ocean pollution and the Surfrider entity are present, through each GRAL, create a project dedicated to the challenge, the population in the Basque Country is aware of the problem of sea pollution but has yet to take action

Challenge with the socio-economic actor "MATER: "How can we raise awareness among citizens so that they can take action?"

Results: A communication plan for MATER as an organisation (TFG), preparation of the Eco patrol campaign, research in the psychological field on pro-environmental behaviours and psychological barriers of the Spanish population, creative posters for an Ecopatrullas activity

Challenge with the socio-economic actor "Kutxa Fundazioa: "How to reduce the use of plastic bottles in public places?

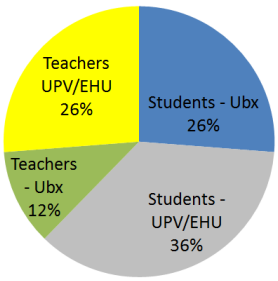
Results: a prototype, an efficient team, and (from a health point of view) tap water in the hospital is safe. From a legal point of view, it is necessary to insert the requirements of the Directive into domestic law so that they are fully binding. From a psychological point of view, drinking tap water in hospitals scares people, although their prejudices about bottled and tap water do not correspond to reality

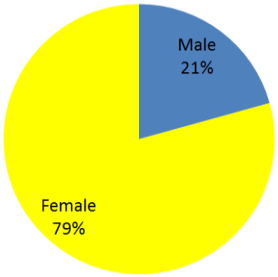
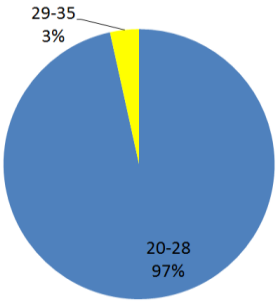
9.2 Review of the open-innovation activity (innovation dimension)

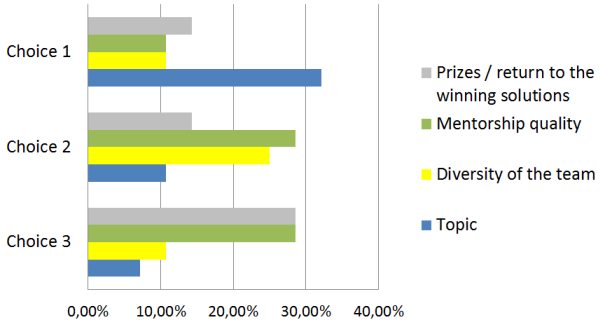
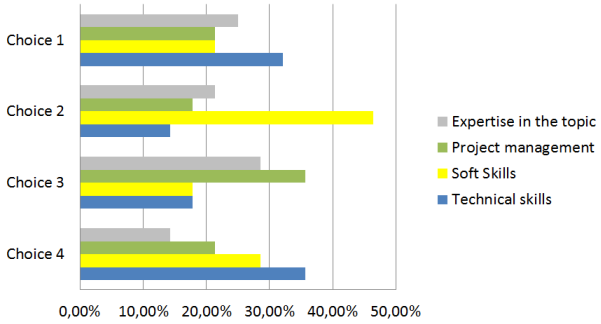
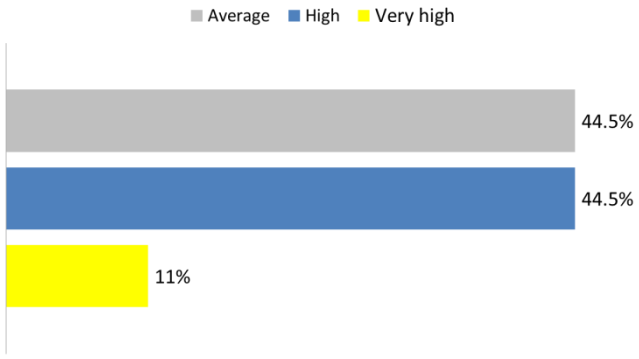
9.2.1Main achievements

Data grid

Table 9-1 Innovation dimension of Ocean I3 activity - part 1 (results)

Objective 1: Assure the quality of the activity as an open-innovation event			
Participants expected **Participants achieved**	80 including 50 students	**Occupancy rate**	94 %
Backgrounds of participants (whole community) *Source: list of participants*			

Inclusivity rate/Gender of the participants (students/learners) *Source: pre-event survey*	
Inclusivity rate/Age of the participants (students/learners) *Source: pre-event survey*	
Interdisciplinarity/number of curricula involved *Source: Ocean I3 report 2018-2021*	14 in 2 different universities Licence degree, master's degree and PhD students
Interdisciplinarity/number of laboratories involved *Source: Ocean I3 report 2018-2021*	Five laboratories in two universities
The openness of the resources	Inside the community (Oktonine platform)
Objective 2: meet the interest of the participants	

Relevance of the topic/motivation rate *Source: pre-event survey* (What motivates you to participate in the activity?)	
Relevance of the topic/expectations and achievements *Source: pre-event survey*	
Objective 3: Create the conditions of the sustainability of collaborations and results	
Number of results/projects *Source: slide presentation (final session)*	Five diverse and workable results (feedback from the mentors)
Motivation to continue the project *Source: post-event survey*	

Analysis

Table 9-2 Innovation dimension of Ocean I3 Activity - Analysis of the results

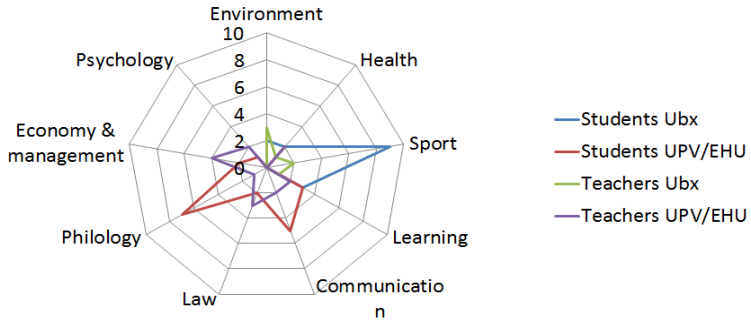
Strengths	Challenges
As an extracurricular activity, the OceanI3 project is quite agile regarding the recruitment of participants. The groups of participants are composed of students from different curricula, teachers, and researchers from different disciplines (they are linked with students by some individual tutored projects). A third category called "external partners" is visible on the Oktonine platform, leading the number of people involved to more than 100. The openness of backgrounds is the key element of openness of the activity, which is based on interculturality and cross-territorial perspectives on a common challenge. The profile of the students is on the opposite standard (students in their twenties, mostly women). The final workshop, which took the form of a presentation to the community and prepared feedback from the socio-economic actors, demonstrates the real impacts produced by the results of the projects. The appropriation of the results by the socio-economic actors, who are remembered, the "sponsors" of the challenges, are part of sustainability conditions.	There is a small imbalance between the participants from the University of Bordeaux and the University of the Basque country, which needs to be worked out. As an experimental project, the methodology has not been developed to be openly shared for the moment. But some research inputs on pedagogy could be opened in a second phase. The response rate to the post-event survey has been too low to be used. It is impossible to have a reliable satisfaction rate. However, the analysis of learners' expectations is interesting as far as it shows the importance of the objective of employability for learners. Indeed, in addition to the very unifying theme, it appears that mentoring, and the development of skills goes beyond the very question of expertise on the subject. Ocean I3 is expected as a professional activity for students, and the implementation of a post-event survey is very important to measure the response to needs.

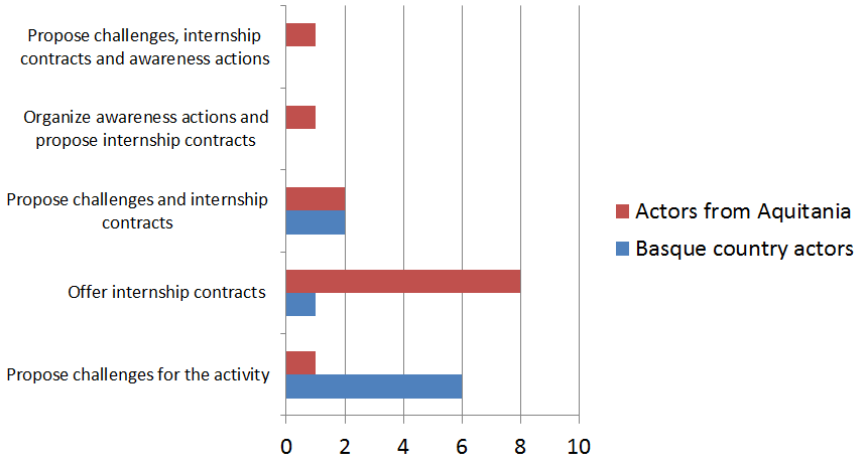
9.2.2Main impacts

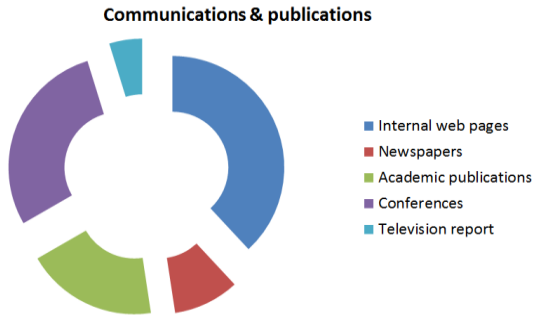
Data grid

Table 9-3 Innovation dimension of the Ocean I3 Activity - part 2 (impacts)

Objective 1: create new projects and collaborations	
IP terms	No IP terms. Results opened publicly, except in the framework of internships and PhD studies.
Role of the university in the community management *Source: complementary survey*	

Role of the university in the community management/verbatim *Source: complementary survey*	"With the social partners, we propose maintaining the collaboration in the following academic years, deepening the challenges and associating new work teams with other disciplinary profiles to continue contributing. The participating teaching staff remains stable, and each year they propose to their students to participate in the project with their tutoring. Students are kept informed and, in some cases, may be asked to participate in specific activities or to continue participating in the project in their new cycle, e.g., from bachelor's to master's degree... " Julieta Barrenechea – coordinator
Dissemination level of the outputs/resources *Source: complementary survey*	
Community-level *Source: list of participants (2020-2021)*	 **Participants came from all other the world (no precise statistics)**

Extended community - type of collaborations with the socio-economic actors (2018-2021)	
Communication indicators *Source: Ocean I3 report 2018-2021*	- one website - one Twitter, one LinkedIn and one Facebook account
Objective 2: create new knowledge resources	
Creation of new resources *Source: Ocean I3 report 2018-2021*	- Public videos (resources published on the website) - Posters and presentations - A methodology and some templates are available on the Oktonine platform. - Some publications and studies are written: some research programmes use Ocean I3 as a case
Objective 3: Develop and enrich the innovation processes in the institution	
Transferability of the activity	Yes
Dissemination level of the activity *Source: complementary survey*	

Dissemination level of the activity - tools and publication *Source: Ocean I3 report 2018-2021*	
Dissemination level of the activity -Other indicators *Source: Ocean I3 report 2018-2021*	Five applications to prices Participation in forums to come, and other participations to European projects, including INOS

Analysis

Table 9-4 Innovation dimension of Ocean I3 Activity - Analysis of the impacts

Strengths	Challenges
The building of an Ocean I3 community is claimed to create new projects, new practices and new open resources. In the framework of the project, it is expected to promote the employability of students in the blue economy of the Euro regional area through close collaboration with actors. The development of knowledge and skills is relevant to changing an ecosystem's mindset. That is why important work has been furnished from the beginning to disseminate and communicate the activity: the more the project is identified, the more concrete impacts. The indicators describe a very dynamic and active community that continues to extend itself, notably by working on its network with the private sector on the one hand and the engagement of the university community on the other hand. The project has been running for three academic years and is expected to be further developed. A project community is formed and is accompanied by a network management approach to maintain and stabilise its activity.	The activity generates a lot of resources from different natures and different formats. The project, which is identified as an innovative project on many sides, has interested a lot of different stakeholders inside and outside the project. A team is working on creating new resources, which explains their abundance. These resources depend on the sustainability of the project. Much work has to be done on the structuration of the resources and data created, which implies extra resources. The empowerment of the community is essential. Moreover, Ocean I3 has developed many tools thanks to a team dedicated to projects: a greater understanding of the issues and impacts, especially by teachers, is the key to its sustainability.

9.3 Description of the activity as a project-based learning activity (participant dimension)

9.3.1Description of the learning design process (cf Learning Design Framework)

Goal setting

Participants co-design the activity based on a challenge given by socioeconomic actors

Participants: undergraduate and postgraduate students at the University of Bordeaux and University of the Basque Country and professors, scientists from different backgrounds (see above). All these participants form an intercultural and interdisciplinary community that speaks different languages: Basque, Spanish, French and English. The private and the government sector are involved.

Participants' pre-activity knowledge of the topic: from basic to advanced level

Learning goals: To learn skills on cross-boundary collaborations (interculturality, multilingualism, etc.), To learn soft skills, also called "blue skills," linked to the blue economy of the Basque Country Territory, To learn Education for SDG's contents and skills, To learn about online and Design Thinking

Research and innovation goals: With a research-based learning approach, the main objective is to produce knowledge oriented to real challenges and problems in the field of the blue economy of the cross-border coastline

Openness: open data, open and cross-boundary collaboration, open innovation practices, outputs are made open access and open innovation practices

Sustainable development goals: quality education, responsible consumption and production, industry innovation and infrastructure, climate action, sustainable cities and communities, life below water, reduced inequalities

No pre-training: collaborative platform training

Activity development

Coordinators: the University of Bordeaux, the University of the Basque Country and Euskampus (management team)

Composition of the group/collaborators: Students and mentors (academic and socio-economic actors)

Learning objectives: participants are able to demonstrate good collaboration skills and produce a project that meets the challenge set by the professionals of the Blue Economy.

Table 9-5 Learning Design Process of Ocean I3 Activity (step by step) - Source: Learning Design Framework

Steps (Design thinking method)	How?	Comments of the coordinator
Ideation phase (topic exploration, need-finding, brainstorming solution ideas)	Participants and mentors. Teachers are involved during all processes. Socio-economic experts are consulted. **Online (Gather and Oktonine)** Method: secondary research, observing and consultations with target end-users, group discussion/brainstorming	**Workshop 1**: creating the collective project Objective: getting to know each other and defining a collective project from a challenge proposed by socioeconomic actors of the Basque country/Aquitania **Between workshop 1 and 2:** Collaborative work: strengthening the team and the collective project (until 19/02/2021). Valorisation and reinforcement of the multilingual and intercultural reality. Knowledge of multilingualism slogans (until 26/02/2021). Active learning method (22/02/2021). Presentation of the individual project (until 01/03/2021)
Design phase (Design model(s) and prototype design(s))	**Participants and mentors** Teachers are involved during all processes. Socio-economic experts are consulted. **Online (Gather)**	Workshop 2: the creation of the collective project. Between Workshop 2 and Workshop 3: realisation of the collaborative project. Workshop 3: discussions with the socio-economic actors and feedback.
Implementation phase (User testing, Reiterative design)	**Participants and mentors** **Online (Gather and Oktonine)** **Method:** test runs with target users, Consultation with experts	Between Workshop 3 and 4: adjustment of the collaborative project and active learning (until 30/04/2021). Workshop 4: integration of the results and work on the SDG's goals on the skills. Between Workshop 4 and workshop 5: preparation of the collective results
Communication phase (presentation and discussion of final outputs, Dissemination of final outputs for real-world application)	**All the Ocean I3 community** **Online (Gather and Oktonine)** **Method:** presentations and documentation of project outcomes	Workshop 5: presentation and diffusion of the final results

9.3.2Description of the resources

The mentoring

Table 9-6 The mentoring in Ocean I3 Activity - source: complementary survey

Who are the mentors?	Teachers from the university organiser, external partners
What is their role?	Teacher - educator, facilitator
What are the criteria for choosing mentors?	Motivation and volunteer, engagement and availability, Field of expertise (specialisation in a field), University network/partners (networking and new opportunities)
How were the mentors involved in the activity?	Mentors are organisers (they are involved in all stages described), they are involved in the organisation of the activity (preparatory meetings), they are involved in the training, just before the activity, they are involved in the evaluation/assessment phase, they are involved in the university network/partners (networking and new opportunities)

The typology of skills

Table 9-7 The typology of skills developed in Ocean I3 Activity - source: identity sheet

Knowledge of the topic	Plastic pollution and ocean sustainability
Technical skills (e.g., using software)	Design software using: a training on Oktonine is given to each teacher, not to students
Soft skills (e.g., project management)	"Blue skills" identified (collaboration with IKASGURA and DREAM UPV/EHU Research labs) ● Communication in intercultural and multilingual contexts ● Negotiation, horizontal participation and commitment to people and actions developed. ● Active listening, interpretation, interrelation, and interaction with the Ocean i3 community

	members and social agents. ● Integration and management of the knowledge contributed by different disciplines and social contexts. ● Analysis, understanding and resolution of complex problems. ● Creativity to solve problems from different angles. ● A global and integrative vision of the problems. ● Elaboration of informed documents based on research methods. ● Integration of values adopted in the Agenda for Sustainable Development.
Open innovation skills (e.g., innovation process)	Design Thinking approach
Others, please specify	Sustainable goals, integration of the problem, the complexity of the problem

The tools

Table 9-8 The tools in Ocean I3 Activity - source: Learning Design Framework

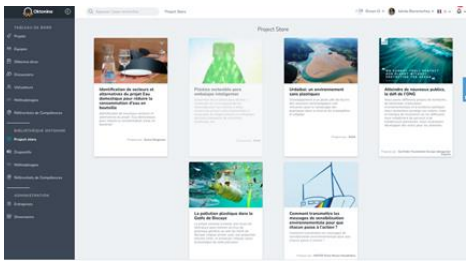
Collaboration tools	
OKTONINE which is a collaborative platform used as: ★ A storage space ★ A method for working through challenges and problems ★ A space of communication for teachers and students, but not instantaneous Mural, Miro, Mentimiter used as: ★ Design Thinking tools during the workshops	
Gather town used as: ★ a platform for conducting virtual workshops in virtual spaces	

Figure 21 Oktonine screenshot - Ocean I3 Activity

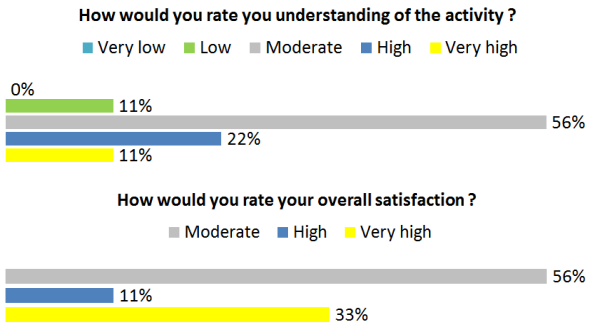
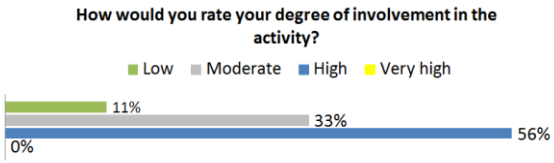
★ Communication space ★ Presentation of the method and exercises ★ Final sessions	
Resources	- Introductory presentation - Use of open-source software and hardware in tasks.

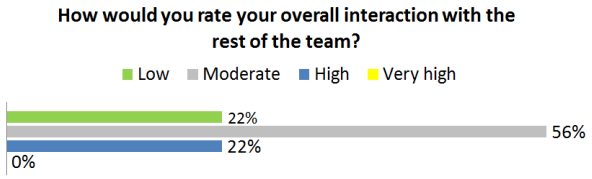
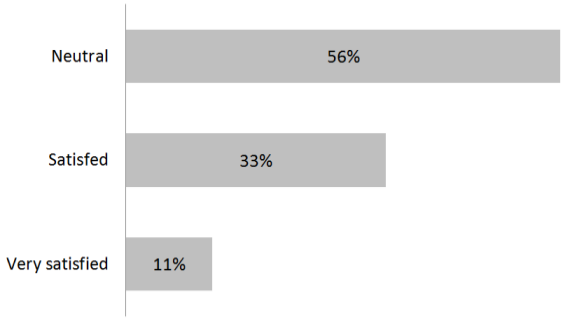
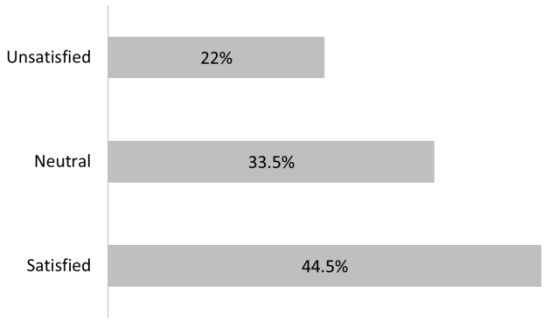
9.4 Review of the project-based learning activity (participant dimension)

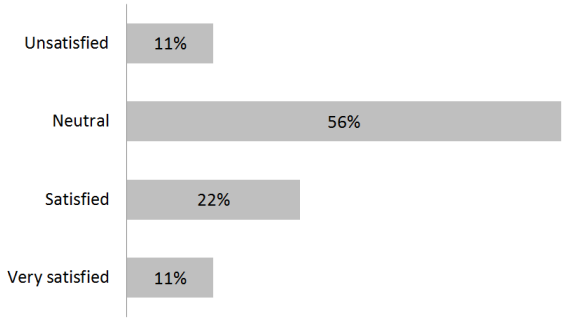
9.4.1Main achievements

Data grid

Table 9-9 Participant dimension of Ocean I3 Activity - part 1 (results)

Objective 1: Encourage the personal engagement	
Rate of engagement regarding the understanding of the activity *Source: post-event survey*	
Verbatim/general feedback *Source: post-event survey*	- "Improve the Oktonine platform, because the activities to be carried out are not clear" (in Spanish) - The "mural" is really difficult to work on, not easily, same for Euskampus oktonine.
Interactivity rate/general engagement and team engagement *Source: post-event survey*	

	
Objective 2: Facilitate the synergies between the participants	
Rate of satisfaction regarding the mentoring *Source: post-event survey*	
Rate of satisfaction regarding the access to knowledge *Source: post-event survey*	
Feedback on tools by the organisers *Source: complementary survey*	"It has accelerated the process we had already planned to incorporate collaborative tools and distance working habits, which in our case (a project shared between two cross-border universities 400 km apart) helps to support and give continuity to the collaborative work of inter-university student teams and with social agents." Although we have yet to further integrate the OKTONINE collaborative learning platform, the experience is interesting and, above all, provides support and the possibility of stabilising the operation of the remote teams. Other tools such as gather town, mural, Miro, Mentimeter are useful instruments that we will continue to use to support our online dynamics." – Julieta Barrenechea – the coordinator
Objective 3: Create the conditions of networking/partnerships	

Satisfaction rate regarding the networking dimension of the activity *Source: post-event survey*	
Number of social network events/social networks interactions	No face-to-face moments. The workshops using Gather town were real moments of team-building.

Analysis

Table 9-10 Participant dimension of Ocean I3 Activity - Analysis of the results

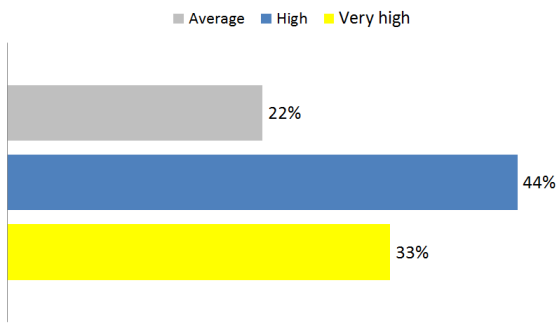
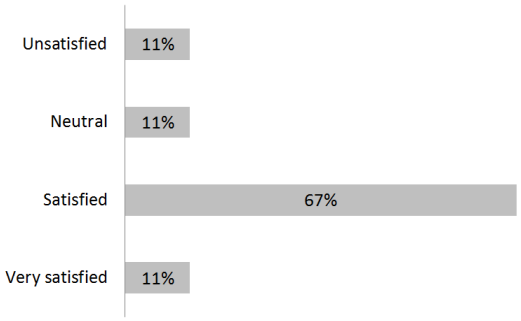
Strengths	Challenges
Because of the very low response rate, it is very difficult to interpret these data with precision. Ocean I3, which has existed for three years, tested an online format for the first time in 2020-2021. The Oktonine platform developed for this edition helped organise and unify the conversion of the activity. Bringing together different communities from different territories is a real issue: thus, a tool bringing together functionalities such as project management or the resource library is a real advantage. It has to be noted that Ocean I3 is the only activity to have organised a training session. This situation is explained by the fact that the platform is provided by an external service that has met specifications. Of the few results we have, the participants appreciated this session and had to be repeated a little later in the process. This feedback will make it possible to adjust the functionalities as well as possible. This point demonstrates the need to build mentoring and training sessions in line with learners' levels and expectations and adjust them along the process by monitoring the participants' needs.	Adjustments concerning the Oktonine platform are nevertheless necessary: users did not correctly understand the platform, which created frustration in terms of engagement and access to knowledge. 56 % of the learners have not fully understood the activity and the learning goals, which may need to be better explained. Nevertheless, the moments of workshops made it possible to consolidate the links between the teams and adjust the tool. Due to the pandemic, it was impossible to organise convivial moments, which is very important in the Ocean I3 activity since it involves multiculturalism objectives. To find these links as much as possible, the organisers used Gather.town, a communication tool that could digitally reconstitute places and discussion spaces. Team-building sessions were also imagined during the workshops to compensate for the lack of interaction. They were appreciated, but it seems that the context weighed heavily on participants' motivation (56 % are neutral, and 11 % are not satisfied). These moments are

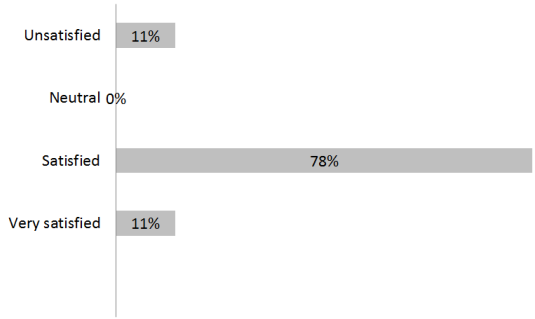
	important in developing collaborations. Successfully completing projects involving the teachers/learners is the best way to compensate for the online format issues.

9.4.2Main impacts

Data grid

Table 9-11 Participant dimension of Ocean I3 Activity - part 2 (impacts)

Objective 1: Develop personal learning and development	
Auto-evaluation of the level of knowledge of the participants after the activity *Source: post-event survey*	
Empowerment on the topic/micro plastic pollution *Source: post-event survey*	
Verbatim/personal learning *Source: post-event survey*	1. "Natural science (physical or chemical)" 2. "I need to spend more time and invest more. But I learnt about microplastic in water and environmental impact." 3. "Need more time."
Objective 2: Motivate new skills and empowerment/fun	

Empowerment/new skills acquisition *Source: post-event survey*	
Verbatim on empowerment *Source: post-event survey*	1. "I learnt about collaboration, preparing the speech and having a methodology to present the project."
Objective 3: Innovative value of the project's outputs	
Number of social network events/social networks interactions	Zero but normally, the workshops are built as networking moments
Networking scheme	See the innovation dimensions.

Analysis

Table 9-12 Participant dimension of Ocean I3 Activity - Analysis of the impacts

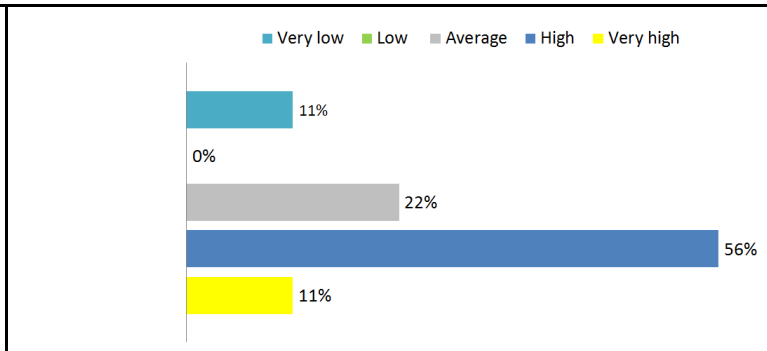
Strengths	Challenges
Again, the response rate does not provide reliable results but just trends. Despite everything, it would seem that the activity is satisfactory in terms of acquiring new skills and knowledge about the topic. Here again, it should be noted that work is being done on learners' self-assessment. Indeed, within the framework of the workshops organised throughout the year, an exercise is dedicated to self-assessment skills according to a typology provided by a laboratory and developing the terminology of Blue Skills. The project is intended to be a precursor in the development of skills entering into a socio-economic approach to needs, particularly provided by the	Outside of workshops, the platform does not report on the completion of projects or results. In-depth feedback from teachers who have close relationships with learners should also be carried out. The fact that this long activity was extracurricular has particular benefits and disadvantages. As a project, the format is adaptable, but the accreditation question remains problematic regarding the engagement furnished (one semester) and the sustainability of the activity. The link with the socio-economic actors is an interesting way to work on valorising the acquired skills.

territory actors. This proximity to the socio-economic world is very encouraging for the learners.	

9.5 Conclusion (socioeconomic dimension of the activity)

The coordinator says about the social impact of the activity that the outputs are "the result of concrete demands from social agents and collaborative work with them during three meetings (...). There are also trainees in the organisations that propose challenges simultaneously as they carry out the project. All this background contributes to the employability of the students." Above that, collaborations with socio-economic actors are maintained by deepening the challenges and associating new work teams with other disciplinary profiles to continue contributing. The participating teaching staff remains stable, and students are kept informed, and in some cases, they may be asked to participate in specific activities. This whole activity dynamic increases the impact of the activity on its ecosystem and participates in the sensibilisation of society to open projects. However, the pedagogical impact of the activity should be improved, notably by consolidating the ALUMNI network, for instance.

Table 9-13 Socioeconomic dimensions of Ocean I3 Activity (long-term impacts)

Rate of understanding of open innovation and the social impact of citizen science *Source: post-event survey*	

10Technology & Migration – Aalborg University

Summary of the activity			
Intra curricular	Focus : innovation	Duration : one semester	Long CEI
From 1 February to 30 June 2021	Online	19 + 5 mentors (academics)	Target: bachelors and master students from Medialogy and Techno-anthropology invited to create projects under a shared "Technology and Migration" theme
Results expected: innovative solutions, networks built		Topic and challenge: Technology and migration	
List of pedagogical resources available for the participants			
Before the event: - Not precise		During and after the event: - creation of a resource-sharing space, but the participants are collecting data straight by asking the partners	
Data analysed within the INOS framework			
Learning Design Framework	Completed	Identity sheet	Completed
Pre-event survey	Response rate: 100 %	Post-event survey	Response rate: 52.63 %
Other data and resources	Two video testimonials		

10.1 Description of the activity as an open-innovation activity (innovation dimension)

10.1.1 Context and programme

Framework: part of an internal megaproject. A theme offered as a semester project theme to students of different studies (2 different programmes). 15 ECTS

MEGAPROJECTS IN BRIEF

https://www.megaprojects.aau.dk/what-is-a-megaproject/

A megaproject is an ambitious umbrella project addressing one or more significant societal problems. A megaproject is part of a collaboration with at least one external partner. The megaprojects consist of several subprojects, all of which contribute to solving the grand challenge set in the megaproject. The students involved are thus working in their own disciplines and as part of their curricular activities.

Organiser/coordinator: Aalborg University

Engagement mode: Communication tools: mailing, social networks, information meetings, external calls of participation

Funding: No financial contribution

The activity is already a regular activity and replicable

"Such themes are offered to students from 2019. The themes and the external stakeholders change, but the idea remains the same." Eva Triantafyllou - coordinator

The main tool is Microsoft Teams: Online format due to the pandemic context: It allowed students from other campuses to participate. It also made it easier to communicate with the external stakeholders (some of whom were located in other countries).

Challenge: technology and migration

Planning: three seminars spread across the semester, weekly support meetings

10.1.2 Main characteristics

The main characteristic of the project is the autonomy given to the students, and consequently, the flexibility of the support provided. The mentor is a facilitator bringing the proper tools and the proper network.

"Open innovation is further incorporated by involving the UN Refugee Agency Copenhagen (UNHCR) as an external expert. As facilitators, the course coordinators' key role is to support the collaborations between the students and with the UNHCR. Currently, this role includes creating an online discussion and resource-sharing space for students via Microsoft Teams, hosting weekly support meetings for students, and helping students establish initial contacts at the UNHCR". The coordinator

Such activities are not compulsory, and the students themselves drive their sustainability. Students are also free to initiate other collaborative activities as inspired by their project work (e.g., interest group meetings).

10.1.3 Results

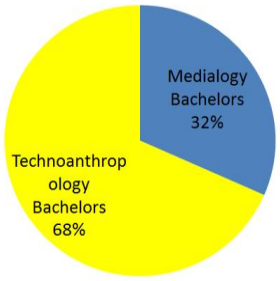
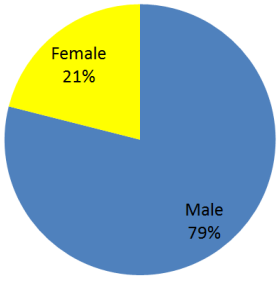
Students produced prototypes and designed solutions for education for refugees, protection of their rights in the working place, and integration in the host country. Moreover, they had the chance to work with the UN Refugee Agency and with students from other disciplines/semesters. Innovative solutions built networks (not specified)

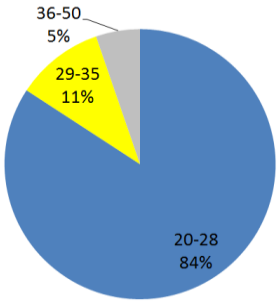
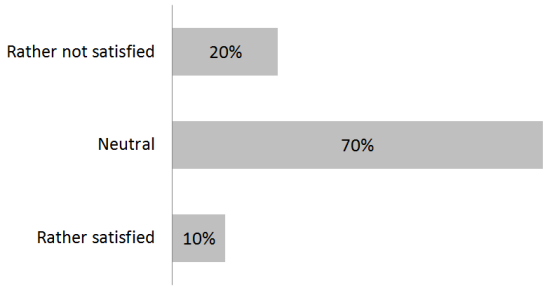
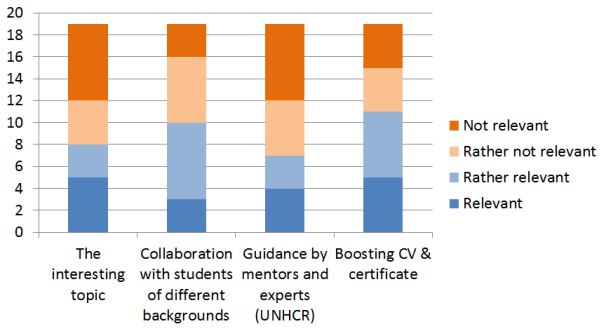
10.2 Review of the open-innovation activity (innovation dimension)

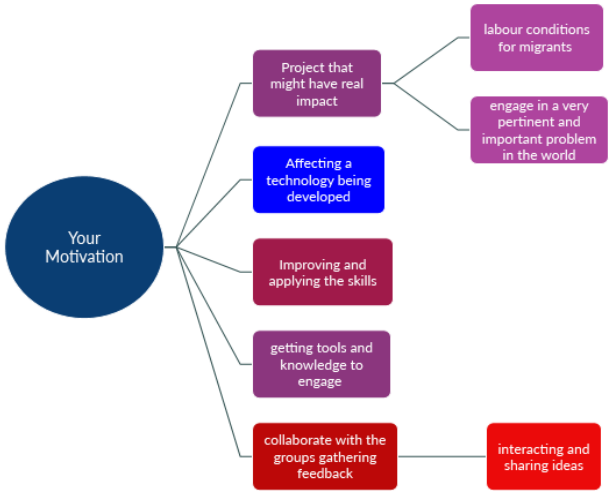
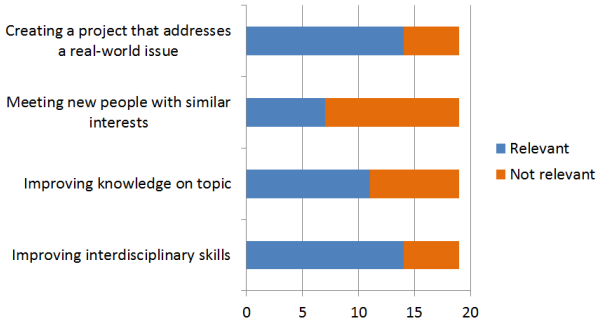
10.2.1 Main achievements

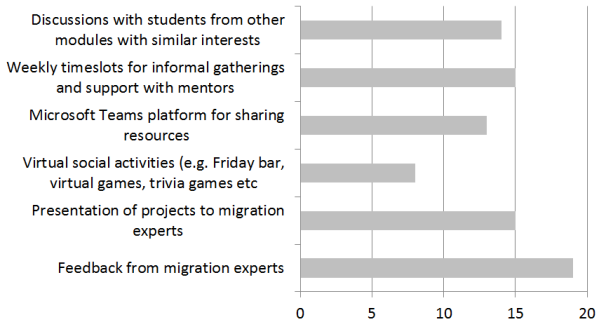
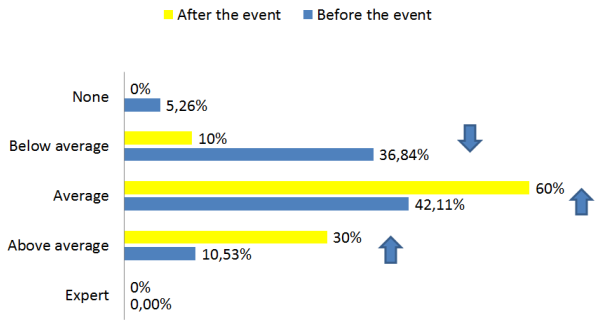
Data grid

Table 10-1 Innovation dimension of Tech and Migration Activity - part 1 (results)

Objective 1: Assure the quality of the activity as an open-innovation event			
Participants expected Participants achieved	20 18	Participation rate	97 %
Inclusivity rate/Variety of the backgrounds *Source: pre-event survey*			
Inclusivity rate/Gender of the participants *Source: pre-event survey*			

Inclusivity rate/Age of the participants *Source: pre-event survey*	
The openness of the resources	Open data No outputs
Objective 2: meet the interest of the participants	
Overall satisfaction of the activity *Source: post-event survey*	
Relevance of the topic/motivation rate *Source: pre-event survey* (What motivates you to participate in the activity?)	

Relevance of the topic/other motivations (open question) *Source: pre-event survey* (What motivates you to participate in the activity?)	 *Figure 22 NVivo mind mapping of the motivations of the participants*
Relevance of the topic/expectations and achievements *Source: pre-event survey*	
Relevance of the topic/other expectations and achievements *Source: pre-event survey*	1. "Be part of a community in AAU." 2. "Not a finished case, but at least some problems. Too vague problem field." 3. "General software and technology tools and abilities. General knowledge about the systems regarding immigration and refugee."

Expectations and interests/by type of activities *Source: Pre-event survey* (What kind of activities are you interested in?)	
Level of knowledge of the topic before and after the activity *Source: pre and post-event survey*	
Objective 3: Create the conditions of the sustainability of collaborations and results	
Nature of the results/projects *Source: complementary survey*	No conditions are created to valorise the outputs, but they are transferable. The student projects did not result in sustainable solutions or collaborations. However, the teacher team is committed to working on this kind of interdisciplinary project.

Analysis

Table 10-2 Innovation dimension of Tech and Migration Activity - Analysis of the results

Strengths	Challenges
As an intra-curricular activity, the activity does not have a very high rate of inclusiveness in terms of age and gender. Most of the participants are students in their twenties. It is on the "variety of backgrounds" indicator that transdisciplinarity operates and collaboration with a socio-economic actor. Even if there is a slight imbalance of representation between the two disciplines, the originality of the activity and its	In general, the expectations and motivations of the participants converge towards one objective: the search for an increase in professional skills (boosting CV and certificate) and the application of these skills to real-life problems. Especially since the theme here involves real issues in terms of sustainable development and social impacts. These expectations are reflected in the type of popular activities that are

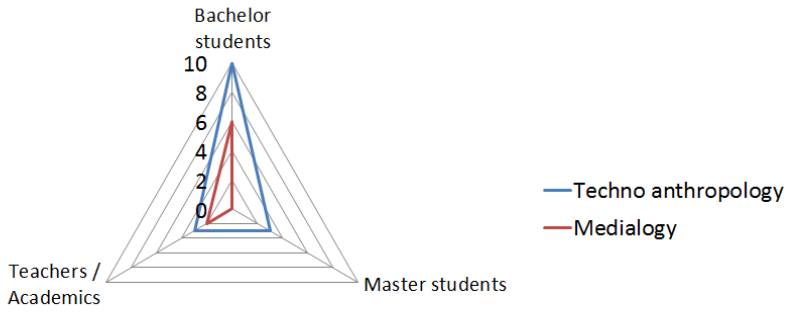
openness hold more than the nature of the results produced. As the programme is based on interdisciplinarity and partnership with a socio-economic actor, the results are not intended to be exploitable. However, it could be very interesting in terms of networking for students on the one hand and the institution on the other hand.	linked to mentoring or external partnerships. Interdisciplinarity is sought for this point but does not primarily involve meeting with other students. The satisfaction rate is not that good: the participants come out enriched in terms of the topic, but it seems that the objectives in terms of professionalisation were not reached.

10.2.2 Main impacts

Data grid

Table 10-3 Innovation dimension of Ocean I3 Activity - part 2 (impacts)

Objective 1: create new projects and collaborations	
IP terms: As defined by the university's standards. Students will always be asked for permission to share their work.	
Role of the university in the community management *Source: complementary survey*	
Dissemination level of the outputs/resources *Source: complementary survey*	

Community-level *Source: pre-event survey*	
Objective 2: create new knowledge resources	
Creation of new resources *Source: complementary survey*	• A publication: Elisha Anne Teo, Tom Børsen, Evangelia Triantafyllou, Jorge Ivan Contreras Cardeno, Petko Karadechev, *Designing open innovation problem-based projects: social relevance, student expectations and preliminary observations*
Objective 3: Develop and enrich the innovation processes in the institution	
Transferability of the activity	**Yes.** "Such themes are offered to students since 2019. The themes and the external stakeholders change, but the idea remains the same". (Evangelia Triantafyllou, the coordinator)
Dissemination level of the activity **International level** *Source: complementary survey*	

Analysis

Table 10-4 Innovation dimension of Tech and Migration Activity - Analysis of the impacts

Strengths	Challenges
The "megaproject" is a redundant programme: the design of the format is capitalised as a resource for the institution. The activity is disseminated at the institution level and behind as a replicable and replicated format. The young but successful concept is building some best practices at the teachers' and academics' levels. The institution's culture of innovation involves building bridges between disciplines on the one hand (the combinations can change depending on the theme) and the weaving of links with socio-economic partners who can provide subjects as close as possible to students' expectations. The tools in terms of visibility, and the groundwork in terms of open resources, are the responsibility of academics who work on the continuous improvement of the format.	As shown in the community scheme, there is a parallelism between the teachers and the students involved. The mentors, who are the teachers and not the socio academics, have an important role in maintaining the community's sustainability throughout the activity. After the activity, the participants and the mentors do not stay connected ("the students will move on to other semesters. We will keep collaborating with the teachers of the other studies"). The regular meetings are consequently very important. The results or resources produced are exploited as feedback on the learning process (see below)

10.3 Description of the activity as a project-based learning activity (participant dimension)

10.3.1 Description of the learning design process (cf Learning Design Framework)

Goal setting

Co-design of activity with participants

Participants: Bachelors and master's students from Techno-Anthropology & bachelor students from Medialogy

Participants' pre-activity knowledge of the topic: limited

Learning goals: To learn about technology-related challenges faced by refugees.

Sustainability goals: quality education, reduces inequalities, partnerships for the goals

Openness: open data, cross border participants (diversity of backgrounds and UNHCR) and training to soft and technical skills relevant to open science and open innovation practices

Activity development

Coordinator: teachers/academics

Composition of the group/collaborators: University postgraduate students, University undergraduate students + mentors/academics

Learning objectives: by the end of this activity, students will have produced projects that address technology-related challenges for refugees.

Table 10-5 Learning Design Process of Tech and Migration Activity (step by step) - Source: Learning Design Framework

Steps (Design thinking method)	How?	Comments of the coordinator
Ideation phase (topic exploration, need-finding, brainstorming solution ideas)	**Participants with guidance by mentors** **Online (Microsoft teams)** **Method: s**econdary research, observing and consultations with target end-users, group discussion/brainstorming	First, course coordinators identified focus areas within "Technology and Migration" relevant to the Medialogy and Techno-Anthropology curricula. The UNHCR contributed key challenges related to these focus areas. Students then developed their project topics using both elements.
Design phase (Design model(s) and prototype design(s))	**Participants with guidance by mentors** **Online (Microsoft teams)**	Students work on their semester projects, as usual
Implementation phase (User testing, Reiterative design)	**Online (Microsoft teams)** **Method:** test runs with target users, Focus groups, Consultation with experts	
Communication phase (presentation and discussion of final outputs, Dissemination of final outputs for real-world application)	**Online (Microsoft teams)** **Method:** presentations, Group discussions and Consultation with experts)	While the students worked on their projects, the role of the facilitators was to support the students' collaborative activities. Initially, this support included creating an online discussion and knowledge-sharing space for students via Microsoft Teams and hosting weekly support meetings for students. Facilitators also assisted students with contacting the UNHCR – to do so, one representative from Aalborg University and another from the UNHCR were responsible for collecting student questions, determining requirements, arranging future interactions, and arranging feedback sessions. These activities were not compulsory, and the students themselves drove their sustainability.

		Students were also free to initiate other collaborative activities as inspired by their project work, such as interest group meetings.

10.3.2 Description of the resources

The mentoring

Table 10-6 The mentoring in Tech and Migration Activity - source: complementary survey

Who are the mentors?	Teachers from the university organiser, the external partners, have a minor contribution as mentors
What is their role?	Advisor, facilitator, and consultant
What are the criteria for choosing mentors?	Teachers involved in the course (teaching expertise), engagement and availability, a field of expertise (specialisation in a field), university network/partners (networking and new opportunities)
How were the mentors involved in the activity?	They are involved in the preparation of the activity. They are involved in all the schedule planning

The typology of skills

Table 10-7 The typology of skills developed in Tech and Migration Activity - source: identity sheet

Knowledge of the topic	Socio-technical systems, open society, societal values. Knowing how to elicit values from socio-technical systems and how to design more explicit and open values for users
Technical skills (e.g., using software)	Using design thinking digital software The ability to use design thinking practices with digital tools online and co-creative mode
Soft skills (e.g., project management)	Project management, collaboration
Open innovation skills (e.g., innovation process)	Design thinking, value-based design, the ability to use the value-elicitation techniques in analysis and design of socio-technical systems

Others, please specify	

The tools

Table 10-8 The tools in Tech and Migration Activity - source: identity sheet

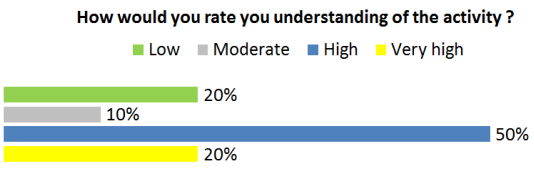
Collaboration tools	
Web conferencing software Collaboration and file-sharing software Not specified: specialised (open) tools/hardware	
Communication tools	
Microsoft teams used for: ★ The regular mentoring meeting	
Resources	Open data (not specified)

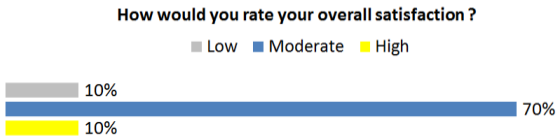
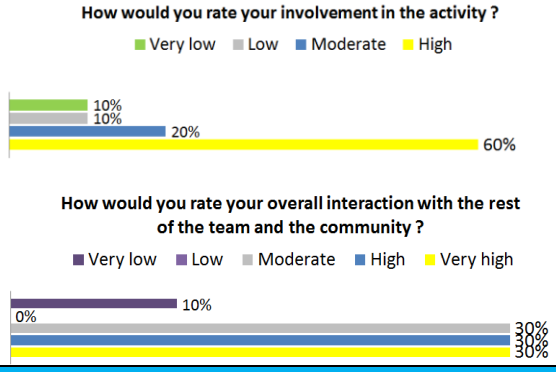
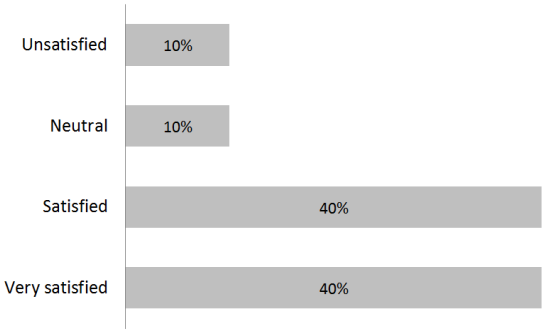
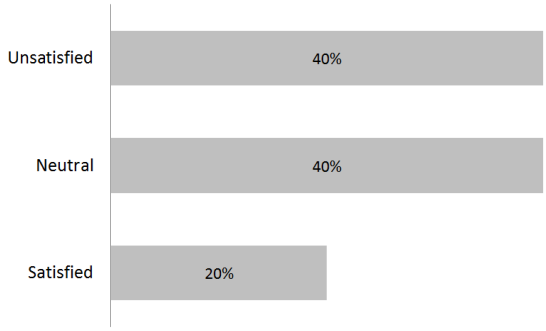
10.4 Review of the project-based learning activity (participant dimension)

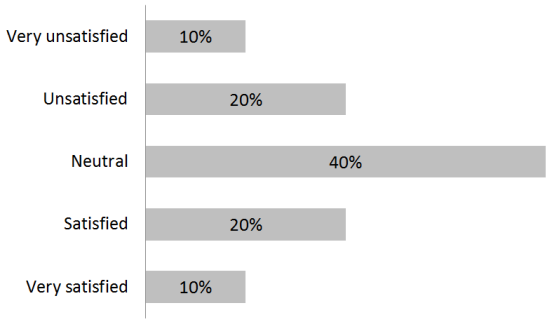
10.4.1 Main achievements

Data grid

Table 10-9 Participant dimension of Tech and Migration Activity - part 1 (results)

Objective 1: Encourage the personal engagement	
Rate of engagement regarding the understanding of the activity *Source: post- event survey*	

	
Interactivity rate/general engagement and team engagement *Source: post-event survey*	
Objective 2: Facilitate the synergies between the participants	
Rate of satisfaction regarding the mentoring and the training *Source: post-event survey*	
Rate of satisfaction regarding the access to knowledge and tools *Source: post-event survey*	
Feedback on tools *Source: complementary survey*	"Positive and beneficial impact of using online tools: It allowed students from other campuses to participate. It also made it easier to

	communicate with the external stakeholders (some of them were located in other countries). The ability to use the online tools has been confirmed. They said that it is very useful in several cases such as in preparing learning, In facilitating students and the participants to access learning devices." Evangelia Triantafyllou – the coordinator
Objective 3: Create the conditions of networking/partnerships	
Number of social network events/social networks interactions *Source: complementary survey*	Online or face-to-face events: 12 weekly online meetings between all participating students and supervisors (informal and optional), three online meetings with the participation of all students and supervisors - in the last one a representative of UNHCR was also present, 15 weekly online meetings among each group and their supervisor. Social networks tools between the participants: MS Teams, Overleaf (for report writing/reviewing)
Rate of satisfaction regarding the networking dimension of the activity *Source: post-event survey*	
Verbatim regarding the networking dimension *Source: post-event survey*	1. "Very good for making contact with other students. It could be a little be more engaging regarding the interaction with academics and experts." 2. "The contact with the UNHCR was difficult, and it feels like we were promised more in the beginning. That is more on the University than the UNHCR." 3. "Very engaging, and participants were very eager to help and interact with the only bad thing for me is that Teams is too heavy of a program to be able to use."
Verbatim regarding the collaborations *Source : post-event survey*	1. "I enjoyed the interaction between faculties, as it gives different perspectives, although I have to admit that we didn't really come in contact with refugee agencies, as it was not really helpful for our project." 2. "I felt that there were some limitations to our collaboration across disciplines. It didn't go as we had hoped, as there was not the desired communication before the project started." 3. "It seems like a good idea. Using the strengths from both

	studies to work together. But it was falling through, making it hard to really explain what I feel." 4. It was fine, considering the restrictions on social gatherings. However, I think gatherings, workshops, and meet & greets would elevate knowledge sharing in the TAM community." 5. "It wasn't implemented in any significant way due to complications." 6. "Other groups were fine. Refugee agencies were very difficult to have contact with. Very interesting, but the collaboration would have been more fruitful if the projects had been about the same topic. Maybe from the start, we could have discussed doing more collaborative work before the groups had chosen topics. " 7. "Would have been nice."

Analysis

Table 10-10 Participant dimension of Tech and Migration Activity - Analysis of the results

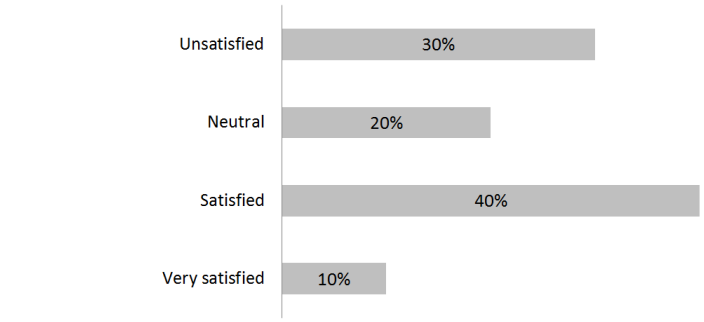
Strengths	Challenges
The participants are globally very satisfied regarding the expertise and support of the mentors who are exclusively the teachers involved in the course and selected according to their teaching expertise, engagement, and availability. Their involvement was appreciated and impacted the experience of the students. The access to the resources, on the other hand, was not unanimous. By resources, we also understand the external partners who came to provide the necessary data and dedicated time. This aspect was more problematic, but more global access to resources was well supervised: "*Helpful environment. We were able to find articles in the "Resources" that guided us in identifying the general issues and forming questions for the interviews more accurately and more tangible solutions to our problem".* Both factors directly affect students' involvements and motivations during the activity. Moreover, the activity has a high rate of networking despite the sanitary conditions and the online work; the	The engagement rate is average for this activity partly due to the adaptation linked to the pandemic context. The activity usually takes place face-to-face, which facilitates understanding the field that is very specific and dependent on a socio-economic actor providing expertise. Indeed, difficulties in defining objectives and aligning learners with this definition have been noted, especially initially. Some participants overcame this problem. Others did not: the data is therefore very disparate. They will be adjusted for a future edition because the online format also has some beneficial impacts: it allows students from different campuses to participate. It made it easier to communicate with external stakeholders, which is important in the framework of the megaprojects. Globally the participants qualified their participation by being proactive, but the overall satisfaction is average. The specific issue noted is the lack of clarity in expectations and instructions at the start of the activity: specific proposals and challenges from the UNHCR part, for example, would have allowed a better definition of

majority of students think that the activity in this interdisciplinary format was an opportunity to build a community where they can elevate their knowledge in collaborative work. The neutral and unsatisfied rate can be attributed to the students who faced some difficulties collaborating with unknown students and suggest that it will benefit organising a speed dating session before choosing the topic to permit the participants to learn about them. This session could be a catalyst for involvement and offer a nice learning environment.	the stakes for the participants.

10.4.2 Main impacts

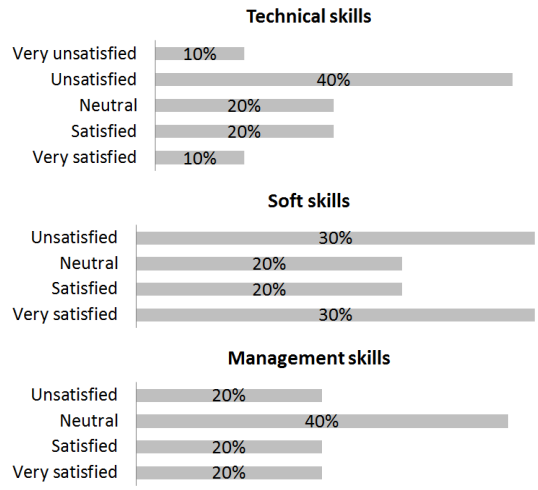
Data grid

Table 10-11 Participant dimension of Tech and Migration Activity - part 2 (impacts)

Objective 1: Develop personal learning and development	
Satisfaction rate/empowerment on the topic *Source: post-event survey*	
Verbatim/personal learning *Source: Post-event survey* (What were the biggest things you learned from the Technology and Migration initiative?)	1. "Gained experience with the humanitarian field." 2. "The best thing out of the initiative is that we had the chance to discuss our issues and doubts with the other groups and the organiser. In this way, we were able to get different perspectives on the same problem. 3. "You won't get focus." 4. "Collaboration between different actors in different sectors". 5. "How much work it takes and how professional it needs to be in order to succeed." 6. Use different languages for different people. Easy vocabulary outside academia. Also, stay practical and focus on humans/individuals experiences. It is easy to be theoretical only and make a single solution about something, but it's more difficult and meaningful to try and create a practical tool in collaboration with the individuals who will use it." 7. "That the UN definitely doesn't have time for a small medialogy group."

	8. "The difficulties of working with an external stakeholder" 9. "The differences between the exploratory approach to knowledge gathering that I am used to, and the UNHCR's expectation of a well-defined problem statement at the first meeting. " 10. "How difficult the humanitarian field is to access." 11. "How to approach another kind of field."

Figure 23 NVivo analysis of the verbatim regarding the lessons of the Tech and Migration Activity

Objective 2: Motivate new skills and empowerment/fun	
Empowerment/new skills acquisition *Source: post-event survey*	
Verbatim – suggestions of general improvements *Source: post-event survey*	1. "I would make clearer the outline and the scope of the project from the beginning. I think at the beginning. There was a little bit of confusion between the students.

	2. "I want to hear about areas of problems. We ended up finding our own unique problem, but "we need you to narrow your problem field further" is an evil circle when you are looking for areas of discourse." 3. "clearer expectation management in the beginning" 4. "Did not like the Teams program :P" 5. "I think that the most positive aspect of this initiative was the opportunity to work with students and mentors who were very engaged and eager to share their knowledge." 6. "Nope, all good :D." 7. "That the introductory seminar starts earlier so that students don't have to choose without fully knowing what they will be saying yes to. " 8. "Jorge especially was a great help to us. In terms of improvements, there was quite a delay between the start of our semester and the first meeting with TAM. Would have preferred it sooner. Also, clearer communication of the UNHCR's expectations would have been nice." 9. "UNHCR gave us a recommendation for a project, but we only had five weeks left, so the first contact to UNHCR has to be much earlier in the process if the idea is that UNHCR provides projects instead of the students creating them" 10. "Would have been nice if UNHCR had come with specific topics they would like investigated. Then hopefully collaboration had been more productive."
Objective 3: Innovative value of the project's outputs	
Transferability of the results	No data
Networking scheme	No data

Analysis

Table 10-12 Participant dimension of Tech and Migration Activity - Analysis of the impacts

Strengths	Challenges
According to the participants' feedback on the competencies acquired and the skills developed, three points have been highlighted: 1. The empowerment in collaborative work has taught them the importance of collective intelligence, communication with others with	The innovative value of the projects cannot be evaluated. Indeed, all student projects had an innovation factor since the students are encouraged to analyse state of the art in the field of work before proposing any solution. The innovation factor varies though from project to project.

various languages, and critical spirit. 2. The importance of building synergies with real-life actors requires competencies and communication and networking approaches. 3. The know-how gained regarding the topic (humanitarian field) encourages them to acquire other skills to be more practical. According to the feedback given by the participants, the conditions for empowerment are enjoyment in participating in the activity (the verbatim traduced much fun), good accessibility to the resources and a helpful environment (mentors helping with issues, notably with the external partner) and interdisciplinarity (the megaprojects creating exceptional conditions by breaking the silos of courses).	The master students did a better job analysing the current landscape and proposing an innovative solution. This aspect can be more defined if needed.

10.5Conclusion (socioeconomic dimension of the activity)

Whether it's a concept or topic, megaprojects are activities that develop an innovative way of learning. The link between immigration and an association creates a real application dimension to the activity and the impression of developing so-called innovative skills. The activity represents new ways to support education, rights, and other aspects of life for immigrants.

A consolidation of the relationship with the partners (communities with socio-economic actors) and a work on the dissemination would be a real plus. They would make it possible to open up the format and resources even more. Moreover, it could engage partners more and avoid misunderstanding at the beginning of the learning process.

11 Opening up and redesigning the values of public services – Tallinn University

Summary of the activity			
Intra curricular	Focus: education	Duration: one semester	Long CEI
4 September to 17 December 2020	Mixed - online video lessons with digital tools and classroom design activities. Location. Tallinn University	26 + 1 mentor (academic)	Target: Tallinn University master course Collective intelligence in sociotechnical systems Groups are expected to be 3-4 people in size.
Results expected: Reengineering the existing digitally mediated socio-technical services from the public value's viewpoint		Topic and challenge: Public digital services, open data use, digital service using collective intelligence	
List of pedagogical resources available for the participants			
Before the event: - Not precise		During and after the event: - Case studies - The supplemental materials were provided in the Google classroom. The discussions and virtual meetings were run in Zoom.	
Data analysed within the INOS framework			
Learning Design Framework	Unfilled	Identity sheet	Completed
Pre-event survey	Response rate: 65.38 %	Post-event survey	Response rate: 61.54 %
Other data and resources	Final presentations available in PDF Format		

11.1 Description of the activity as an open-innovation activity (innovation dimension)

11.1.1 Context and programme

Framework: part of a course entitled Collective intelligence in sociotechnical systems, MA course; team assessment is based on final projects

Similar activities: Open society technologies winter school 2020. Planning similar approach at the online winter school 2021 Public innovation with social activists who design services for their communities

Coordinator/organiser: Kai Pata, Associate Professor of Educational Technology, School of Digital Technologies Tallinn University

Engagement mode: Part of a course, no special registrations needed

Funding: No financial contribution, resources with equipment and tool

The activity is already a regular activity and replicable

"Value cards based design and the canvases we used may be used in a different type of open innovation activities." Kai Pata - coordinator

The online tools would have been used in a non-pandemic period

Planning: See below

11.1.2 Main characteristics

As with other Tallinn activities, and thanks to the domain of expertise of the teacher/mentoring, the activity is oriented toward methodical learning goals. Indeed, the topic is directly connected to the method: the activity entitled 'Opening up and redesigning the values of public services' focuses on the value cards and the Design Thinking approach. A large panel of tools is explored to apply a collective intelligence approach to service design with public stakeholders and cities.

11.1.3 Results

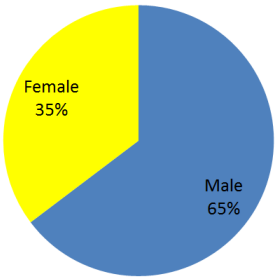
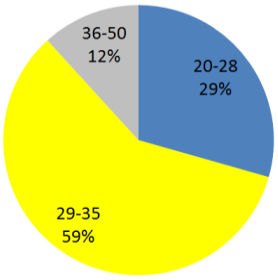
The participants were divided into ten groups, and nine presentations were given: pitching the case reports, presentation on Zoom with PowerPoint slides

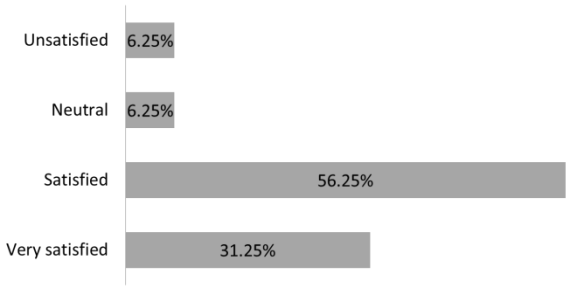
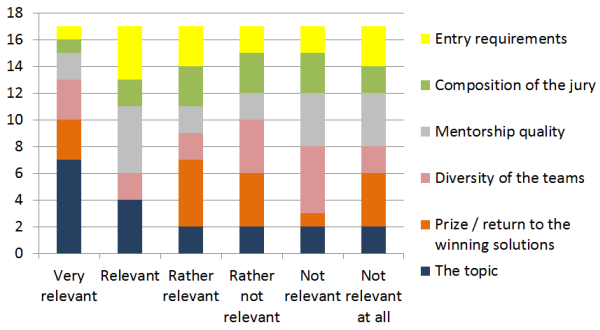
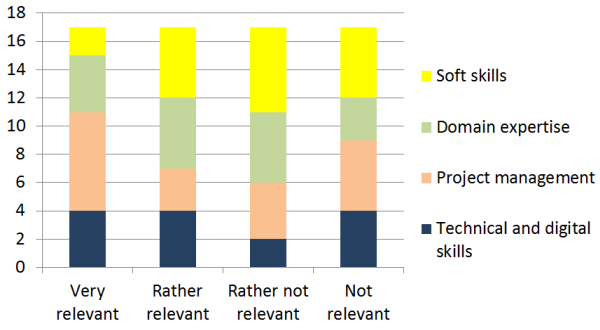
11.2 Review of the open-innovation activity (innovation dimension)

11.2.1 Main achievements

Data grid

Table 11-1 Innovation dimension of "Opening up values" Activity - part 1 (results)

<table>
<tr><th colspan="4">Objective 1: Assure the quality of the activity as an open-innovation event</th></tr>
<tr><td>Participants expected
Participants achieved</td><td>20
19</td><td>Participation rate</td><td>95 %</td></tr>
<tr><td>Inclusivity rate/Variety of the backgrounds
Source: pre-event survey</td><td colspan="3">100 % of the participants are master students of open society technologies, design thinking</td></tr>
<tr><td>Inclusivity rate/Gender of the participants
Source: pre-event survey</td><td colspan="3"> 
</td></tr>
<tr><td>Inclusivity rate/Age of the participants
Source: pre-event survey</td><td colspan="3"> 
</td></tr>
<tr><th colspan="4">Objective 2: meet the interest of the participants</th></tr>
</table>

Overall satisfaction of the activity *Source: post-event survey*	
Relevance of the topic/motivation rate *Source: pre-event survey* (What motivates you to participate in the activity?)	
Relevance of the topic/expectations *Source: pre-event survey*	
Objective 3: Create the conditions of the sustainability of collaborations and results	
Diversity of the results/Number of projects	Nine projects presented

Analysis

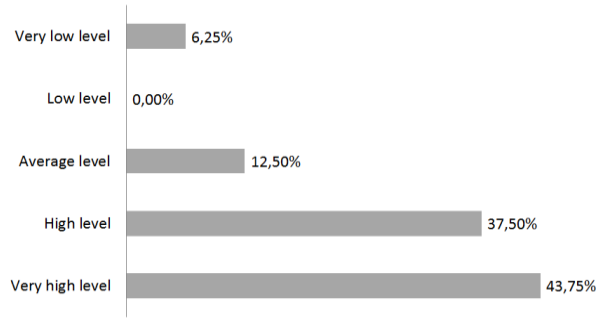
Table 11-2 Innovation dimension "Opening up values" Activity - Analysis of the results

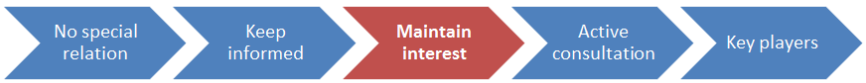
Strengths	Challenges
The pre-event survey establishes two main objectives for participants: to improve their expertise in the topic and to acquire project management skills. These objectives can be achieved by conducting a whole designing process: nine projects were presented at the end of the course. As explained by the coordinator as an element of openness, developed cases will be further used as open learning resources, for students, for service design with public stakeholders and cities.	As an intra-curricular activity, the activity does not have a very high rate of inclusiveness. Most of the participants are students between 20 and 35 years old, and no external partner is involved in the process. Therefore, the openness of the activity is measured on other elements, such as open innovation best practices.

11.2.2 Main impacts

Data grid

Table 11-3 Innovation dimension of "Opening up values" Activity - part 2 (impacts)

Objective 1: create new projects and collaborations	
IP terms	Not defined, outputs are shared freely
Motivation to continue the project *Source: post-event survey* (How would you rate your motivation to continue the project?)	

Role of the university in the community management *Source: complementary survey*	 The participants and the mentors keep in touch after the activity, as students in the programme.
Dissemination level of the outputs *Source: complementary survey*	
Objective 2: create new knowledge resources	
Creation of new resources	Open-learning resources by documenting the artefact (shared space, all the Design Thinking artefacts are collected). A portfolio of value-driven socio-technical governance tools cases will be created.
Creation of new practices	New practices and new open-resources
Objective 3: Develop and enrich the innovation processes in the institution	
Transferability of the activity	Yes
Dissemination level of the activity *Source: complementary survey*	

Analysis

Table 11-4 Innovation dimension of "Opening up values" - Analysis of the impacts

Strengths	Challenges
The main challenge for long term activity is maintaining interest during the whole semester. The large	The coordinator is thinking about capitalising on the experience to write an article and ground some best

motivation of students to continue the project suggests that the valorisation of the outputs is important: pitches are recorded, and the case studies were collected into the open digital portfolio "for further usage". As a redundant one, the activity generates some open-learning resources at each edition under the documentation (portfolio) format published on the university website. The activity is very transferable: "Value cards based design and the canvases we used may be used in different types of open innovation activities". The resources are published on the university's website, and the applications open up the development of new partnerships for future projects. This capitalisation participates in the enrichment of the innovation process in the institution.	practices linked to the format. The long format provides a basis for several practices and resources that can be widely disseminated. This dissemination can be very important for the socio-economic dimensions of the activity.

11.3 Description of the activity as a project-based learning activity (participant dimension)

11.3.1 Description of the learning design process (cf Learning Design Framework)

Goal setting

Participants co-design the activity
The whole setup for the activity is done in co-design mode.
The topics of interest were iteratively collected using a design thinking approach. The motivation is mostly related to understanding sociotechnical systems as tools for public governance. The students' are self-motivated learners; however, the course also has this activity as the exam task.

Participants: twenty-six master students of open society technologies, Design Thinking

Participants' pre-activity knowledge of the topic: Intermediate level.
They have some competencies with Design Thinking practices and some digital competencies. However, they do not have experience in problem-based learning, eliciting values of digital socio-technical systems and redesigning the openness values in tools in teamwork.

Learning goals: To learn skills on the design of socio-technical systems and value-elicitation techniques, To learn Design Thinking practices and online tools

Research and innovation goals: To develop example cases of socio-technical governance tools with elicited values for the learning portfolio

Openness: Open data, open innovation practices, outputs are made open access

Sustainable development goals: Quality education, reduced inequalities, sustainable cities and communities, partnerships for the goals

No pre-training: Activity did not require pre-training because it was run as a task at the higher education course. The training was involved in the course. Design Thinking activities were run in blended mode. Some sessions were held completely online. The other sessions were in a face-to-face mode in computer class. The training involved guidance on technologies, guidance on Design Thinking, and guidance on pedagogical learning design.

Main task: Design Thinking activities were run in blended mode. Parallel sessions were held completely online and in the face-to-face mode in class. Students ' preferences facilitated individual group work using google drive and tools.

Activity development

Coordinator: Kai Pata (Tallinn University)

Composition of the group/collaborators: Students and mentor (academic)

Learning objectives: Participants are able to develop example cases of socio-technical governance tools with elicited values for the learning portfolio

Table 11-5 Learning Design Process of "Opening up values" Activity (step by step) - Source: Learning Design Framework

Steps (Design thinking method)	How?	Comments of the coordinator
Ideation phase (topic exploration, need-finding, brainstorming solution ideas)	Participants with guidance with mentors **Online (Microsoft Teams)** Method: secondary research, observing and consultations with target end-users, group discussion/brainstorming	**Session 1**: Choosing the socio-technical systems for analysis. Collecting and sorting the systems for further analysis. (Task was mediated in Google classroom). Grouping into teams. Selecting one system to analyse as their case. Choosing the topic. Select individually or in pairs one Estonian digital service that is a socio-technical system and uses collective intelligence. **Session 2:** System analysis as a socio-technical system or service to analyse. The task was done as group work with paper canvases **Session 3**. Analyse what data your system uses. Students use a data and knowledge canvas that aligns with open data principles. Analyse what algorithms your observed system uses (Is there an algorithm? Is there any information on what the algorithm does? What values does this

		algorithm promote?). What additional data and social pattern-driven algorithms might be useful to be considered in your system? The results of this assignment are collected into the final report.
Design phase (Design model(s) and prototype design(s))	Participants **Online (Microsoft Teams)**	**Session 4.** Assignment: How does your system nudge people? Analyse your system. To whom does the system create which values? Is the system nudging people in any way? How? Create a nudge idea for your system. **Session 5**. Mapping the values of the system by selecting the value cards and associating these with agent, algorithms, data, system, and society levels of socio-technical systems. **Session 6.** Map your system with future wheel canvas and values cards for eliciting the values at the agent, algorithms, data, system, and society level. Miro.com canvas was used for this work.
Implementation phase (User testing, Reiterative design)	Participants **Online (Microsoft Teams)**	**Session 7**. Translate the actionable items in your future wheels into a sketch depicting the evolution of your system. Use a persona canvas and journey map canvas (https://uxpressia.com). Benchmark the before/after versions of the socio-technical system pinpointing significant changes and exposing the rationale connecting it to one or both of the value-driven design instruments you used.
Communication phase (presentation and discussion of final outputs, Dissemination of final outputs for real-world application)	Participants **Online (Microsoft Teams):** presentations, Group discussions and Consultation with experts)	**Session 8.** Each of the ten groups had 15 minutes to present their work, followed by five minutes for discussions and feedback. The group work results are graded based on case criteria. The case studies were collected into the open digital portfolio for further usage. The presentations folder:https://drive.google.com/drive/u/0/folders/1A37hg5Pn1lxw05nF0DANQ_gx2wo-Aslm

11.3.2 Description of the resources

The mentoring

Table 11-6 The mentoring of "Opening up values" - source: complementary survey

Who are the mentors?	Teachers from the university organisers (expert in Design Thinking and value-based design experiences)
What is their role?	Teacher - educator, Facilitator, Consultant /Expert/ Adviser, Judge
What are the criteria for choosing mentors?	The teacher involved in the course (teaching expertise), Field of expertise (specialisation in a field)
How were the mentors involved in the activity?	Mentors are organisers (they are involved in all stages described), they are involved in the organization of the activity (preparatory meetings), they are involved in the training, just before the activity, they are involved in the evaluation/assessment phase

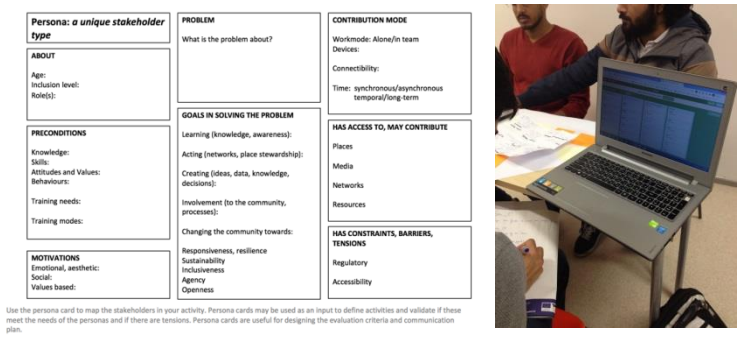
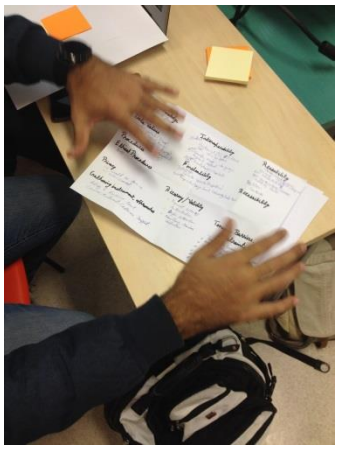
The typology of skills

Table 11-7 The typology of skills developed in "Opening up values" Activity - source: identity sheet

Knowledge of the topic	Socio-technical systems, open society, societal values. Knowing how to elicit values from socio-technical systems and how to design more explicit and open values for users
Technical skills (e.g., using software)	Using design thinking digital software The ability to use design thinking practices with digital tools online and co-creative mode
Soft skills (e.g., project management)	Project management, collaboration
Open innovation skills (e.g., innovation process)	Design Thinking, value-based design, the ability to use the value-elicitation techniques in analysis and design of socio-technical systems
Others, please specify	

The tools

Table 11-8 The tools of "Opening up values" - source: Learning Design Framework

Collaboration tools	
Mixed - online video lessons with digital tools, Classroom design activities with digital tools. Trello, Uxpressia, Miro, the paper prototyping tools, the data evaluation canvas, the future wheel canvas, the persona canvas, the journey map canvas ★ Used as Design Thinking tools	 Persona: *a unique stakeholder type* ABOUT Age: Inclusion level: Role(s): PRECONDITIONS Knowledge: Skills: Attitudes and Values: Behaviours: Training needs: Training modes: MOTIVATIONS Emotional, aesthetic: Social: Values based: PROBLEM What is the problem about? GOALS IN SOLVING THE PROBLEM Learning (knowledge, awareness): Acting (networks, place stewardship): Creating (ideas, data, knowledge, decisions): Involvement (to the community, processes): Changing the community towards: Responsiveness, resilience Sustainability Inclusiveness Agency Openness CONTRIBUTION MODE Workmode: Alone/in team Devices: Connectibility: Time: synchronous/asynchronous temporal/long-term HAS ACCESS TO, MAY CONTRIBUTE Places Media Networks Resources HAS CONSTRAINTS, BARRIERS, TENSIONS Regulatory Accessibility Use the persona card to map the stakeholders in your activity. Persona cards may be used as an input to define activities and validate if these meet the needs of the personas and if there are tensions. Persona cards are useful for designing the evaluation criteria and communication plan. *Figure 24 Persona canvas and worksheet on Trello - screenshot - "Opening up values" Activity*
Communication tools	
Zoom and Slack + classrooms Slack, Zoom, and participants have the freedom to choose their own platform for independent teamwork ★ guiding the participants ★ presentations ★ And the final session	 *Figure 25 screenshot - "Opening up values" Activity*

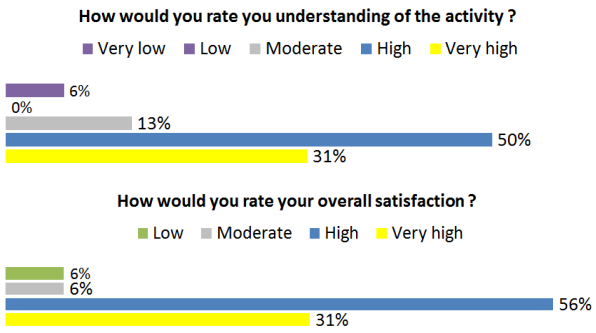
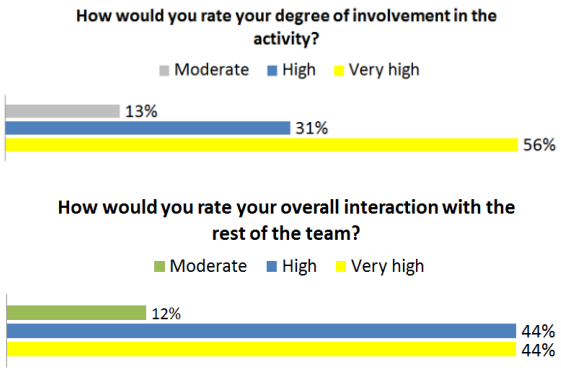
Resources	Shared space in google drive folder. Used tools tricider.com A portfolio of value-driven socio-technical governance tools cases will be created.

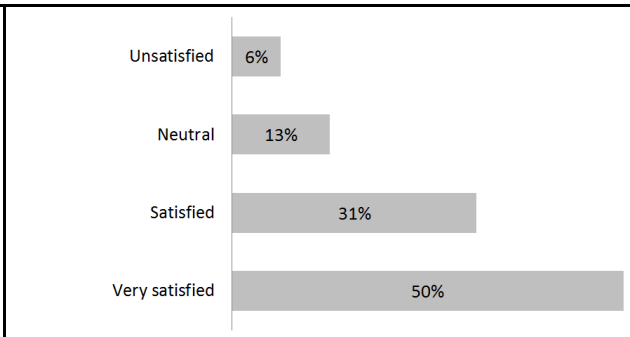
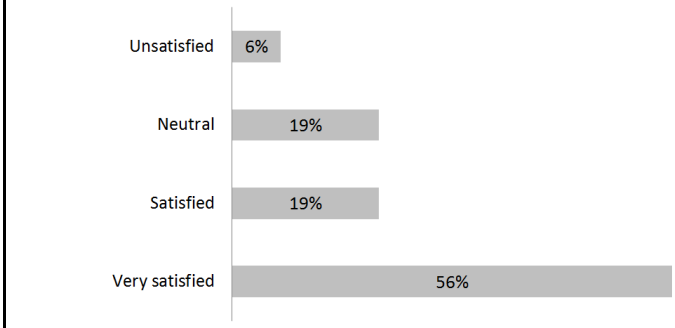
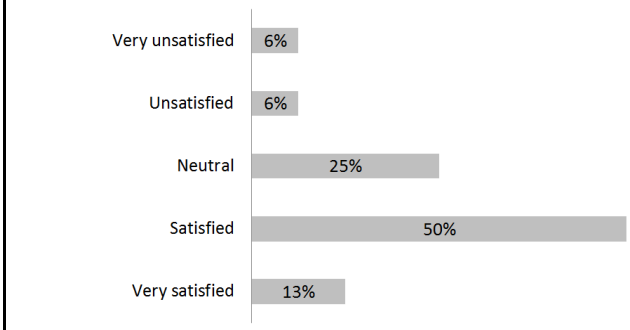
11.4 Review of the project-based learning activity (participant dimension)

11.4.1 Main achievements

Data grid

Table 11-9 Participant dimension of "Opening up values" Activity - part 1 (results)

Objective 1: Encourage the personal engagement	
Rate of engagement regarding the understanding of the activity *Source: post-event survey*	
Interactivity rate/general engagement and team engagement *Source: post-event survey*	
Objective 2: Facilitate the synergies between the participants	

Rate of satisfaction regarding the mentoring and the training *Source: post-event survey*	
Rate of satisfaction regarding the access to knowledge and the tools *Source: post-event survey*	
Objective 3: Create the conditions of networking/partnerships	
Number of social network events/social networks interactions	Online or face-to-face events: none
Rate of satisfaction regarding the networking dimension of the activity *Source: post-event survey*	

Analysis

Table 11-10 Participant dimension of "Opening up values" Activity - Analysis of the results

Strengths	Challenges

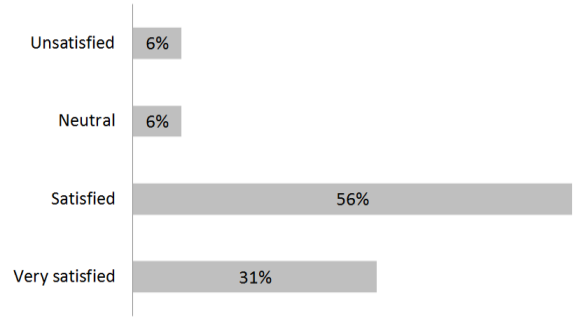
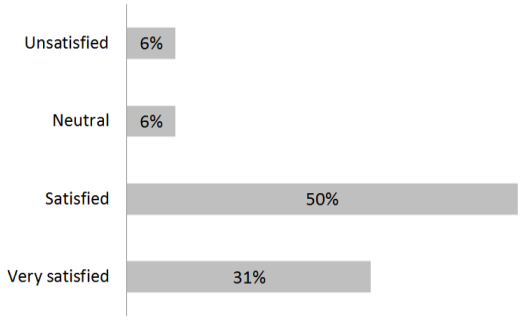
The engagement and interactivity rate is generally very positive. Co-designing with the students is the main reason. Teams are engaged from the start and can lead a project from A to Z with new techniques. The satisfaction rate regarding the adequation of the mentors and the tools used during the activity is also high: over 90 % of students were satisfied despite the context. Teacher presence in online learning is more critical, complex, and challenging than in traditional educational environments. However, online tools permit in that case to compensate for this lacking by diversifying the support. Globally, the participants were really satisfied: the few who were not satisfied state questions of difficulty or time. This situation is basically linked to the technicality of the open-practices that may need more or less time to integrate technical tools: the level of basic knowledge can be very disparate. Teachers have to overcome potential barriers caused by technology, time, and place. Meanwhile, they have to make decisions among the expanded choices and opportunities that online tools provide them for creating effective, efficient, and appealing learning environments (stimulating and attractive for learners). In this activity, the same tools would have been used in a face-to-face format, which means that the tools are already tested and mastered by the mentor and, therefore, already considered learning tools.	Interactions were very good in the organized workshops and sessions, as demonstrated by the engagement rate measured above. On the other hand, the inter-group dimension was limited by the online format, making it impossible to create more informal moments. 50 % of the participants are satisfied, 12.5 % are very satisfied, and the rest of the rate of dissatisfaction is due to the Covid-19 lockdown and the fact that there were no networking activities. In addition, the online work for some students is qualified by obstacles; *"we worked together with specific people, and due to class going fully online, there was not really any good opportunity to network with other people".*

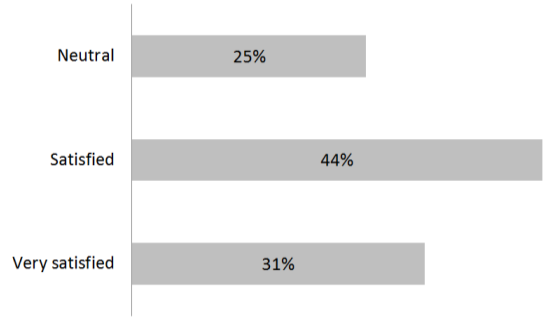
11.4.2 Main impacts

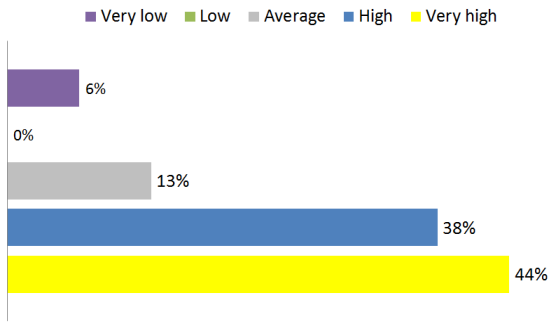
Data grid

Table 11-11 Participant dimension of "Opening up values" Activity - part 2 (impacts

Objective 1: Develop personal learning and development

Satisfaction rate/level of knowledge on the topic after the activity *Source: post-event survey*	
Verbatim/personal learning *Source: post-event survey*	1. "I feel like I gained very little. The info was presented very confusingly." 2. "Most of the things before the course were unclear, but I learned about socio-technical systems more and understood the socio-technical system after the course." 3. "Due to the assignments, I learned a lot about the topic." 4. "Hard to feel empowerment when you barely understand the task." 5. "Since there was collaboration between team members, and we learned a lot from each other." 6. "I'm quite happy with the results; it felt good to share the results."
Satisfaction rate/personal learning and empowerment on the topic *Source : post-event survey*	
Objective 2: Motivate new skills and empowerment/fun	

Satisfaction rate/empowerment and new skills acquisition *Source: post-event survey*	
Verbatim/new skills acquisition *Source: post-event survey*	1. "Gained experience with project management and communicating with others more clearly." 2. "Project management skills" 3. "Technical (I learn how to work on wireframe), project management, communication skills (soft skill)." 4. "I'm sure I definitely learned something new, but at the moment, it's difficult to point out what exactly. Maybe communication, because I haven't had a chance to work together with people who have a completely different cultural background. " 5. "domain expertise"
Verbatim/suggestions of general improvement *Source: post-event survey*	1. "Overall, the course was very good. I would suggest giving a bit more time." 2. "Actually, have proper directions and explain what is wanted of the students. Currently, the tasks were so difficult to understand because the wording was so confusing and felt random. When we asked for help, we did not get clear answers or did not get an answer at all." 3. "First, the programme was well organised that all groups/students got the needed help to apply all needed skills and knowledge of Collective Intelligence in Socio-Technical Systems. AM glad to have attended the course." 4. "I do not see any gap to suggest an improvement. From my perspective, everything was the best." 5. "It was a bit chaotic, and I sometimes had some difficulties in understanding the end goal of the assignment." 6. "It was practical and interesting but had limitations via online mode. " 7. "I am totally satisfied with this course. " 8. "Everything was very well organised, thought through and prepared for us (like Miro boards to fill). I would have liked even more generative design tool creations or even design workshops (I know it is not possible due to the time limitation, but this is my honest feeling right now) because it

	really helped me start being creative again. “
Objective 3: Innovative outputs	
Number of social network events/social networks interactions	No data
Networking scheme	No data
Motivation rate to continue the project *Source: post-event survey*	
Verbatim/motivation to continue the project *Source: post-event survey*	• “I have no interest.” • “I am highly motivated to continue this project because I am strongly convinced that our concepts, the new design, would transform the public transport app/sector.” • “My teammate is from Finland, and we can continue to our project until the end in order to achieve our goal.” • “I wouldn't know where to start.” • “I will try to participate in NGGS 21.”

Analysis

Table 11-12 Participant dimension of "Opening up values" - Analysis of the impacts

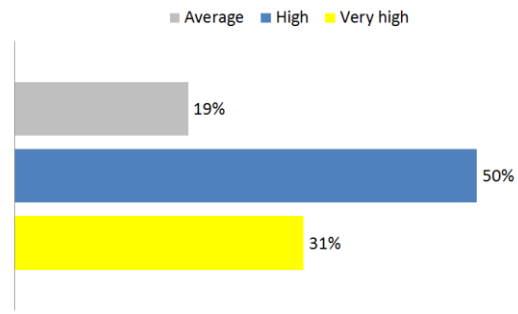
Strengths	Challenges
The learners' personal development is positive: even if it is sometimes difficult for them to name in detail the rise in competencies, the "experience" dimension of the activity is recognised in particular through teamwork. Whether it is project management or communication,	Some consolidations more than adjustments are needed regarding the empowerment dimension, notably to name the rise and competence by self-monitoring the experience. But globally, the activity is successful.

the acquisition of soft skills is often mentioned verbatim. 85 % are satisfied by the innovative educational approach based on the Design Thinking method. During the class, the students took responsibility for their own learning and were responsible for all aspects of the session component of the course. In that case, the pedagogy is very adapted to the expectations of the learners, who are, according to the mentor, "self-motivated learners". Co-designing the activity with the learners guarantees the success of open innovation activities, especially with long-format activities. This collaborative approach helped teachers improve goals, deepen student engagement and inquiry, build collaboration skills, and increase concept integration. The social topic related directly to the challenges of real-life organised students and teachers around an important initiative to the university community.	

11.5Conclusion (socioeconomic dimension of the activity)

The activity has a strong social impact: as a replicable and transferable activity (open outputs, open resources such as techniques, methods, and tools), the documentation is already fully accessible at the institutional level. Moreover, some values of the socio-technical systems were made explicit and can be addressed in technology redesign. As planned with a scientific article, the valorisation of this format will be very interesting to increase the global impact of open innovation practices.

Table 11-13 Socioeconomic dimension of "Opening up values" (long-term impacts)

Rate of understanding of open innovation and its social impact *Source: post-event survey*	

12 Collaborative problem-solving – Oulu University

Summary of the activity			
Intra curricular	Focus: education (learning of working life competences) and research activity (how students experience the process and achieve working life competencies)	Duration: one semester	Long CEI
17 September to 10 December 2020	Hybrid format	14 students + 6 academics + 1 Ed tech company LET Master	Target: Tallinn University master course Collective intelligence in sociotechnical systems Groups are expected to be 3-4 people in size.
Results expected: innovative solutions		Collaborative learning and problem solving	

List of pedagogical resources available for the participants	
Before the event: - Not precise	During and after the event: - Support document: "Problem-solving process" document edited by Pirkko Siklander, Niina Impiö and Essi Vuopala

Data analysed within the INOS framework			
Learning Design Framework	Unfilled	Identity sheet	Completed
Pre-event survey	Missing	Post-event survey	Response rate: 64.29 %
Other data and resources	Schemes: problem-solving process, Digital Open Badges		

12.1 Description of the activity as an open-innovation activity (innovation dimension)

12.1.1 Context and programme

Framework: part of a course entitled "Problem-solving case 2."

Coordinators/Organisers: LET master's degree programme, Oulu University

Engagement mode: Part of a course, no special registrations needed

Funding: No financial contribution but human contribution: the sponsor participates (with one or several employees) in the OIA.

Innovation goals: a deeper understanding and development of community problem solving

Sustainable development goals: quality education

The activity is already a regular activity and replicable

Planning:

23.9. Kick-off- meeting 24.9. Case introduction 1.10. Expert talks, coaching 15.10. Expert talks, coaching 29.10. Midterm presentation 19.11. Expert talks, coaching 3.12. Final presentation 10.12. Closing

12.1.2 Main characteristics

The main characteristic is the use of open badge accreditation to valorise the experience. The organisers are also collecting feedback on this method from the participants.

Open badge accreditation:

Assessment methods and criteria (https://opas.peppi.oulu.fi/en/course/413327S/11686)

Students are showing their learning through digital open badges. Badge labels and more detailed criteria are introduced at the beginning of the course.

Criteria for passing the course: The student participates actively in all the learning activities. The student participates in collaborative activities and can contribute to the collaboration task significantly. His or her contribution indicates good familiarity with the learning materials. The student has accomplished all individual tasks.

Criteria for failing the course: The student is passive or absent from face-to-face meetings and collaborative activities. The student infrequently participates in collaborative activities, and his/her contribution to the team task is minor. S/he has not accomplished all individual tasks, and s/he cannot prove his or her familiarity with the learning materials of the course.

12.1.3 Results

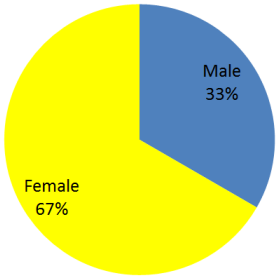
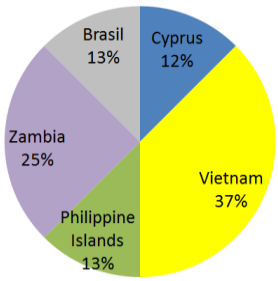
No data

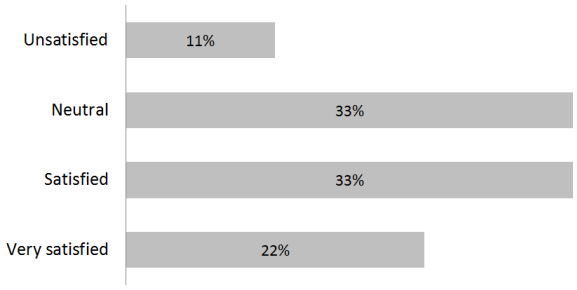
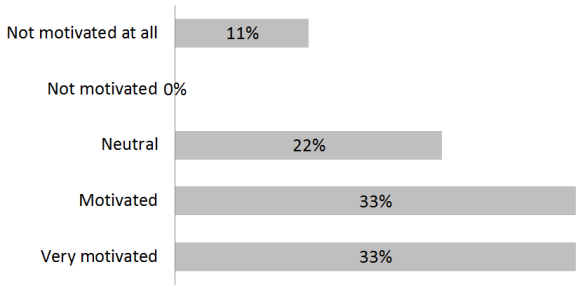
12.2 Review of the open-innovation activity (innovation dimension)

12.2.1 Main achievements

Data grid

Table 12-1 Innovation dimension of "Problem-solving" Activity - part 1 (results)

Objective 1: Assure the quality of the activity as an open-innovation event			
Participants expected **Participants achieved**	22 university students + 3 academic staff (25) 14 + 6 academic staff + 1 Ed tech company	**Participation rate**	64 %
Inclusivity rate/Gender of the participants *Source: pre-event survey*			
Inclusivity rate/Nationality of the participants *Source: pre-event survey*	 Participants from different fields and cultures, working life collaboration		
The openness of the results	No specification		

Source: Learning Design Framework	
Objective 2: meet the interest of the participants	
Overall satisfaction of the activity *Source: post-event survey*	
Overall motivation in participating in the activity *Source: post-event survey*	
Overall satisfaction of the activity/Suggestions of improvements *Source: post-event survey*	1. "I think to streamline more of the badges, maybe combining some of them into one." 2. "Create a project/ product for a campaign/ development point of the company. Test the product, see how the company's experts could improve the product" 3. "More expert talks" 4. "No comment" 5. "I think all courses that a smooth flow. However, I would like to know about the next class activity right after the previous class, not in 2 days before, so we can schedule and plan ourselves to do the task better." 6. "I suggest that the virtual class should last 2 hours instead of 4 hours."
Objective 3: Create the conditions of the sustainability of collaborations and results	
Variety of the results/Number of	Four teams' presentations, supported with client interaction

projects	

Analysis

Table 12-2 Innovation dimension of "Problem-solving" Activity - Analysis of the results

Strengths	Challenges
Dedicated to international master's students, the inclusivity of the activity is interesting regarding the cross-boundary collaboration, especially in a long format framework. Intercultural collaborations can give some output on the topic dealing precisely with collaboration. The participants seem to have an advanced level on the topic and are aligned on exigence regarding the innovation practices. The satisfaction rate is good: it is moderated by a global exigence which implies some expectations regarding the expertise and the mentors on the one hand and the expectations regarding the outputs on the other hand. The motivation rate reflects that hypothesis.	On the contrary, there is no mention of the openness of the outputs, which seems not to be a priority. Work on that part of the process may need to be engaged to valorise the engagement of the participants and their high motivation.

12.2.2 Main impacts

Data grid

Table 12-3 Innovation dimension of "Problem-solving" Activity - part 2 (impacts)

Objective 1: create new projects and collaborations	
IP terms	Not defined, outputs are shared freely
New practices *Source: complementary survey*	New practices, e.g., learning, collaboration and problem-solving skills
Role of the university in the community management *Source: complementary survey*	

	The coordinator does not know if participants and mentors keep in touch after the activity
Dissemination level of the outputs *Source: complementary survey*	Other: only dissemination was at the end of the course (teams presentations)
Objective 2: create new knowledge resources	
Creation of new resources *Source: complementary survey*	New solutions (resources for the clients)
Objective 3: Develop and enrich the innovation processes in the institution	
Transferability of the activity	Yes
Dissemination level of the activity	None

Analysis

Table 12-4 Innovation dimension of "Problem-solving" Activity - Analysis of the impacts

Strengths	Challenges
As an intra-curricular activity, the objective is not to create a sustainable community but at least a short-lived one enriched by the inter-cultural approach of the participants on the topic. The level of dissemination of the outputs is not precise. The main strength of the activity is the post-event survey which is a long evaluation of the course provided by the participants. This very critical view of the programme participants is an important step. On the one hand, it allows the organisers/mentors to continuously improve the course and its components in its substance and form (question of accreditation). However, it also allows learners to be part of this	The formalisation of the creation of new resources is not specified, maybe due to a lack of time. As the activity is a recurrent one, the creation of educational resources can be the next step for the improvement of the activity. The creation of new resources is not specified.

process and see their requirements met.	

1.2 Description of the activity as a project-based learning activity (participant dimension)

12.2.3 Description of the learning design process (cf Learning Design Framework)

Goal setting

Participants are involved in the evaluation of the activity (post-event survey)

Participants: international master's students

Participants' pre-activity knowledge of the topic: advanced level

Learning goals: To learn about collaborative problem solving, to learn about working life skills, to learn about collaborative tools

Research and innovation goals: To develop example cases of socio-technical governance tools with elicited values for the learning portfolio

Openness: innovation practices, open educational resources, and cross-border collaborations

Sustainable development goals: quality education

No pre-training

Activity development

Coordinators: LET master's degree programme professors

Composition of the group/collaborators: Students, educators, teachers, innovators, and mentors (professionals inside and outside the university)

Learning objectives: Collaborative problem solving, open science in general, physical activity and learning, education export, education technology. Working life skills, e.g., collaboration and cooperation, problem-solving, creativity and self-regulation. Collaborative problem-solving skills

Table 12-5 Learning Design Process of "Problem-solving" Activity (step by step) - Source: Learning Design Framework

Steps (Design thinking method)	How?	Comments of the coordinator
Ideation phase (topic	Participants with guidance by	Developed by the participant

exploration, need-finding, brainstorming solution ideas)	mentors/teachers **Physical venue and online (Zoom)** Method: secondary research, observing, group discussion/brainstorming	**Step 1 - Deadline: 12/10 Understanding an open problem** Independent teamwork, teaching sessions with different activities (e.g., expert talks), feedback from teachers and mentors. Google drive, Tools selected in teams, online Zoom sessions, Badge Factory
Design phase (Design model(s) and prototype design(s) Implementation phase (User testing, Reiterative design)	Participants with guidance by mentors/teachers **Physical venue and online (Zoom)**	**Step 2 - From 15/10 to 3/12** Planning (solving process and group process) **Step 3 - Deadline 29/01** Constructing solution Independent teamwork, teaching sessions with different activities (e.g., expert talks), feedback from teachers and mentors. Google drive, Tools selected in teams, online Zoom sessions, Badge Factory
Communication phase (presentation and discussion of final outputs, Dissemination of final outputs for real-world application)	Teachers and mentors, participants **Physical venue and online (Zoom)** presentations, Group discussions, peer-assessments, Consultation with experts, Documentation of project outcomes, Publication of project outcomes	Teachers and mentors will give feedback along the way. Participants will apply for open badges during the whole event (Open Badge Factory)

12.2.4Description of the resources

The mentoring

Table 12-6 The mentoring in "Problem solving" Activity" - source: complementary survey

Who are the mentors?	Teachers from the university organiser, Mentors from the university organizer, External partners
What is their role?	Teacher - educator, Facilitator, Consultant /Expert/ Adviser

What are the criteria for choosing mentors?	The teacher involved in the course (teaching expertise), Engagement and availability, Field of expertise (specialisation in a field), University network/partners (networking and new opportunities)
How were the mentors involved in the activity?	Mentors are organizers (they are involved in all stages described), they are involved in the organisation of the activity (preparatory meetings), they are involved in the evaluation/assessment phase

The typology of skills

Table 12-7 The typology of the skills developed in "Problem-solving" Activity - source: identity sheet

Knowledge of the topic	Collaborative problem solving, open science in general, physical activity and learning, education export, education technology
Technical skills (e.g., using software)	Collaborative tools
Soft skills (e.g., project management)	Working life skills, e.g., collaboration and cooperation, problem-solving, creativity and self-regulation
Open innovation skills (e.g., innovation process)	Collaborative problem-solving skills
Others, please specify	

The tools

Table 12-8 The tools in "Problem-solving" Activity - source: Learning Design Framework

Collaboration tools

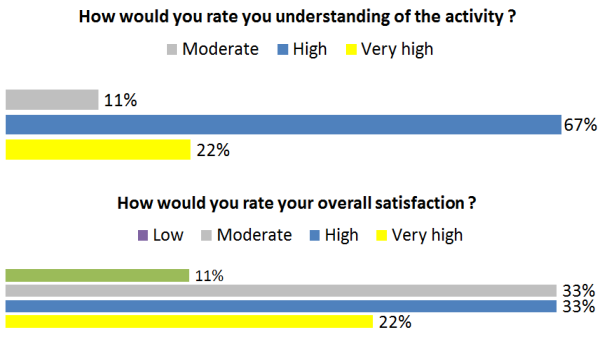
Google Drive, Zoom, Google docs, Answer Garden	
Communication tools	
Resources	

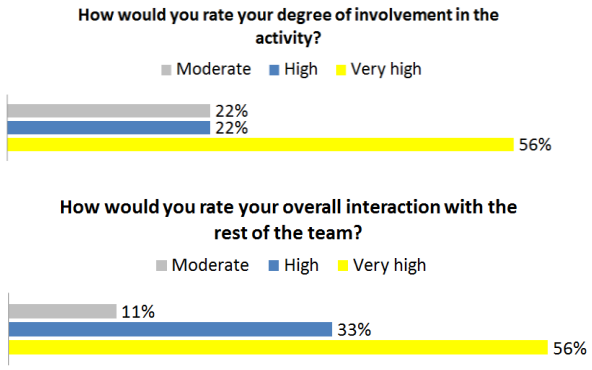
12.3 Review of the project-based learning activity (participant dimension)

12.3.1 Main achievements

Data grid

Table 12-9 Participant dimension of "Problem-solving" Activity - part 1 (results)

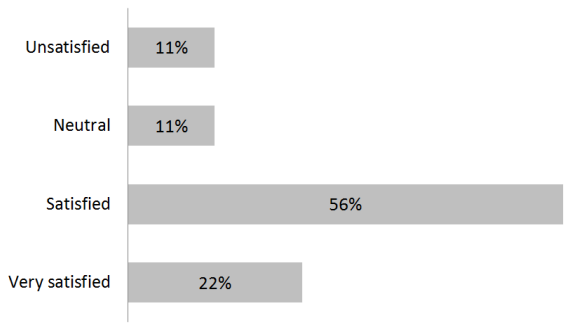
Objective 1: Encourage the personal engagement	
Rate of engagement rate regarding the understanding of the activity *Source: post-event-survey*	

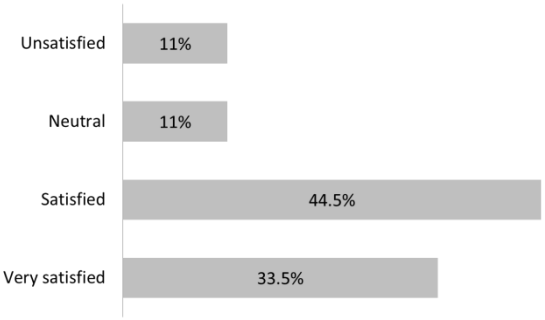
Interactivity rate/general engagement and team engagement *Source: post-event Survey*	
Verbatim/Criteria of dream team (process to collaborate) *source :post-event survey*	1. "They should all have respect and empathy for each other. Whether or not roles or specific tasks are better depends on the people within the group. " 2. "Before forming the group, you should consider how well each of the group members gets along with each other." 3. "Dream team: dedicated, responsible members who possess deep knowledge in the field." 4. "Criteria: years of experience, comments from their previous colleagues." 5. "Each member should have a specific task, and they know how to collaborate, support each other" 6. "I would choose someone willing to put their best self out to take responsibilities and actively contribute to the task. The attitude of kindness and empathy are also important. And they have the autonomy to decide their roles as well as specific tasks as long as they enjoy doing it and for the company's benefits." 7. "Qualities in dream team: Honest, taking the initiative, smart worker, domain expert, Fun." 8. "Criteria: interested in the task at hand, Roles: let's do it, Open-mindedness, Communication skills." 9. "I would choose people who care open-minded and can easily communicate and of course proficient in the language." 10. "Having guidance to the participants is always better and save some time. I would probably choose diverse people with different backgrounds, set up a deadline and provide some guidance. And, of course, my "door" would be opened if needed." 11. "I prefer to collaborate with those who are willing to communicate, active listening, respective, responsible, and humorous." 12. "I would like to use catchy criteria's, such as video clips or

	graphic design." 13. "I prefer flexible roles and tasks for each member. Empathetic, Critical thinkers, Problem solvers, Team players." 14. "Yes, I would prefer specific roles and tasks for each, but then, there should be teamwork as the task is being accomplished." 15. "Qualities: feeling great working in a team, give constructive feedback, know the subject of educational theories and also have experience outside the university, in schools or ventures." 16. "Having a group setting with all the people who are chosen and all state their strengths and weaknesses."

Figure 26 NVivo analysis of the verbatim concerning the role of the participants - "Problem-solving" Activity

Objective 2: Facilitate the synergies between the participants

Rate of satisfaction regarding the mentoring and the access to expertise in general *Source: post-event survey*	

Rate of satisfaction regarding the access to knowledge and resources *Source: post-event survey*	
Verbatim about remote studies by topic *Source: post-event survey*	**Students supporting remote studies** 1. "We are really fortunate to have the technology to support all communication nowadays. Imagine if it was 20 years ago living in a pandemic situation. We probably wouldn't be able to study and have almost the same experience when we had face-to-face meetings. Of course, it is a challenge because you have to regulate yourself better to keep motivation at high levels and keep yourself - and others - on track. In spite of the fact that face-to-face meetings are more of a warming environment, remote studies are possible and have a huge space to grow and develop." 2. "To my own work, remote studies help me discover many open education resources and open-access publishing. I also have more time for cooking, working out and taking care of myself. However, being alone sometimes causes me negative feelings that can't be fulfilled by a virtual social connection. " 3. "To my teamwork, remote studies are strongly supported by technological tools and effective scripts from the course. But we sometimes encountered a lack of commitment due to informal virtual meetings via Zoom and low attention as starring on screen for a long time. One more issue is that we have still not got the remote working habit, which hampers us from working with autonomy." **Students against remote courses** 1. "In collaboration with coaches and clients, remote studies have no challenges because we have enough meetings, and we can also exchange information via email easily." 2. "Remote studies made it even harder to stay focused and motivated on achieving our goals. I think it would've been better to have more interactions and meetings with the client. I also think that less formal meetings and online hangouts would help make the courses more fun."

	3. "It affects my mood as I wish to have face to face meetings with the team. Sometimes it hinders the process by losing Internet connection or sounds are not clear." 4. "We don't feel the atmosphere." 5. "Remote studies or distance learning has its limitation on synchronised interaction. To communicate well, we also need to see and feel others body language and feel what they feel. So, because of that, sometimes we misunderstand each other via the online platform. For my own work, for online learning, I need tremendous energy to regulate my self-discipline to keep up with the course assignments and my schedules. Of course,, I have often failed to regulate, but I keep trying every day." 6. "It made it more flexible. At the same time, it also helped some in procrastinating". 7. "For there was no issue because we planned and followed the schedule all the time."
Feedback on tools *Source: complementary survey*	"facilitate the collaboration and communication" Karoliina Hautala - The coordinator
Objective 3: Innovative outputs	
Transferability of the outputs	No data

Analysis

Table 12-10 Participant dimension of "Problem-solving" Activity - Analysis of the results

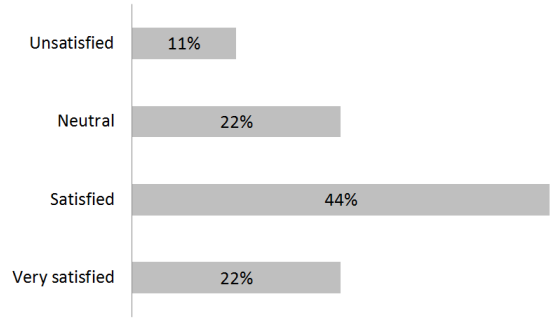
Strengths	Challenges
The rate of interactivity and involvement in the activity was very high. Indeed, over 86 % of participants were satisfied with the collaborative dimension of this activity using several tools: for instance, the platform for work, WhatsApp, for communication. The learners were free to adopt the tools at their convenience for discussing or co-designing. Each one has an active role. The coordinator made sure to track the course instruction and that all students had the necessary information. In this activity and this form of collaborative work, the learners develop their leadership and skills in the management of project	The remote format can be challenging as well. To overcome the difficulties of remote teaching, teachers regulate three points: instructions to provide evidence of required competence were clear and well structured, tools (e.g., cloud service) to provide evidence were clear and well instructed, and the format to provide evidence (video, text, multimedia) were suitable for the demonstration of competencies. Regarding the post-event survey, there are two general student perceptions; some find the remote courses beneficial and motivational, whereas others do not

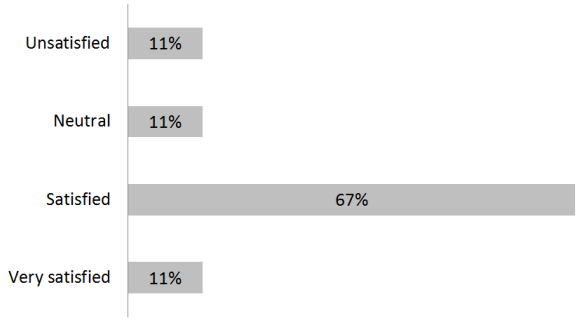
because they are in responsibility (schedule, roadmap) In this sanitary context, open innovation activities were conducted remotely with several techniques and tools that can optimise the innovation dimension of the activity.	appreciate the online format and prefer the conventional way. The example of the activity is important, as they suggest that it is an effective study tool for students who are comfortable with technology and access it regularly. Overall, the use of remote courses and support (video, pedagogical resources online) in science education has been shown to be: 1) effective in enhancing students' learning experience. 2) relevant and important as an emergent method of learning given the modern pressures facing higher education. 3) met with positive student attitudes and perceptions about adopting and using such technology for educational purposes.

12.3.2 Main impacts

Data grid

Table 12-11 Participant dimension of "Problem-solving" Activity - part 2 (impacts)

Objective 1: Develop personal learning and development	
Satisfaction rate/Personal learning and topic empowerment *Source: post-event survey*	
Objective 2: Motivate new skills and empowerment/fun	

Satisfaction rate/empowerment and new skills acquisition *Source: post-event survey*	
Verbatim/Skills acquisition/self-evaluation by the learners *Source: post-event survey*	1. "The skill that I practised the most is doing tasks that I am unmotivated to do. In real life, we will encounter many situations in which we have to do things we don't like, so it helps us develop our discipline : (video editing)." 2. "Working attitude" 3. "Knowledge about working life." 4. "I think I have learned working on more applications and platforms that can be used to support group learning. I learn from other classmates as well." 5. "Collaboration" 6. "Self-management" 7. "Still learning empathy, supporting each other, actively listening, communication, and collaboration." 8. "In this course, I learn how to organise group work and understand the importance of aligning learning science and practical application in working life." 9. "Problem-solving, Critical thinking, Empathy, Team working" 10. "I practised skills that I have acquired earlier. The knowledge that I put into practice and attitudes helped me cope with challenges in group work. All are equally important." 11. "I will be more disciplined in the work that I do in the future. Develop myself. Understand that even though good people have struggles and have to work/figure out the solution every day, just use it! In different projects." 12. "Work with others." 13. "Manage my tasks."

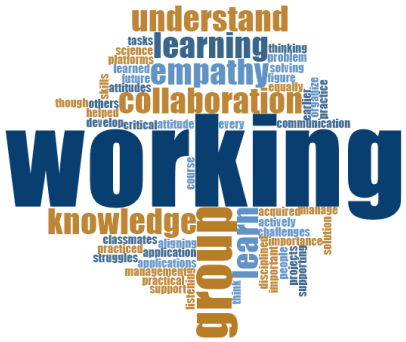


Figure 27 NVivo analysis regarding the self-evaluation of new skills (verbatim) - "Problem-solving" Activity

Objective 3: Innovative outputs	
Using badges as proof of learning achievement.	
Number of social network events/social networks interactions	No data
Networking scheme	No data

Analysis

Table 12-12 Participant dimension of "Problem-solving" Activity - Analysis of the impacts

Strengths	Challenges
The students find this online experience complete and impactful because it allows them to 1) develop new skills using collaborative work (notably soft skills and organisation skills like managing projects with different tools and design thinking practices) and 2) prepare the student for solving challenges of real-life which increases their engagement and motivation. The figure of the mentor is multiple; they are, in turn, facilitator, advisor, researcher evaluator, content facilitator, technologist, and designer. To overcome the difficulties of online teaching, OU teachers consider three goals which are then assessed by learners in the post-event survey:	The badges are proof of learning achievement, but the valorisation of the outputs' innovative value could also be important.

• Academic proficiency goals helped me understand the purpose of the specific phase of the CPS process. • Academic proficiency goals and assessment criteria provided new insight into the CPS (Collaborative Problem Solving) process. • Academic skills objectives and evaluation criteria proposed to rethink the group's work or a new point of view.	

12.4Conclusion (socioeconomic dimension of the activity)

Collaborative Problem Solving is a proven method for approaching a problem or a challenge imaginatively and innovatively. It helps you redefine the problems and opportunities you face, produces new, innovative responses and solutions, and then take action." The very impact of this activity is the learning approach based on continuous improvement by monitoring the activity. The participants are engaged in the continuous improvement of the activity and the mentors, who have multiple roles. Participants and mentors are all at the same level, creating a dynamic that emphasises the open science impact. The issue here is the dissemination of these improvements and the capacity of the institution to digest and capitalise on all these resources.

13 Conclusion

Open innovation activities can be seen in two ways: both as collaborative activities involving communities producing results and both as project-based learning activities involving resources and tools aimed at increasing skills in innovation and open science globally. The general objective is for HEIs to consolidate and perpetuate formats allowing the construction of communities, on the one hand, particularly educational, and educational resources on the other.

Through these activities, shorts, or longs, intra or extra-curricular, the report shows the different contributions of open innovation in higher education, from acculturation to innovation to the rise in the completeness of new skills essential to professionalisation at the heart of learners' expectations. Opening the activity according to its needs and possibilities can make it possible to meet various challenges putting the learner in a position of active pedagogy. In the Learning Design Framework, we identify five levers of "openness":

	Openness Practices	Active pedagogy objectives	Results and impacts (evaluation)	Means and tools
Open or cross-boundary (interdisciplinary, inter-sectoral, experts with non-experts)	Mixing interdisciplinary and cross-boundary communities	Encourage communication and interactivity within a diverse and inclusive community	Create an alignment between participants (results) and a sense of community (impacts)	Mentors as facilitators and community-management tools
The use of OS/CS/OI tools and resources as learning tools and resources (e.g., open data, open software)	Using open platform or diverse open tools and open data (self-made data)	Foster autonomy thanks to reusable open tools	Make tools accessible and accompany the mastering of them by the participants	Mentors as trainers and box of open tools
The training of soft and technical skills necessary for OS and OI practice (e.g., open data training, soft skills in open collaboration)	Designing activity through Design Thinking Method	Stimulate auto-regulation regarding empowerment and consciousness of learning process	Involve participants in co-designing activity and increase empowerment in innovative skills	Mentors as guides and self-monitoring tools/regulation sessions (learning process)
The generation of activity outputs that are made open access (e.g., in some participatory	Valorising innovation processes and artefacts	Learn how to document artefacts and how to communicate on them	Set up new processes for evaluating and disseminating outputs	Mentors as evaluators and evaluation/communication tools

data collection activities, data is made public via an online data portal)				
The activity's availability as an open educational resource (e.g., license-free lesson plans, tools and resources).	Capitalising, formatting and making available educational resources	Improve active pedagogy practices in my establishment/community	Assess and ground formats and resources and perpetuate activities and open innovation culture	Mentors as pedagogical community builder and teacher/open resources tools

This table, which links openness and active pedagogy, gives the basics of the five levers to foster open innovation in HEIs. These five levers for open innovation will serve as the basis for drafting the guide to good practices.

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Annex A – Evaluation survey

This document is an open framework. It can be adapted to the characteristics of the completed activity and of the organiser if needed.

It is based on the LDF, and its objective is to collect the data needed to complete the evaluation part of the document (cf. Problem based learning projects)

1 Background information

Role:

☐ Teacher

☐ Librarian

☐Researcher/expert

☐ Higher education student

☐Other participants outside of university

Gender: male/female

Age:

☐ Up to 19

☐ 20-28

☐ 29-35

☐ 36-50

☐ 51-65

☐ 66 and older

2 Before the activity

To fill before the activity

One is the lowest, and five is the highest.

- How would you rate your level of knowledge about the topic?

1	2	3	4	5

- What motivates you to participate in the activity? Rank from least relevant to most relevant

Rank (1: Least relevant – 6: Most relevant)						
	Topic	Prize/return to the winning solutions	Diversity of the team/cross border collaborations	Mentorship quality	Composition of the jury	Entry requirements

- What are your expectations in terms of learning? Rank from least relevant to most relevant

Rank (1: Least relevant – 5: Most relevant)					
	Technical skills (e.g., programming or use of technology)	Soft skills (communication, empathy, leadership, curiosity, teamwork, conflict management)*	Domain expertise (relating to the topic),	Project management (relating to the whole activity)	Other: specify

3 About the activity

To fill during the activity or right after its completion

One is the lowest, and five is the highest.

- How would you rate your level of satisfaction with the activity?

1	2	3	4	5

- Please, share any suggestions of improvement for the organisers (practical organisation, time management, access to the resources, choice of mentors, choice of topics…):

- How would you rate your understanding of the activity and its goals?

1	2	3	4	5

- How would you rate your degree of involvement in the activity?

1	2	3	4	5

- How would you rate your interaction with the rest of the team?

1	2	3	4	5

- How would you rate your access to knowledge, resources and/or data?

1	2	3	4	5

- How would you rate your access to training and the expertise of the other participants and/or mentors?

1	2	3	4	5

4 Following the activity

To fill after the activity (right after its completion or later)

One is the lowest, and five is the highest.

- How would you rate your level of knowledge about the topic?

1	2	3	4	5

- Please specify:

- After the activity, how would you rate your empowerment in terms of (to fill according to the topic)?

1	2	3	4	5

- Please specify:

- How would you rate your acquisition of new skills (*or fill the type of skills: technical, soft, domain expertise, project management, others*) after the activity?

1	2	3	4	5

- Please specify:

- How would you rate your motivation to continue the project?

1	2	3	4	5

- Please specify:

- How would you rate the networking dimension of the activity?

1	2	3	4	5

- Please specify:

- How would you rate your understanding of open innovation and the social impact of citizen science on society?

1	2	3	4	5

- Please specify:

Annex B – Complementary survey

The organiser of each activity completed this survey.

It is an open framework. It can be adapted to the characteristics of the completed activity and of the organizer if needed.

1 The activity (a measure of the sustainability of the activity)

Name of the activity:

Can you precise the framework of the event?

☐ Punctual event

☐ Part of an internal megaproject

☐ Part of an external megaproject

☐ Regular event

☐ Part of a course

☐ Other

Name of the course, and details of the accreditation procedures, or name of the megaproject if relevant:

How did you engage the participants before the event?

☐ Part of a course, no special registrations needed

☐ Communication tools, mailing, social networks

☐ Information meetings

☐ External calls of participation

☐ Networking

☐ Other

Precise if you have received a financial contribution of sponsors to cover the expenses of the OIA: yes/no

If you received any non-financial contributions, please specify the nature of them:

☐ Data

☐ Equipment/tools

☐ Human contribution: the sponsor participates (with one or several employees) in the OIA.

☐ Other

Would you reiterate the activity (on the same format and topic) with other participants? yes/ no/ it's already a regular activity

Do you think that the format of the activity can be transferable: (another topic, challenge, participants, community...)? yes/no/it is already a regular format of activity

Free comments on the sustainability of the activity:

2 Mentoring

Who are the mentor-s of your OIA (many choices possible)?

☐ Teachers from the university organiser

☐ Guest Teachers from other universities

☐ Mentors from the university organiser

☐ External partners

☐ Other

Specify the quality of the mentor-s if relevant:

7) Specify the roles of the mentors (many choices are possible)?

☐Teacher-educator

☐ Facilitator

☐ Consultant /Expert/ Adviser

☐ Judge

☐ Other

Define the main criteria considered for the choice of the mentors in your OIA:

☐ Teacher involved in the course (teaching expertise)

☐ Motivation and volunteer

☐ Engagement and availability

☐ Field of expertise (specialisation in a field)

☐ University network/partners (networking and new opportunities)

☐ Other

How do you involve your mentors?

☐ Mentors are organisers (they are involved in all stages described)

☐ They are involved in the organization of the activity (preparatory meetings)

☐ They are involved in the training, just before the activity

☐ They are involved in the evaluation/assessment phase

☐ No special preparation before and after the event

☐ They are involved in the university network/partners (networking and new opportunities)

☐ Other

In your opinion, what is the main motivation for external partners to participate in the activity? (it external partners are involved in the activity)

General feedback on the mentoring/Tips:

3 Tools in the Covid 19 context

Would you have used the same tools in a non-pandemic period? yes/no

Did you have easy access to the software or tools used for this activity? (choice of the tool, licences) yes/no

Develop if relevant:

Do you think that using online technology tools and software in the learning process in the context of Covid-19 has a positive impact? yes/ no/other

Why? (Facultative question):

How do you rate your ability, as an organiser or teacher, to deal with online tools during the open innovation activity? (1: very satisfied to 5: not satisfied)

1	2	3	4	5

Regarding this activity, do you think that the ability of teachers/organisers to use technology is :

☐ In preparing learning tools

☐ In implementing learning tools

☐ In facilitating students/participants to access to a learning device

☐ An assessment of the outcomes

☐ Other

Regarding this specific activity, did you need to have a training session before the activity? Yes/no/I do not, but it would have been useful

If yes, what do you recommend?

After the Covid do you expect to organise this kind of activity in the same conditions? Yes/no/I do not know

Develop if relevant:

What are the best practices regarding tools? What is your feedback about your used tools? Is there a tool you would recommend? (Facultative question)

4 Learning impact and community building

Can you class the learning impact of the activity according to you (if measurable/facultative question)? Topic learning/Collaborative learning/ Social learning/Technical learning

1	2	3	4

Do you think that the resources shared and produced during the activity are:

☐ Accessible

☐ Sufficient

☐ Difficult to access

☐ Other

Do you think the OIA results or outcomes can have some social impacts? Yes/no/I do not know

Please specify what kind of impacts:

Which kind of relation will you maintain with the participants and the mentors involved in your project after the activity?

☐ Keep informed

☐ Maintain interest

☐ Active consultation

☐ Key players

☐ No special relation

Please develop of relevant:

How were or will the activity's outcomes (results or resources) be disseminated?

☐ Public presentations (despite the final pitch)

☐ Video dissemination

☐ Article on a specific revue

☐ Publication on a specific website

☐ Broadcast (National or Regional)

☐ Other

Did the participants and the mentors keep in touch after the event? Yes/no/I do not know

If yes, specify:

Did the activity lead to long-term results or outcomes in addition to the results of your activity? Yes/no

If yes, what kind?

☐ New projects

☐ New practices

☐ New open resources

☐ New organisations or new jobs (companies, associations...)

☐ Other

If other, can you specify?

How did you disseminate the activity across your community?

☐ I didn't

☐ I published some open resources on the university's involved communication internal service

☐ I published or co-contributes by the outcomes/results in international revues

☐ I covered the activity in the media/social networks

☐ I developed new partnerships for future projects with external partners

☐ Other

Comments/feedback/tips about learning impact and community building: