Design Thinking

Detailed Design Thinking Report

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Introduction

The objective of this report is to inform on the purpose, execution and outcome of the Design Thinking workshops as an element of IO 3. Design Thinking was also employed during the project meetings to solve problems that arose and to overcome barriers faced due to corona. Design Thinking is typically viewed as a human-centred approach used to foster innovation, creativity and change. It has been used in the industry to inform the design of products and services. Design Thinking is also effective in research activities addressing wicked or complex problems.

Design thinking supports divergent, lateral thinking – thinking that enables problem finding rather than quick, often short sighted, problem solving. Using design thinking users come to realize it is possible "… to creatively attack the world's greatest problems and meet people's most urgent needs" (Hatch, 2014). Sites like Open IDEO.org share wonderful projects that people have tackled – all in the service of the public good.

Design thinking can be used to develop eight core abilities:

- Navigate ambiguity - ability to persist with the discomfort of not knowing
- Learn from others – ability to emphasize and embrace diversity
- Synthesize information – ability to make sense of information and find insight and opportunity
- Experiment rapidly – ability to quickly generate ideas in written, drawn or built forms
- Move between concrete and abstract – ability to move between needs, ideas, and define ideas
- Build and craft intentional – ability to thoughtfully make / construct ideas into tangible, shareable forms
- Communication deliberately – ability to form, capture, and related stories, ideas, concepts, reflections and learnings to diverse audiences
- Design – ability to recognize a project as a design challenge and then decide on people, tools, techniques required to tackle it (https://dschool.stanford.edu/about/#about-8-core-abilities).

Design thinking workshops as part of IO3 is being used to inform the elements needed for the development of the BLS academy.

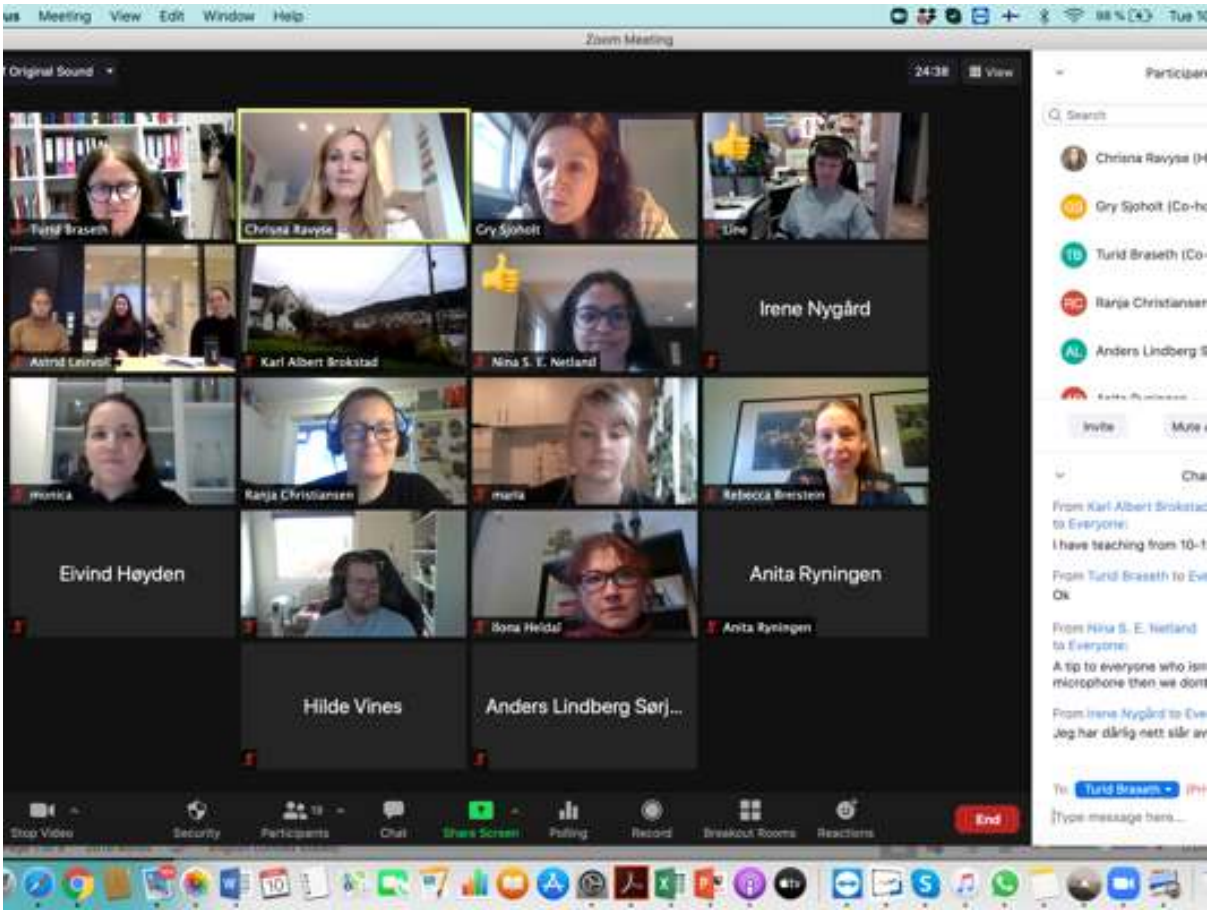
The focus of our work was firstly to explore the barriers/ hurdles/ problems that exist within the triangular relationship of teachers, supervisors and students in the context of the sharing of knowledge between teachers, supervisors and students within BLS. From there they were asked to resolve the issues and story board their ideas. This was done at each one of our partner countries. A fourth workshop explored the findings from each and aimed to develop a combined solution that will not only improve the sharing of knowledge within each partner country but across borders to improve the internationalization of our target audience, teachers, supervisors and students.

Design thinking process within the BLS academy IO3

Within IO3 we hosted 4 DT workshops. One with each one of the partner countries with a final workshop which combined representatives from each one of the partner countries as a collaborative team. With the COVID-19 situation we were only able to conduct two of these face to face with the other two making use of various online tools and will be described separately in the report. Participants had to identify 3 problems within their small groups.

They then had the opportunity to each develop on solution for one of the problems that they identified as the greatest.

The first workshop took place in Turku 22 and 23 October 2020. This meeting was a face to face meeting and we had a total of 11 participants comprising of teachers, supervisors and students. Results from this group is discussed in section 3.1. Participants worked together 2x2 and we aimed to make sure that there were not two people from the same target audience ie teacher and teacher.



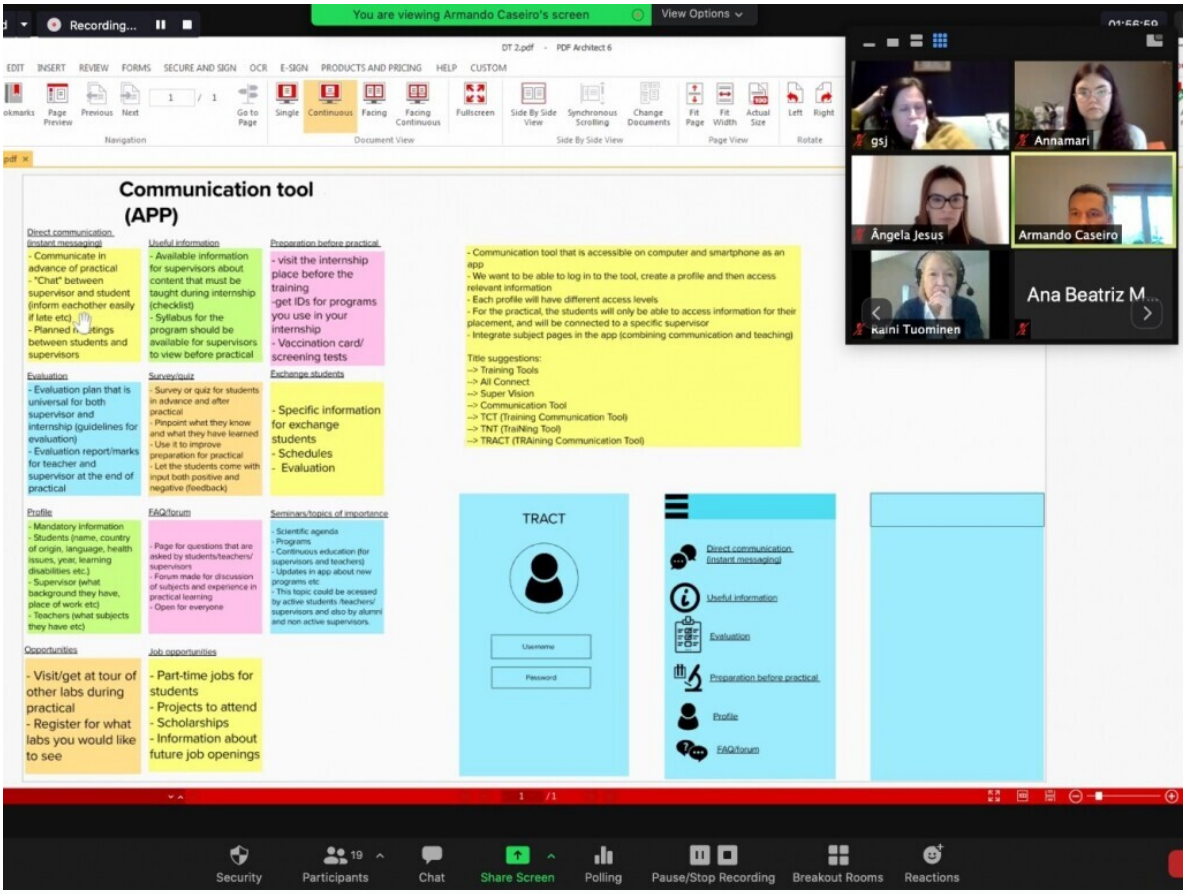
The second workshop was done online on 10 and 11 November 2020. We had 20 participants in this group, comprising of teachers, supervisors and students and two from the collaboration group between IT and BLS at Bergen. Participants worked together 2x2 and we aimed to make sure that there were not two people from the same target audience ie .teacher and teacher. We made use of zoom for this workshop with breakout rooms and facilitating by visiting the groups in the break out rooms. Participants could also request help at any time when they needed it. Results from this group is discussed in section 3.2

The third workshop took place in Coimbra 24 and 25 November 2020. This was also a face to face meeting. We had a total of 14 participants comprising of teachers, supervisors and students. Participants worked together 2x2 and we aimed to make sure that there were not two people from the same target audience ie. teacher and teacher. Results from this group is discussed in section 3.3

The fourth workshop took place online, 7 and 8 January. We had a total of 16 participants. We grouped participant together in groups of three with one from each representative country and also insuring that each group had a teacher, supervisor and teacher in the group. The task for this group was a little different as they had insights to the results from the previous DT workshops and were asked to either expand on one of the ideas and further develop it, or combine some ideas to form a new one but were also given the opportunity to come up with a completely new solutions based on the knowledge of what the core problems identified are.

The design challenge was:

How can we improve communication, sharing of knowledge between teachers, supervisors and students on a global scale that will also facilitate student interaction?



The combined results are discussed in section 3.4

Results

The results will be discussed by DT workshop and will first present the results from the DT process related to problem finding. And then the results from the solutions will be reported. All DT notes used by participants during the DT workshops were collected (translated if needed) and coded making use of ATLAS ti.®. Codes were done making use of an inductive coding process. The inductive approach is bottom-up. Codes were derived from the data. Participants' notes *in vivo* codes are used to code the data. These codes are built and modified throughout the coding process. They were then grouped into themes. The solutions that came from the DT workshops were also categorized based on the themes that emerged from the problem finding process.

When reading the results it is important to understand that even though there was a lot of talk in some areas which generated a lot of codes on that area participants created based on what they thought was the best solution for the biggest problem and this might not correlate with the codes

Results Turku

Five themes emerged from the 171 codes; communication (codes like lack of communication, inefficient communication, communication skills etc), skills (lack of skills, skills training, inconsistency in skills training, basic skills), teacher training (lack of time, non-specific training, lack of training) assessment (inconsistent, unclear, lack of detailed feedback) and digital teaching resources (interactivity, games, easy to use). Table 1 shows the code count within each of these themes

Table 1: Frequency count of the codes within each theme

Communication	Skills	Assessment	Teacher training	Digital resources
57	22	43	11	38

Digital ResourcesCommunication57114322

From this it is clear that communication is considered the biggest problem with digital resources and teacher training going hand in hand. When digging further into these themes, teachers felt inadequate. to provide students with appropriate training tools especially during the special circumstances of COVID-19, teachers and supervisors also felt that they do not have specific training to support them in their roles as teachers/supervisors and also a lack of time to actually attend training, with the extensive workload. Concerning digital resources students voiced the need for more interactive learning material, complaints about endless PowerPoints and too long recorded lectures without enhancing their learning experience.

Participants could then each choose one problem to develop a solution for. The following solutions were presented and were grouped based on the themes identified through the coding process Annexure A: Pictures of all the solutions

Communication:

Students and supervisors can befriend each other and chat and talk and ask questions also get to know their environment before practical

Academic content is shared where students can learn from each other

Platform with blogs, sharing of experiences

Debate or social events between teachers, students and supervisors to get to know each other better in order to be more comfortable when starting practical or students will feel they are more accessible when they want to ask questions.

Process of practical: Meeting of student before start of practical. Allowing supervisor to have a better understanding of where the student is at competency and also his or her personality allow supervisor time to prepare better for the student before they start

Training

Training for supervisors to support their own learning but also for discussions on topics and also cases and outcomes can be discussed

Training for teachers to empower and be on top of world trends, students working together on projects form different countries and tools to make training easier

Digital tools

Simulation game to familiarize themselves with the different labs and where everything is kept

App that provided game like factors based on case studies and allows them still have real world experience and discussions

360 video/ VR introduction to labs to make sure students feel more comfortable before starting their clinical practice

Webpage with teaching tools based on learning styles. Visual, auditory, learn by doing, learn by reading or writing. Student decided on the way in which they would like to receive the information with specific tasks related to support their specific learning style.

Assessment

Examination tool for supervisors that allows easier and more real-time scoring of practical with feedback on how the student can improve. Graded scale exported either as a grade or just as a competency comment with the option to add additional comments

3.2 Bergen

Only four themes emerged from the 207 codes; communication (codes like lack of communication, inefficient communication, communication skills, communication tools etc), skills (lack of skills, skills training, inconsistency in skills training, basic skills), assessment (inconsistent, unclear, lack of detailed feedback) and digital teaching resources (interactivity, games, easy to use). Table 2 shows the code count within each of these themes

Table 1: Frequency count of the codes within each theme

Communication	Skills	Assessment	Digital resources
52	44	37	74

In this group digital resources seemed to be the biggest concern with communication also having a significant number of codes. Skills and assessment were lower from the other two and fairly close together. Interesting that teachers felt students need training on more detailed elements of their work as they felt students were unsure of detailed certain aspects. Communication included things like inconsistent information, and complicated platforms. Digital resources included easy to use tools to create digital content for teachers, games and gaming elements in learning material featured highly in the digital resources theme.

Participants could then each choose one problem to develop a solution for. The following solutions were presented and were grouped based on the themes identified through the coding process Annexure B: Pictures of all the solutions

Communication:

Communication platform for supervisors and teachers and students to log in. Where information on meetings can be shared and stored. Some information only between supervisors and teachers

Checklist for teachers, supervisors and students to ensure they all have covered all the core skills needed for the respective BLS field.

App with easy access to personal schedule, tutorials, classes, contacts, forum for sharing of knowledge search all contained in one app

Skills

Training process for bachelor thesis students to collaboratively design with computer science students. Which includes production of short videos for inclusion in teaching

More specific training on equipment and certain procedures ie Butterfly needle

Digital tools

Virtual lab experiences, collaborative game play with quizzes and competition

Framework for good IT structure when developing digital tools for teaching and learning

Platform with templates to easily create an online lesson – including integration of Quizlet and other quiz like software. Some pedagogical guidelines will be given to allow teachers to adhere to the best online pedagogical approach.

Coimbra

Table 3: Frequency count of the codes within each theme

Communication	Skill	Teacher Training	Assessment	Digital teaching resources	Intern. Collab
129	112	114	72	102	88

In Coimbra we had six themes emerging from the 617 codes; communication (codes like lack of communication, inefficient communication, communication skills etc), skills (lack of skills, skills training, inconsistency in skills training, basic skills), teacher training (lack of time, non-specific training, lack of training) assessment (inconsistent, unclear, lack of detailed feedback), digital teaching resources (interactivity, games, easy to use) and international collaboration (interaction, lectures outside Portugal, online student forums etc) Table 3 shows the code count within each of these themes

In this group communication also seemed to be of high concern with skills and teacher training being close seconds. A big emphasis on digital resources was also placed and a theme not found in other groups was discussions surrounding international collaboration. Within the teacher training, same as other participants it had to do with skills to deliver better online content. Teachers are secure in their own knowledge but delivering and guiding student online were overwhelming, this explains the big discussion surrounding digital resources. Teachers felt that they do not have enough and that they are very restricted in their own internal systems as to what they can use. International collaborations seem to be a bigger request from student with a real need to discuss with other students about their training and one very important factor was the fact that they wanted the degree to be standardized across Europe to make mobility better.

Participants could then each choose one problem to develop a solution for. The following solutions were presented and were grouped based on the themes identified through the coding process Annexure C: Pictures of all the solutions

Communication

Digital learning society to improve communication between supervisors and teachers, immediate feedback on students learning experience improving confidence and learning of students

Communication platform for supervisors and teachers and students to log in. Where information on meetings can be shared and stored. Some information only between supervisors and teachers

International collaboration

Virtual collaboration with students from other countries x2

International BLS society with virtual workshops and short seminars held in a more interactive way to ensure maximum learning and provide platform for learning.

Standardization of theoretical knowledge and technical skills across Europe allowing students to work anywhere

Repository with videos, images, clinical cases, webinars, courses, projects and collaborative research projects

International congress of BLS: Biannual, unifying career, sharing of information countries represented by 2 people nationally elected open to students and professionals. Workshops, seminars, posters, social gathering, clinical cases, lectures, debates, conferences.

Digital tools

Videos to explain case studies and also make use of both teachers and supervisors to showcase that to give a more real-life situation and feel, chat box discussions on these elements in the videos.

Smaller groups to discuss cases on a digital platform, teacher support to call when they need help. Collaborative sessions with students across the globe.

Web app to search for cases and lectures from all over on topics and other elements in the different fields of BLS. Also instruments what they are used for and analyses outputs and interpretations and related case studies to this.

Results from the Combined International Meeting

The notes of this workshop were not coded as they were not investigating the need anymore. They were only asked to create or expand on the current solutions.

Interesting observation from the combined workshop is that even though there were some really good teacher tool innovations from the individual workshops none of the groups in the final DT elaborated on these. The results were communication, a game and assessment form.

Based on these it was clear that our IO 4: Digital Teacher is very much needed and many of the innovations from the individual DT workshops will be used in this IO. The Design Thinking Working Group made the following decisions:

- A communication platform will not be developed however we will be developing a course on communications skills making use of a simulation game.
- An assessment form was created
- As part of the international collaboration that came out from these workshops we will be hosting a monthly webinar during which we will discuss various topics related to BLS and we also got students involed on that.
- The virtual teacher include courses for lecturers in creating material that are easy to use and also how to integrate various technologies into the classroom as well as teaching learning resources for students to aid them in their learning.
- Students participated actively in writing blog posts and other forms of reporting about their experiences on exchange and other involvement in the project.
- Multiplyer events included workshops at the EPBS conference that was hosted by the lecturers and students from the three universities
- The final conference was focused around teaching and learning and involved hospital partners, students and teachers
- Hospital partners also participated in making introductory videos to the labs they work in.

Conclusion

The design thinking workshops was a great success, and they proofed to really uncover the core of the problems experienced by the triangular partnerships between teachers, students and supervisors. Feedback from participants included that this created an awareness of the problem which in itself is positive. Furthermore, we hope that it facilitated in them the opportunity to think about ways in which they themselves can contribute to improve the communication situation.

Making use of DT to determine the problem areas but to also to spark innovation confirmed on the one hand that the BioTriCK project is needed and our target is on point, and secondly it supported the thinking of the work group as well as expanded our original thoughts.

Design Thinking as project managment tool

Design thinking is like a superhero for project management, swooping in to save the day when things get tricky. When a project hits roadblocks or faces barriers, design thinking steps in with its problem-solving cape. It encourages teams to view challenges from fresh angles, fostering innovative solutions. By empathizing with users and stakeholders, brainstorming creative ideas, and rapidly prototyping solutions, design thinking guides projects out of trouble spots and around barriers. It's not just a process; it's a mindset that turns obstacles into opportunities, ultimately steering projects towards success.

The Design Thinking Workshops were led by EDvantage, a business partner within the project. EDvantage is a specialist in applying Design Thinking principles to foster and boost growth within companies, ultimately improving productivity and achieving superior results.