

D3.17 DESIGN FACTORY WORKSHOPS

Organised for RUN-EU Students

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1. Introduction

Design Factory workshops are immersive and collaborative learning experiences that aim to foster innovation, creativity, and problem-solving skills through hands-on activities and real-world projects. The concept of a Design Factory workshop is based on the idea of creating an environment that merges academia, industry, and the community. These workshops bring together participants from diverse backgrounds such as design, engineering, business, and other fields to collaborate and leverage their different perspectives and expertise.

By following a human-centered design approach, Design Factory workshops typically follow a structured process that encourages participants to think creatively and iteratively in the following stages of the workshop:

1. **Problem Identification:** Participants begin by identifying the problem or challenge they want to address.
2. **Ideation and Concept Development:** In this stage, participants engage in brainstorming sessions and idea generation activities to explore various solutions.
3. **Prototyping and Testing:** The workshop then moves into the prototyping phase, where participants create low-fidelity or high-fidelity prototypes of their ideas.
4. **Presentation and Communication:** Finally, participants present their refined solutions to a broader audience, including stakeholders and experts, to receive feedback, insights, and validation.

The first edition of this report will focus on documenting the initial workshops conducted at HAMK and NHL during 2021 and the first semester of 2022.

These two institutions, HAMK and NHL, have already successfully implemented Design Factory workshops. In the initial round, other participating institutions observed and learned from these workshops, gaining valuable insights and knowledge. As a result, these institutions have subsequently developed their own Design Factory workshops, tailored to their specific contexts and needs. The first edition of this report will primarily focus on the workshops conducted at HAMK and NHL, while acknowledging the subsequent development and implementation of Design Factory workshops by the other participating institutions.

2. Design Factory Workshops organized by HAMK

2.1. Product Development in 3 hours 2021

Product Development in 3 hours (PD3) was organized as Design Factory workshop during RUN-EU Super Week. PD3 is product development exercise conducted in three hours, where the purpose is to learn prototyping skills by hands-on doing and demonstrating a tangible or intangible prototype solution for the audience of the workshop. The students in the prototyping teams were from different fields making the groups interdisciplinary. Students had an opportunity to navigate in international team where they had to take in consideration different approaches, culture differences and languages.

Participants in the PD3 where all the students that were involved in 'How to Navigate Through Unfamiliar Contexts' Short Advanced Program (SAP).

Instruction material for PD3 is available from HAMK Design Factory SlideShare account: <https://www.slideshare.net/hamkdf/design-factory-bootcamp-2021-pd3>.



Figure 1. Product development in 3 hours workshop 2021.

Table 1. Participants to PD3 workshop 2021.

Institution	Number of participants
(AIT) Athlone Institute of Technology	4
(FHV) Vorarlberg University of Applied Sciences	2
(LIT) Limerick Institute of Technology	2

(SZE) Széchenyi Istvan University	5
(HAMK) Häme University of Applied Sciences	1
(IPCA) Polytechnic of Cávado and Ave	6
(NHL Stenden) NHL Stenden University of Applied Sciences	6
Total	24

2.2. 3D modeling workshop 2021

3D-modeling workshop was embedded inside Short Advanced Program ‘How to Navigate Through Unfamiliar Contexts’. The 3D modeling included online instruction on using Tinkercad for creating 3D models. The learning goal was to have basic knowledge on 3D modeling and to be able to create a 3D model that can be printed with a 3D printer.

2.3 3D printing workshop 2021

Students had a pretask, where they needed to think about a model/object, which they would like to 3D print during their Super Week visit at HAMK Design Factory. Before the Super Week HAMK Design Factory (DF) provided an online teaching session for the students for using Tinkercad 3D software. Later during the Super Week, DF staff members guided the students through the 3D printing process and helped with the fine tuning and developing their premade 3D models. Each student printed their 3D model that they could bring back home as a takeaway from the Super Week.

These two workshops gave a quick and easy learning opportunity for the students to learn what 3D modeling and printing is, how the process works and how to use 3D printers. The role of the workshops was to provide an introduction to the topic, so that students could better understand opportunities that 3D modeling and 3D printing bring to product development and design.



Figure 2. Students printing their own designs.

Table 2. students participating in the 3D modeling and 3D printing workshops.

Institution	Number of participants
Vorarlberg University of Applied Sciences	2
Széchenyi Istvan University	5
Häme University of Applied Sciences	1
Polytechnic of Cávado and Ave	6
NHL Stenden University of Applied Sciences	6
Total	24

2.4. Product Development in 3 hours 2022

During the Super Week, HAMK Design Factory provided a product development project workshop (PD3), which was held within 3 hours for all visiting staff and students. The workshop was organized separately for the staff and the students from the different visiting universities. The idea behind this workshop was to bring and support understanding how product development and design thinking can be done and to get an idea about the value of working in multi-disciplinary teams towards a common goal. This workshop also provided the opportunity for participants to get their hands “dirty” through prototyping, while figuring out how their solution idea should be built into an understandable, visual and interactable form.

At the beginning of each workshop, the participants were given a challenge to design a workshop that they would like to implement in their own their university.

2.5. 3D-modeling workshop 2022

Just like during the 2021 3D printing workshop, the same workshop was provided again during the 2022 Superweek due to its success and positive feedback from the first run. Workshop participants were given a remote introduction to 3D modeling using Tinkercad software, so they could prepare their models beforehand for the 3D printing.

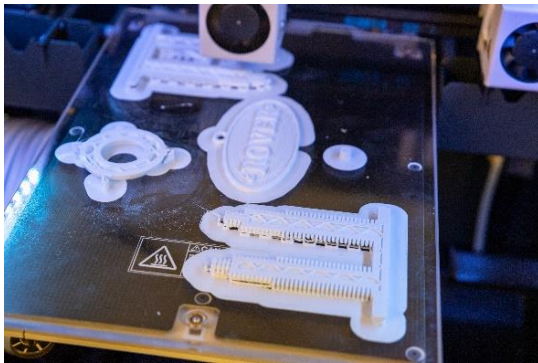


Figure 3 3D printing



Figure 4 Students using 3D printer

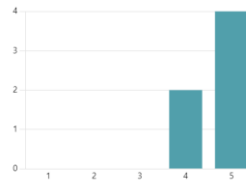
2.6. Satisfaction survey

19 students participated in the Product Development Project in 3 hours, 3D-modeling workshop in 2022. Anonymous feedback was collected from the participants at the end of the week, however only 6 responses were received. We asked the students to rate lectures and group work on scale from 1 to 5 stars. The average of lectures and group work responses were

4.65 stars. Similarly, we asked students to rate the over-all experience on scale 1-5 stars. The average of responses for over-all experience was 4.83.

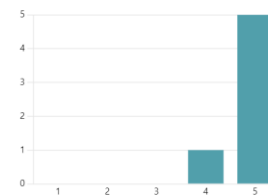
2. Lectures and group work
[More Details](#)

4.67
Average Rating



4. Over-all experience
[More Details](#)

4.83
Average Rating



3. Design Factory Workshops organized by NHL Stenden

3.1 Contracting 2022

The workshop on Contracting was organized as part of the intervention method for the RUN-EU research 'Transactional Analysis and its impact on open-mindedness' that was conducted at the Future Design Factory at NHL Stenden University of Applied Sciences.

At NHL Stenden one group of students participated in the workshop in September 2022.

The goal of this 1,5 hour workshop is to help the students make a good start with the necessary negotiating and making agreements that they have to do in order to be able to work together in a constructive way. It also provides them with tools they can use in the negotiations with their clients (the companies that provide the challenges/issues they work on).

Students become aware of the influence of different frames of reference on the negotiating process. In the assignment we challenge them to take their own responsibility to make sure every group member can achieve their learning goals and to negotiate their group contract from an I'm okay / you're okay position. After negotiating their group contract, each group gives a short presentation about the process and the outcome and gets feedback from the other groups. They then go for a second round to process the feedback they got from the other groups and make their contracts even better.

We expect that this workshop will also create a ground for the second workshop to have a larger effect.

Table 3. Participants to workshop on Contracting.

Institution & period	Number of participants
NHL Stenden (Future Design Playground) September 2022	13
NHL Stenden (Sustainable Development Solutions) September 2022	12

Total	25
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Afterwards one of the participating students mentioned that the workshop helped him understand the influence of negotiating from different frames of reference and reflect on his own manner of negotiating.

3.2 Managing Communication 2021 and 2022

The workshop on Managing Communication was first organized as part of the program for the RUN-EU Super Week. In November 2021 and May 2022 a group of international students from the participating universities participated in the workshop. In two hours' time students learned how to recognize negative communication patterns. The learned theory and concepts of communication and they learned how to influence communication and to communicate more effectively. Theory was alternated by role plays.

A few days later the students had a meeting under the guidance of the workshop teacher, where they could discuss communication problems they encountered during the week. This was an opportunity for them to apply the theory from the workshops to real life situations. Since the students were from different countries, there was also the opportunity to learn about cultural differences in these kinds of situations.

The participants in this workshop on Managing Communication were all the students that were involved in 'How to Navigate Through Unfamiliar Contexts' Short Advanced Program (SAP).

The workshop was also part of the intervention method for the RUN-EU research 'Transactional Analysis and its impact on open-mindedness' that was conducted at the Future Design Factory at NHL Stenden University of Applied Sciences.

Table 4. Participants to workshop on Managing Communication 2021 in RUN-EU SAP.

Institution	Number of participants
(AIT) Athlone Institute of Technology	4
(FHV) Vorarlberg University of Applied Sciences	2

(LIT) Limerick Institute of Technology	2
(SZE) Széchenyi Istvan University	5
(HAMK) Häme University of Applied Sciences	1
(IPCA) Polytechnic of Cávado and Ave	6
(NHL Stenden) NHL Stenden University of Applied Sciences	6
Total	24

Based on satisfaction survey of six participating students the students found the workshop beneficial for their studies.

Table 5. Participants to workshop on Managing Communication 2022 in RUN-EU SAP.

Institution	Number of participants
(AIT) Athlone Institute of Technology	0
(FHV) Vorarlberg University of Applied Sciences	1
(LIT) Limerick Institute of Technology	0
(SZE) Széchenyi Istvan University	1
(HAMK) Häme University of Applied Sciences	2
(Leiria) Politécnico de Leiria	1
(NHL Stenden) NHL Stenden University of Applied Sciences	3
(IPCA) Polytechnic Institute of Cávado and Ave	4
(TUS) Technological University of the Shannon	5
Total	17

Based on satisfaction survey the students helped them to think out of the box and widen their view on.

One of the participating students stated: "I wish I would have had this workshop earlier in my studies. That would have been very helpful in the many communication problems I encountered in different project groups during my studies'.

4. Summary

Overall, there were 114 students that participated in Design Factory Workshops organized by HAMK and NHL Stenden. The numbers were calculated based on students that registered for the workshop or the module or the other learning event, where the workshop was embedded, like RUN-EU SAPs.

Answering to student feedback and satisfaction surveys was voluntary and very little answers were received. This may be due that this was voluntary for the students and there were no standard satisfaction surveys, rather each institution collected the feedback in their own way and format.



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