

# **DT MEETS STEM TEACH BEAST Training Programme Syllabus**

**THIS SYLLABUS EXPLAINS THE LEARNING OBJECTIVES  
AND EXPECTED OUTCOMES OF THE TEACH BEAST TRAINING  
FOR FACULTY**



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# I. INTRODUCTION TO THE TRAINING COURSE

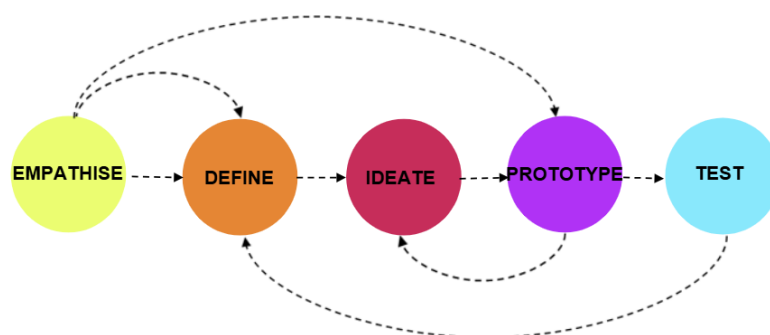
The DT MEETS STEM TEACH BEAST Training Programme has been developed for professors by professors. The training and material supports professors in the application of the Design Thinking (DT) process in Science, Technology, Engineering, and Math. The training programme provides relevant and applicable practical steps for DT implementation. It includes methodologies and techniques, as well as advice based on professors' expertise.

## INTRODUCTION TO DESIGN THINKING

Design Thinking is a creative, human-centred, iterative approach to problem-solving recognised by academic and industry settings as a practical and agile process which engages people in generating innovative solutions to complex challenges. Originally used in design professions, it's now applied to solve complex organisational, social and business challenges.

The Design Thinking process has the following 5 steps:

- ◆ **Empathy:** understanding users' perspective and needs;
- ◆ **Problem definition:** clearly defining the problem to be solved;
- ◆ **Ideation:** brainstorming and generating potential solutions;
- ◆ **Prototyping:** creating rough models to test and sharpen ideas;
- ◆ **Testing:** collecting user feedback on prototypes to iterate and improve solutions;




## BENEFITS OF DESIGN THINKING IN STEM COURSES

The job market demands a broader skill set beyond technical expertise and scientific knowledge, since automation, AI, and other technologies transform it.

As professors, we would like to create opportunities for students to acquire skills and develop mindsets to achieve impactful careers - developing cognitive, social, and adaptive skills that complement technological capabilities is becoming essential nowadays and the manual highlights it by fostering critical thinking, creativity, innovation, collaboration, communication and problem-solving skills. Design Thinking benefits STEM courses by:

1. Cultivating critical thinking, creativity, and innovation;
2. Promoting interdisciplinary collaboration and communication;

- 
3. Empowering student agency and problem-solving skills;
  4. Building resilience and adaptability in addressing complex challenges;
  5. Connecting STEM education to real-world applications with a user-centred approach.

Beyond empowering students, DT offers professors a powerful methodology for crafting innovative learning experiences. DT can benefit you in your teaching practice as follows:

- ◆ **Create engaging and dynamic courses:** the DT process allows you to design, deliver and evaluate your courses in a continuous cycle, an interactive approach that enables you to experiment, gather feedback and improve your course, as well as better meet student needs.
- ◆ **Embrace an experimentation mindset:** the dynamic nature of today's student needs requires adaptable teaching methods. DT fosters an experimentation mindset enabling you to test new approaches, refine your teaching strategies and create courses that follow your students' evolving needs and knowledge levels.
- ◆ **Develop a User-centred approach:** just like students apply DT to address user needs, you can leverage the same principles to design user-centred courses, focusing on student learning engagement and outcomes

## 2. LEARNING OBJECTIVES AND EXPECTED OUTCOMES

### LEARNING OBJECTIVES

The learning objectives of the training for professors are as follows:

1. Learn the DT process, methodology and tools to teach professors of STEM courses how to bring the DT approach into STEM courses.
2. Learn the “Teacher’s process” and the “Student experience”.
3. Understand how to use the material: DT Meets STEM Manual, Miro, Mission and Slide Deck.

### EXPECTED OUTCOMES

After the 3 days workshop participants would have created the first draft of the following:

1. **Updated Syllabus** for your course, incorporating the CBL through DT. How will you allocate time to CBL and DT in your course?
2. **Material for class:** Slides that you will use in class
3. **Handouts for students:** Material that you will give to students in the course (e.g. Miro, Missions)
4. **Teams:** What types of teams will you create?
5. **Challenge:** What type of challenge suits the process and course?
6. **Evaluation:** What type of evaluation best suits the course?



### 3. COURSE FORMAT AND METHODOLOGICAL APPROACH

The course is based on the experiential learning method. You will learn the Design Thinking method in the following format:

1. **Capsule content sessions.** Content sessions of approximately 30 min where the theory and techniques are explained by the faculty.
2. **In-class individual and teamwork.** Application of the methods in your STEM course during session. The course faculty provides support in class as participants work through the various steps of the workshop.

### 4. COURSE STRUCTURE AND CONTENT

The course is run over 3 days with the following content covered each day:

#### **DAY 1 (09h00 – 17h00)**

- Session 1: Mindset, process and value of Design Thinking in STEM courses
- Session 2: Tools for designing projects and project team collaboration
- Session 3 & 4 : Tools for exploring and defining the problem space

#### **DAY 2 (09h00 – 17h00)**

- Session 5 : Tools for creating and testing the solutions
- Session 6 & 7: Course Transformation: Syllabus improvement with PBL
- Session 8 : Course transformation: Create Supporting slides
- Session 9 & 10: Challenge development

#### **DAY 3 (09h00 – 17h00)**

- Session 11: Evaluation of PBL courses
- Session 12: Course transformation cont.
- Session 13: Supporting structure
- Session 14: Share & Feedback

## 5. MATERIALS

Participants will be provided with the following materials during the Training programme:

### **TEACH BEAST MANUAL FOR PROFESSORS**

The manual provides professors and teaching assistants with processes, methodologies and practical guidelines for the design, development and evaluation of Design Thinking in STEM courses. The manual includes an overview of Science-based and Technology-based STEM courses, advice on how to create student challenges, advice on how to create and manage student teams and finally, evaluation methods in CBL.

### **PRESENTATION SLIDES (FOR USE IN CLASS BY PROFESSOR)**

A comprehensive presentation slide deck allows you to introduce DT to your students in a clear and engaging manner. Every deck of slides refers to a specific Milestone and is then relevant to the lesson it is referring to. As a professor, you can use these slides as a tool that helps you to introduce the PBL and the several techniques students are going to learn during your course.

### **MILESTONES FOR STUDENTS**

Milestones serve as structured, step-by-step guidelines outlining the tasks to be completed by a specific deadline: these documents are aligned with the presentation slides. For each stage of the student project, a document is provided detailing the objectives students are expected to achieve within the given timeframe. These documents include a well-defined path and comprehensive descriptions of suggested tools and resources that are essential for the development and success of the project. Students may reference these milestone documents at any time to ensure they have clearly understood instructions and they're on the right way toward their final deliverables.

### **MIRO BOARDS FOR STUDENTS**

An online collaborative platform called Miro is included as a resource. Miro allows students to work together virtually, brainstorming ideas, visually organising project information, and creating mind maps in real-time. This fosters a collaborative learning environment and enhances communication within student teams. The board is thought to be used and edited by the team as it's dealing with the challenge, so that students will easily follow the structured process: its templates mirror the Milestones documents and Presentation slides provided and help students understand what and when to do the required tasks.



# Teach-BEASTs

Teach to BE Aware STudents

**“TEACH to BE Aware Students” Project (2022-1-PL01-KA220-HED-000089791) implemented by University of Information Technology and Management in Rzeszow (Poland), Alma Mater Studiorum – Università di Bologna (Italy), ESADE Ramon Llull University (Spain) and Instituto Politecnico de Portalegre (Portugal)**

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# Teach-BEASTs

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Training support booklet



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Materials Accompanying TEACH-BE(A)STs Training

# PERSONAL INTRODUCTION

To foster a collaborative and informative environment, we will begin with a brief introductory session. Each of you is kindly requested to introduce himself to the group, following the guidelines:

- **Name:** *Please start with your full name, ensuring clarity so everyone can address you properly throughout our discussions.*
- **Institution:** *Mention the institution you are currently affiliated with. This helps in understanding the diverse academic backgrounds present here today.*
- **Discipline:** *Briefly describe your primary discipline or field of study.*

# MEET AND GREET

*Find 3 things in common with 3 people in the room!*

# BINGO

*Complete the Bingo sheet*



# WORKSHOP PREREQUISITES

To ensure a productive and enriching experience during sessions, participants should come prepared with the following materials:

**Course(es) Syllabus** for reference. *This will assist in delving into the specifics of teaching objectives and methods.*

**Slide Decks for Classes.** *These materials will allow for the implementation of our approach into materials so that they are ready to use.*

By coming prepared with these materials, participants will be able to actively engage in discussions and activities tailored to enhance your teaching approach.

# WORKSHOP OBJECTIVES

- Learn the DT process, methodology and tools in order to teach professors of STEM courses how to bring the DT approach into STEM courses.
- Learn the “Teachers process” and the “Student experience”.
- Understand how to use the material: *DT Meets STEM Manual, Miro, Slide Deck*
- Test whether the material generated for the objectives of the DT in STEM is easy to understand and use. Identify improvements in the material provided.
- Generate examples of the use of the manual.



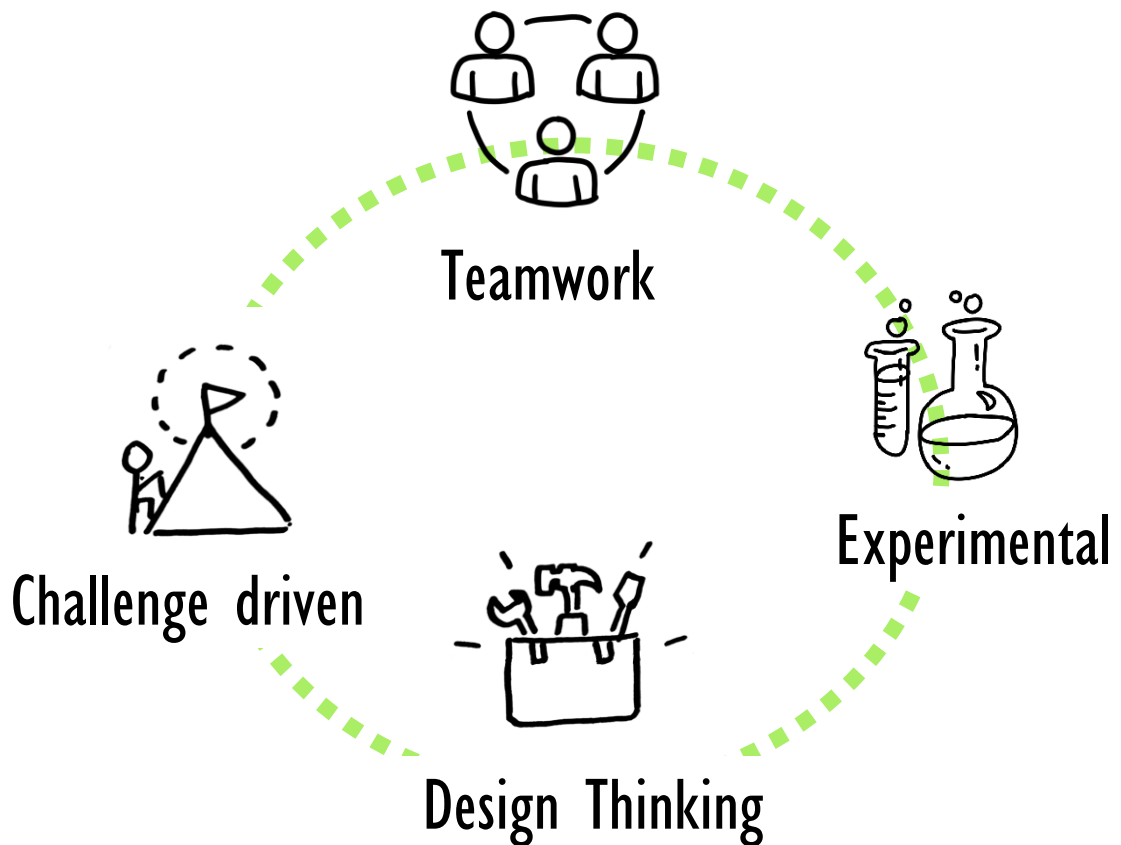
# EXPECTED OUTPUTS

*After the 3 days workshop you have created the first draft of the following:*

1. **Updated Syllabus** for your course, incorporating the CBL through DT. How will you allocate time to CBL and DT in your course?
2. **Material for class**: Slides that you will use in class
3. **Handouts for students**: Material that you will give to students in the course (e.g. Miro, Missions)
4. **Teams**: What types of teams will you create?
5. **Challenge**: What type of challenge suits the process and course?
6. **Evaluation**: What type of evaluation best suits the course?

*Use the booklet for your notes. As part of our learning, we would like to make a copy of your notes in the booklet.*

# WORKSHOP DYNAMIC



# WORKSHOP SCHEDULE

## Day 1

*Session 1:* Mindset, process and value of Design Thinking in STEM courses

*Session 2:* Tools for designing projects and project team collaboration

*Session 3 & 4 :* Tools for exploring and defining the problem space

## Day 3

*Session 11:* Evaluation of PBL courses

*Session 12:* Course transformation cont.

## Day 2

*Session 5 :* Tools for creating and testing the solutions

*Session 6 & 7:* Course Transformation: Syllabus improvement with PBL

*Session 8 :* Course transformation: Create Supporting slides

*Session 9 & 10:* Challenge development

Barcelona Design Week – Fusion Point students' projects expo and Voluntary dinner in Barcelona

*Session 13:* Supporting structure

*Session 14:* Share & Feedback

Workshop close and feedback

# DESIGN THINKING MINDSET AND TOOLS

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# OBJECTIVES

- What is Design Thinking?
- Understand the DT process and introduction to basic concepts and tools.
- How can it help STEM students?
- Understand the process, tools and structure
- The basics: Pre, during and after course.

# DESIGN THINKING MINDSET AND TOOLS

## DT ice breaker

WHAT DO YOU THINK ABOUT DESIGN THINKING?

ADD A QUESTION YOU WANT TO ANSWER

WRITE AN ANALOGY TO DESCRIBE DESIGN THINKING



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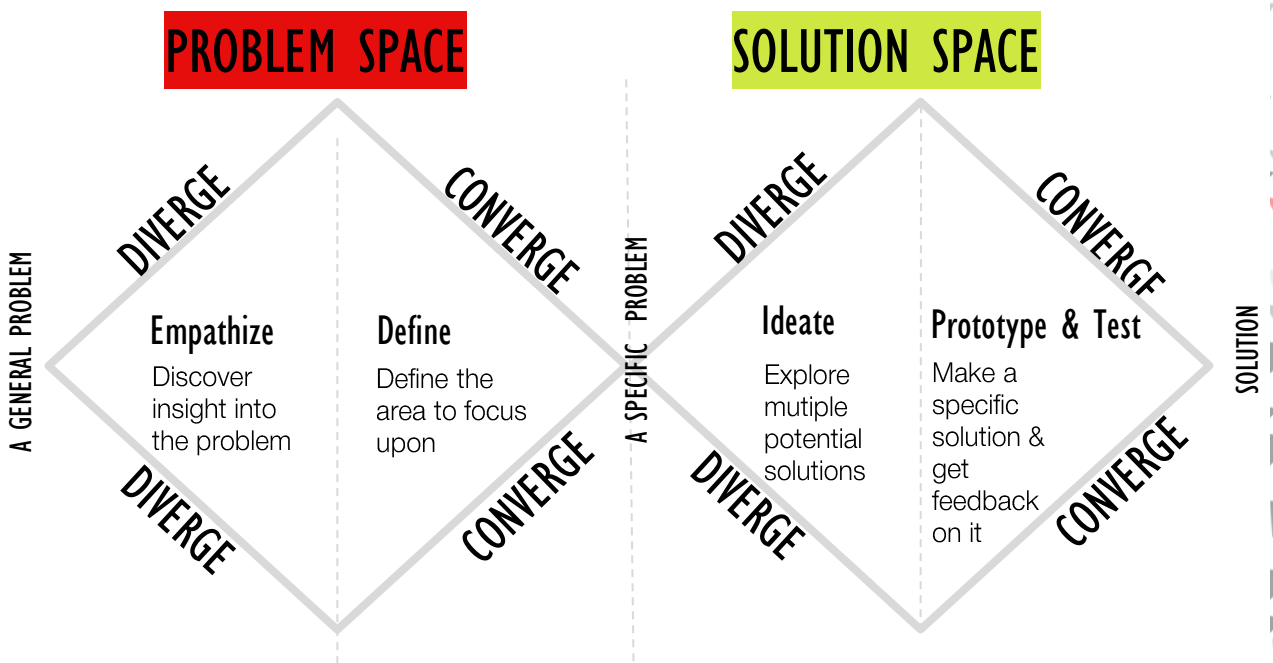
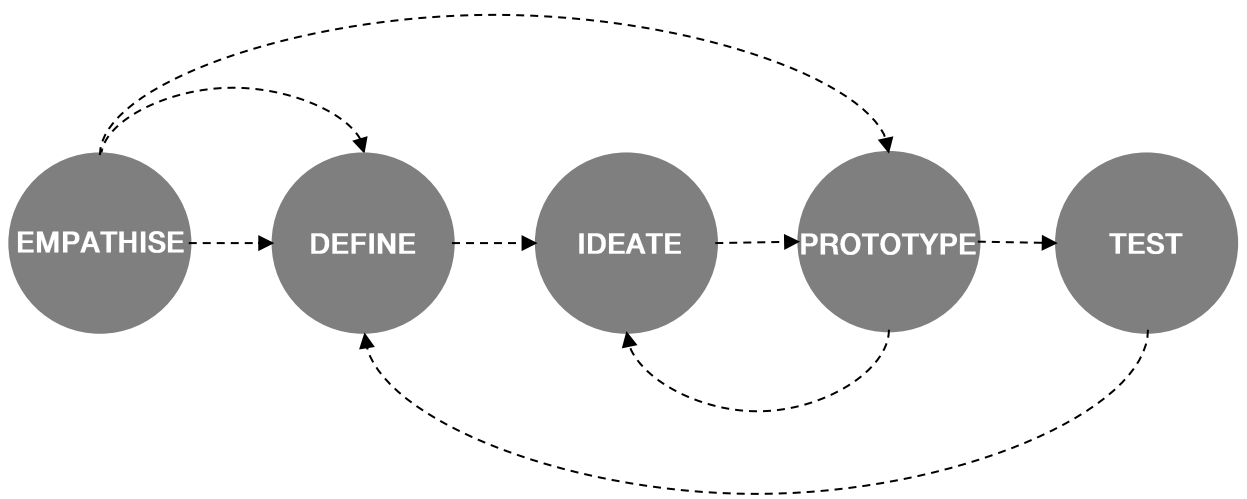
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# DESIGN THINKING MINDSET AND TOOLS

## THE PROCESS



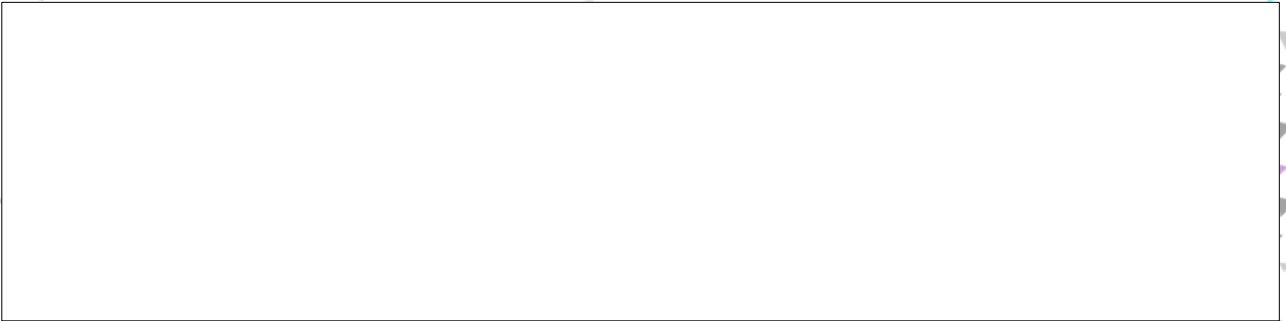
DESIGN THINKING  
MINDSET AND TOOLS

# NOTES, DOUBTS, INSIGHTS

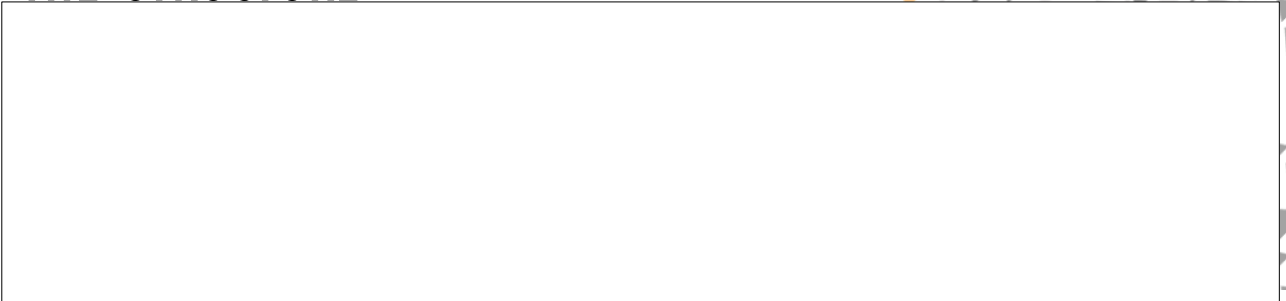
THE PROCESS



TOOLS



THE STRUCTURE





# KEY TAKEAWAYS

Design Thinking is a **creative**, **human-centred**, **iterative** approach to problem-solving recognised by academic and industry as a practical and agile **process** which **engages people** in generating innovative solutions to complex challenges.

- **PROCESS**
- **TOOLS**
- **STRUCTURE**

# TOOLS FOR PROJECTS and PROJECT TEAM COLLABORATION

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## TOOLS FOR PROJECT PROJECT TEAM COLLABORATION

# OBJECTIVES

- Understand Project-Based Learning (PBL)
- Clarify the importance of team collaboration
- How to deal with a distributed team
- How to use Teach-BeAst provided Tools
- How to implement DT into your syllabus by using DT Tools and Techniques

# NOTES

DESIGN THINKING  
MINDSET AND TOOLS

# TOOLS FOR STUDENTS

## THE MIRO BOARD



**TECHNICAL-BASED**  
COURSES



**SCIENCE-BASED**  
COURSES



# DESIGN THINKING MINDSET AND TOOLS

## MISSIONS

### TECHNICAL-BASED COURSES



1



2



3



4



5



6

### SCIENCE-BASED COURSES



0



1



2



3



4



5



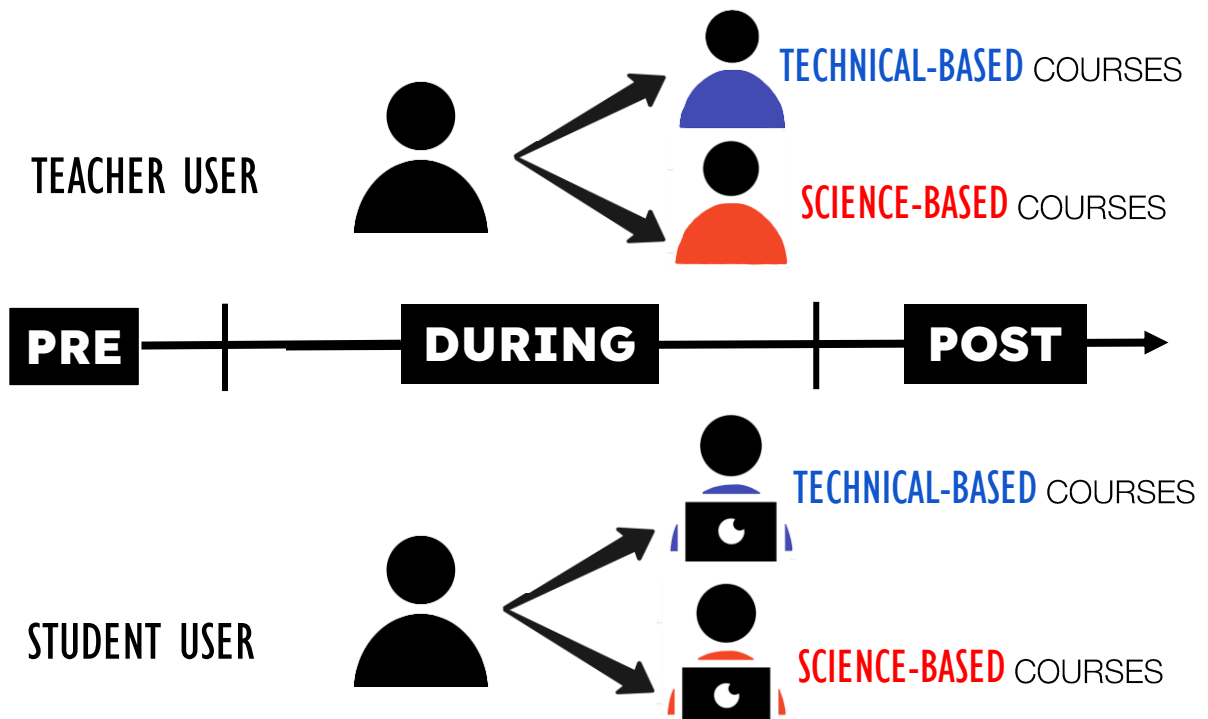
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# KEY TAKEAWAYS

Teaching is a creative design act by nature. You create experiential learning every day!

A great team will find ways to communicate well, regardless of the tools!

# TWO PERSPECTIVES

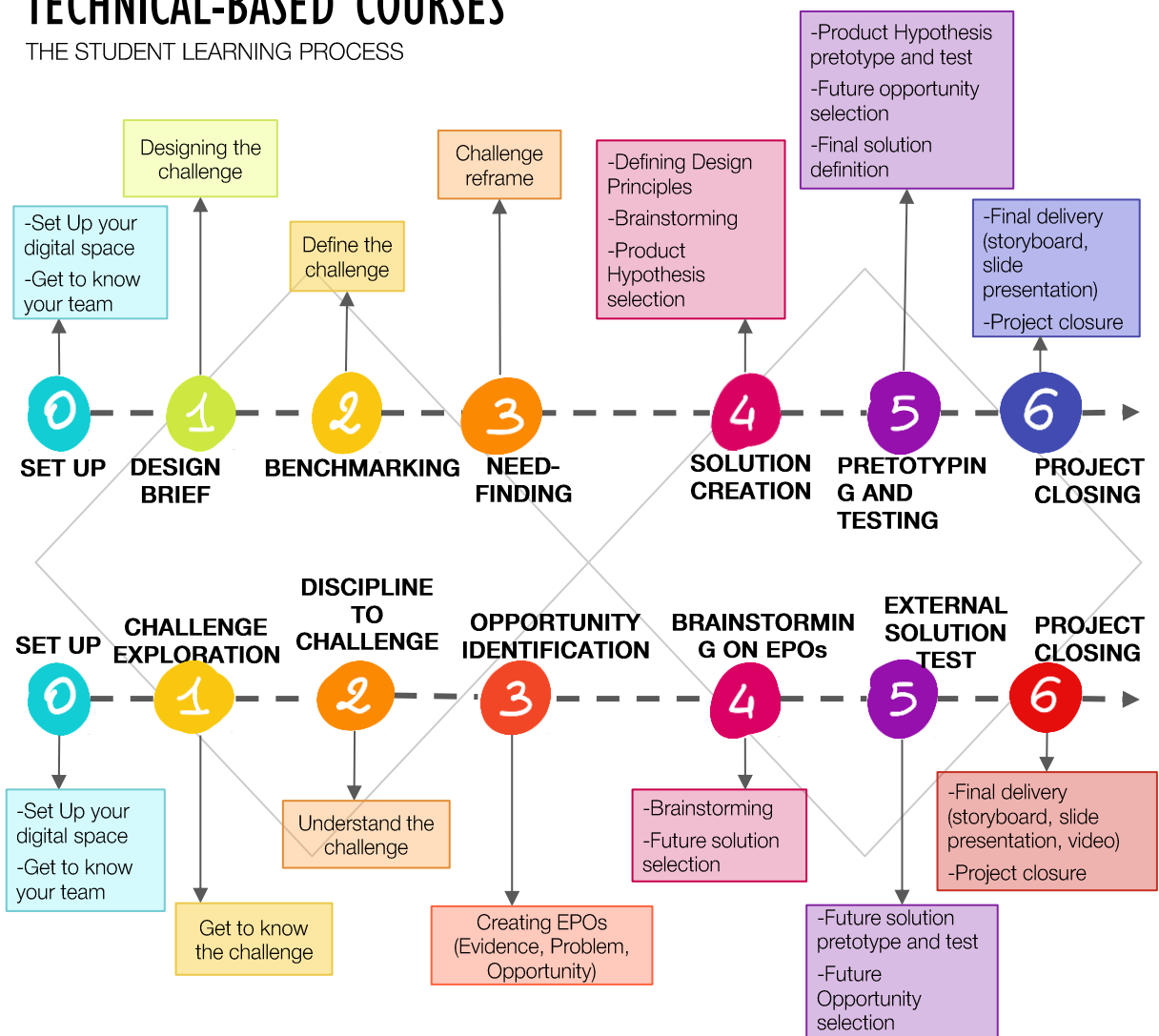




## TWO PROCESSES

### TECHNICAL-BASED COURSES

THE STUDENT LEARNING PROCESS



### SCIENCE-BASED COURSES

THE STUDENT LEARNING PROCESS

TOOLS FOR PROJECT

# TOOLS - PROBLEM SPACE

TOOL

NOTES

TOOLS FOR PROJECT

# TOOLS — PROBLEM SPACE

TOOL

NOTES

TOOLS FOR PROJECT

# TOOLS — PROBLEM SPACE

TOOL

NOTES

TOOLS FOR PROJECT

# TOOLS - SOLUTION SPACE

TOOL

NOTES

TOOLS FOR PROJECT

# TOOLS - SOLUTION SPACE

TOOL

NOTES

TOOLS FOR PROJECT

# TOOLS - SOLUTION SPACE

TOOL

NOTES

# COURSE TRANSFORMATION

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# SYLLABUS IMPROVEMENT



# SYLLABUS IMPROVEMENT

*Work within your group for collaborative drafting.*

- Take advantage of this time to either create new sections of your syllabi or revise existing ones.
- The aim is to incorporate the Project-Based Learning (PBL) using Design Thinking tools identified in previous sessions into your course design.

### FACILITATOR SUPPORT:

- Facilitators will be available throughout the session, moving around the room to offer individualized feedback and support.
- Feel free to ask for suggestions, clarifications, or assistance in integrating the tools into your syllabi effectively.

# COURSE TRANSFORMATION

# SYLLABUS IMPROVEMENT

# YOUR OWN SPACE

NOTES - DOUBTS - INSIGHTS

# COURSE TRANSFORMATION

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## CREATE SUPPORTIVE SLIDES

# CREATE SUPPORTIVE SLIDES

*Work within your group for collaborative drafting.*

- Take advantage of this time to either create new slides or supporting material for your course or revise existing ones.
- The aim is to embed the DT process into your course.

## FACILITATOR SUPPORT:

- Facilitators will be available throughout the session, moving around the room to offer individualized feedback and support.
- Feel free to ask for suggestions, clarifications, or assistance in integrating the tools into your syllabi effectively.

# CREATE SUPPORTIVE SLIDES

NOTES - DOUBTS - INSIGHTS

# CHALLENGE DEVELOPMENT

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# OBJECTIVES

- Understand how to create the challenge
- Understand the three phases:
  - Challenge development;
  - Challenge operationalization;
  - Challenge evaluation;
- What to do beyond the challenge identification



## CHALLENGE DEVELOPMENT

# CREATE YOUR STEM INNOVATION CHALLENGE

# EVALUATION IN PBL COURSES

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# OBJECTIVES

- What are the challenges in the evaluation of PBL?
- How can those challenges be overcome?
- What tools are available in the toolkit?
- What is experiential learning?
- How to evaluate an individual reflection?

# GOALS

- **Compare**: Provide a mark which can be fitted in the current evaluation system.
- **Individual**: Account for individual efforts.
- **Group**: Account for group results.
- **Learn**: Enhance students learning.
- **Skills & Attitude**: Account for skills and attitudes developed.

# EVALUATE REFLECTIONS

## REFLECTIONS

### REFLECTION

### REFLECTION

## EVALUATION

VARIETY

DEPTH

RELEVANCE

VARIETY

DEPTH

RELEVANCE

# EVALUATE REFLECTIONS

## REFLECTIONS

### REFLECTION

### REFLECTION

## EVALUATION

VARIETY

DEPTH

RELEVANCE

VARIETY

DEPTH

RELEVANCE

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper has a thin black border around its edges.



## EVALUATION IN PBL COURSES

# REFLECT THE EVALUATION

### FACTS

### FEELINGS

### FINDING

### FUTURE

# KEY TAKEAWAYS

- **EVALUATION:** group evaluation, peer-to-peer evaluation, individual evaluation
- What does “Experiential Learning” mean?
- **Active reviewing:**
  - **Facts:** an objective account of what happened;
  - **Feelings:** the emotional reactions to the situation;
  - **Finding:** the concrete learning that you can take away from the situation;
  - **Future:** structuring your learning such that you can use it in the future.

# COURSE TRANSFORMATION

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## EVALUATION

# EVALUATION

*Work within your group for collaborative drafting.*

- Take advantage of this time to create your new evaluation tool. Use the supporting material received in the workshop to easily navigate the changing process.

### FACILITATOR SUPPORT:

- Facilitators will be available throughout the session, moving around the room to offer individualized feedback and support.
- Feel free to ask for suggestions, clarifications, or assistance in integrating the tools into your syllabi effectively.

# EVALUATION

## NOTES - DOUBTS - INSIGHTS

# SUPPORTING STRUCTURE RESOURCES AND OPS

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# YOUR OWN WORKING SPACE

# NOTES



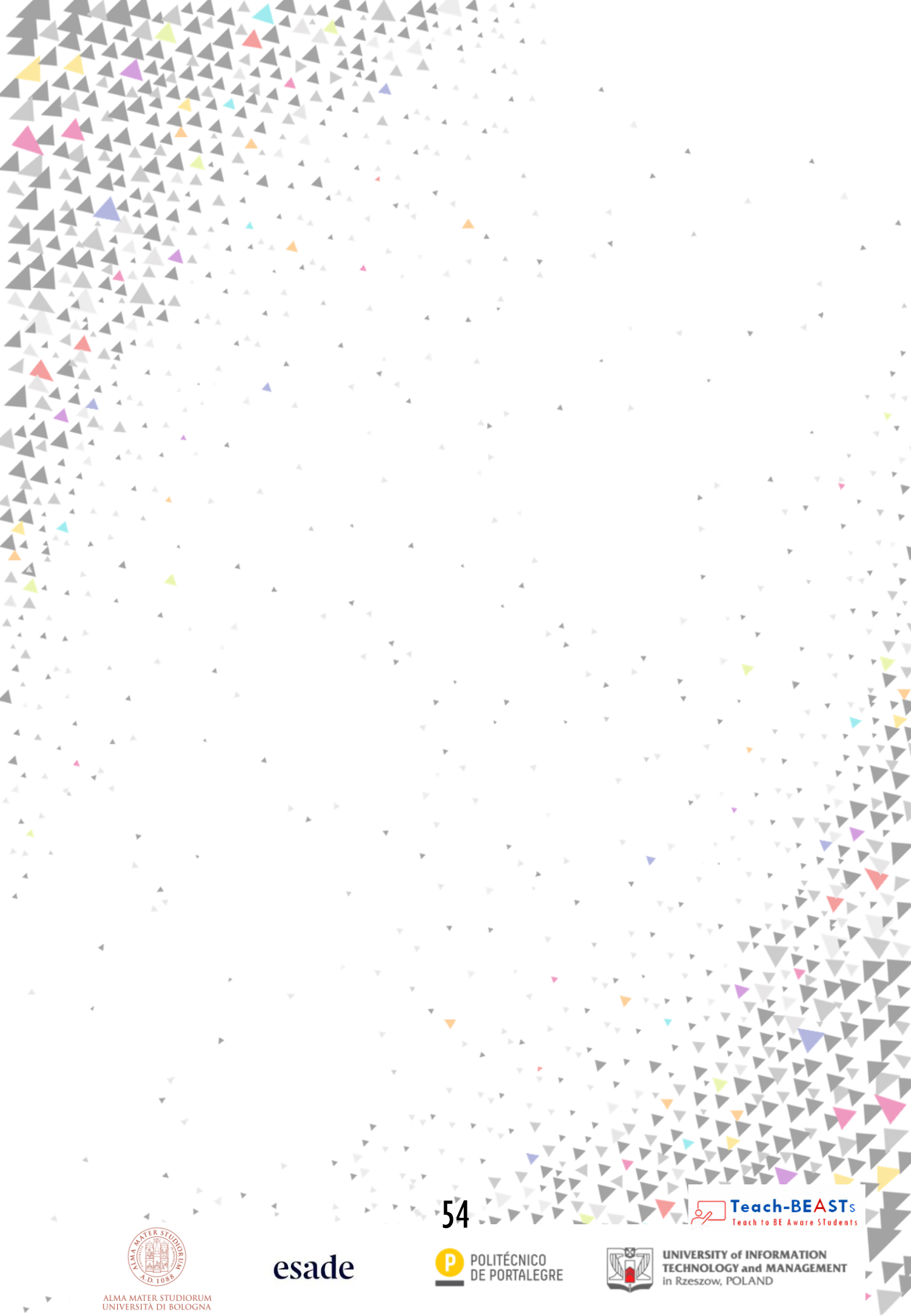
# NOTES

## YOUR OWN WORKING SPACE

# INSIGHTS

## YOUR OWN WORKING SPACE

# INSIGHTS



# THANKS FOR PARTICIPATING!



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implemented by University of Information Technology and Management in  
Rzeszow (Poland), Alma Mater Studiorum - Università Di Bologna (Italy) and  
ESADE Ramon Llull University (SPAIN)**

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# DT meets STEM workshop

“TEACH to BE Aware Students” Project (2022-1-PL01-KA220-HED-000089791)



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**Kick Off**

# **DAY 1**

# **WELCOME!**

# Agenda

## DAY I

09.00 - 09.30	Welcome, Day 1 Opening & plan for the day
09.30 – 10.50	Session 1 : Mindset, process and value of Design Thinking in STEM courses
10.50 - 11.00	Logistics
11.00 - 11.30	<i>Coffee break</i>
11.30 – 13.00	Session 2: Tools for designing projects and project team collaboration.
13.00 - 14.30	<i>Lunch break</i>
14.30 – 16.00	Session 3 : Tools for exploring and defining the problem space (I)
16.00 - 16.30	<i>Coffee break</i>
16.30 - 17.30	Session 4 : Tools for exploring and defining the problem space (II) + Q&A
17.30 – 18.00	Day 1 close and wrap up

# Agenda

## DAY 2

09.00 - 09.15	Day 2 Opening & plan for the day
09.15 – 10.00	Session 5 : Tools for creating and testing the solution (Solution Space)
10.00 – 11.00	Session 6: Course Transformation: Syllabus improvement with PBL (I)
11.00 - 11.30	<i>Coffee break</i>
11.30 - 13.00	Session 7 : Course Transformation: Syllabus improvement with PBL (II)
13.00 - 14.30	<i>Lunch break</i>
14.30 – 15.00	Session 8 : Course transformation: Create Supporting slides
15.00 – 16.00	Session 9: Challenge development (I)
16.00 - 16.30	<i>Coffee break</i>
16.30 - 17.30	Session 10: Challenge development (II)
17.30 – 18.00	Day 2 close and wrap up

# Agenda DAY 3

09.00 - 09.15

Day 3 Opening & plan for the day

09.15 - 11.00

Session 11: Evaluation of PBL courses

11.00 - 11.30

*Coffee break*

11.30 - 13.00

Session 12: Course transformation cont.

13.00 - 15.00

*Lunch break*

15.00 - 16.00

Session 13: Supporting structure

16.00 - 16.15

*Coffee break*

16.15 - 16.45

Session 14: Share & Feedback: Course Transformation

16.45 - 18.00

Workshop close and feedback

# 4 Institutions



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# Faculty Team



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**Imma Ruenda**  
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**Gastão Marques**  
IPP



**Maria José**  
**Varadinov**  
IPP



**Ettore Gorni**  
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# Workshop Objectives

1. Learn the DT process, methodology and tools in order to teach professors of STEM courses how to bring the DT approach into STEM courses.
2. Learn the “Teachers process” and the “Student experience”.
3. Understand how to use the material: DT Meets STEM Manual, Miro, Mission, Slide Deck
4. Test whether the material generated for the objectives of the DT in STEM is easy to understand and use. Identify improvements in the material provided.
5. Generate examples of the use of the manual.



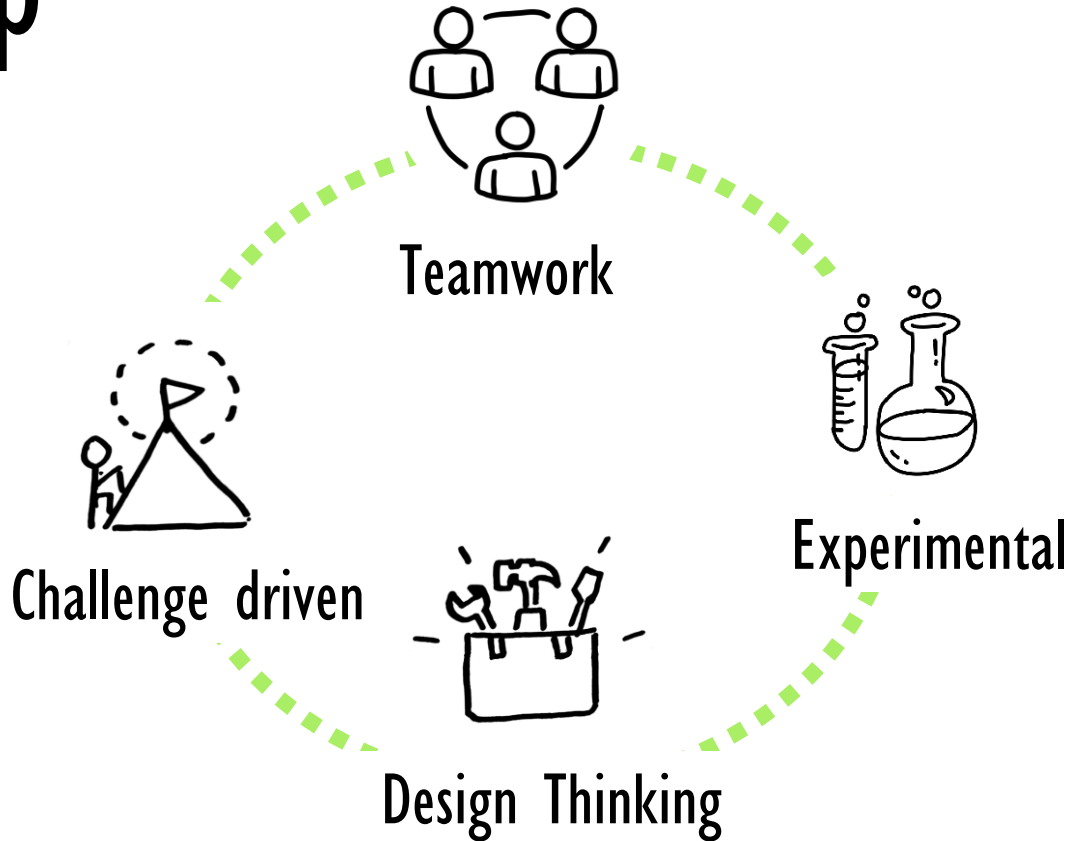
# Expected Outputs

After the 3 days workshop you have created the first draft of the following:

1. **Updated Syllabus** for your course, incorporating the CBL through DT. How will you allocate time to CBL and DT in your course?
2. **Material for class**: Slides that you will use in class
3. **Handouts for students**: Material that you will give to students in the course (e.g. Miro, Missions)
4. **Teams**: What types of teams will you create?
5. **Challenge**: What type of challenge suits the process and course?
6. **Evaluation**: What type of evaluation best suits the course?

During the session you will have a booklet for your notes. As part of our learning, we would like to make a copy of your notes in the booklet.

# Workshop Dynamic



# Workshop Process



# How will we do the workshop?

1

Process and tools  
through an example case  
STEM course

2

Individual work  
Apply techniques to your  
course syllabus

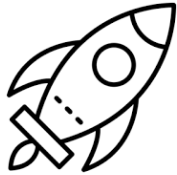
3

Teamwork: in pairs,  
teams and plenary

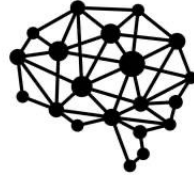
# Why apply DT in STEM courses?



Better problem  
solving through  
user-centric  
approach



Boost  
creativity



Boost critical  
thinking



Multi-  
disciplinary  
collaboration



Impact on  
Professional  
Readiness

# How to bring DT into STEM?

Transform **part** of the  
existing course

Transform **100%** of the  
existing course

# Sessions outline

## Day 1 21.10.2024

Venue: Fusion Point, Rambla of Innovation

Session 1: Mindset, process and value of Design Thinking in STEM courses

Session 2: Tools for designing projects and project team collaboration

Session 3 & 4 : Tools for exploring and defining the problem space

## Day 2 22.10.2024

Venue: E-Garage, Rambla of Innovation

Session 5 : Tools for creating and testing the solutions

Session 6 & 7: Course Transformation: Syllabus improvement with PBL

Session 8 : Course transformation: Create Supporting slides

Session 9 & 10: Challenge development

Barcelona Design Week – Fusion Point students' projects expo and Voluntary dinner in Barcelona

## Day 3 23.10.2024

Venue: Fusion Point, Rambla of Innovation

Session 11: Evaluation of PBL courses

Session 12: Course transformation cont.

Session 13: Supporting structure

Session 14: Share & Feedback

Workshop close and feedback



**Day I**  
**Session I**  
**09.30 — 11.00**

# **DESIGN THINKING**

## **MINDSET AND TOOLS**

# Session I Objectives

1. What is Design Thinking?
2. Understand the DT process and introduction to basic concepts and tools.
3. How can it help STEM students?
4. Understand the process, tools and structure
5. The basics: Pre, during and after course.

# Session I Agenda

09.30 – 10.00

What is Design Thinking?

10.00 – 11.00

The Basics: Process, Tools and Structure

# DT ice breaker

● ACTIVITY 5 min

1. 1 thought about design thinking
2. 1 question you would like answered
3. 1 analogy to describe design thinking

Design thinking is like (a)  
\_\_\_\_\_ because  
\_\_\_\_\_.  
(analogy format)

**FIXED  
MINDSET**



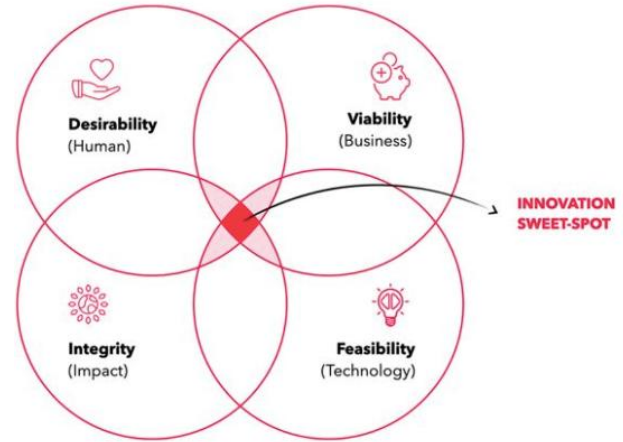
**GROWTH  
MINDSET**

Fuente: <https://www.iecl.com/fixed-mindset-versus-a-growth-mindset/>

# Design Thinking

“Design thinking is a human-centered approach to innovation that draws from the designer’s toolkit to integrate the needs of people, the possibilities of technology, and the requirements for business success.”

Tim Brown, IDEO



Source: Yoel Lenti, Hatch Studios, Novembre 2023

# Design Thinking

Design Thinking is a creative, human-centred, iterative approach to problem-solving recognised by academic and industry as a practical and agile process which engages people in generating innovative solutions to complex challenges.



# Design Thinking

Interdisciplinary

Collaborative

Iterative

Experimental

Creative

User Centric

Learn from Failure

Empathy

# Design Thinking

PROCESS

TOOLS

STRUCTURE

# Design Thinking

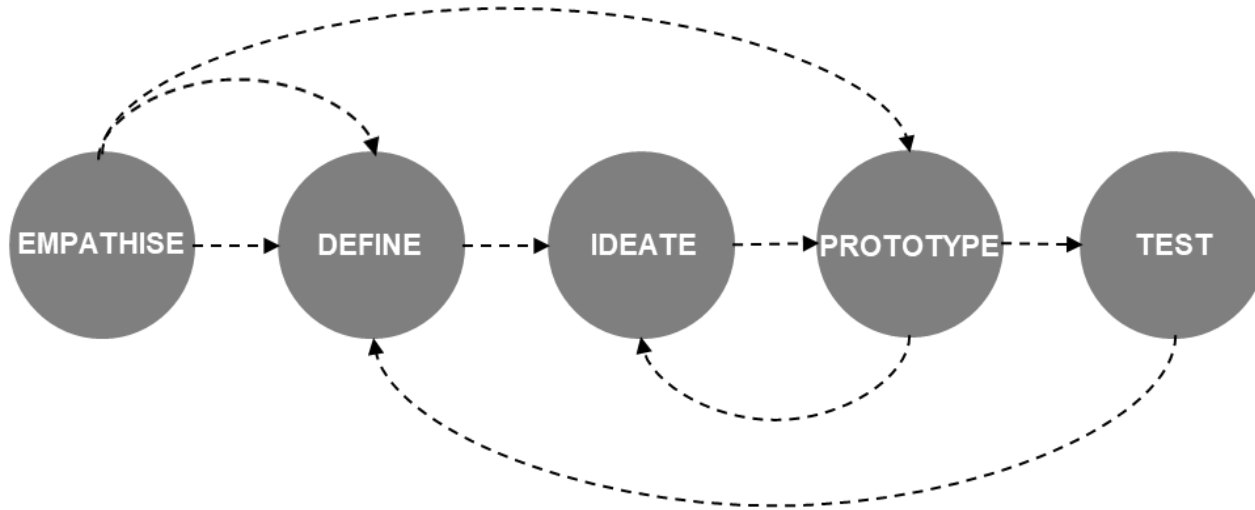
## PROCESS

1. Empathise
2. Define
3. Ideate
4. Prototype
5. Test

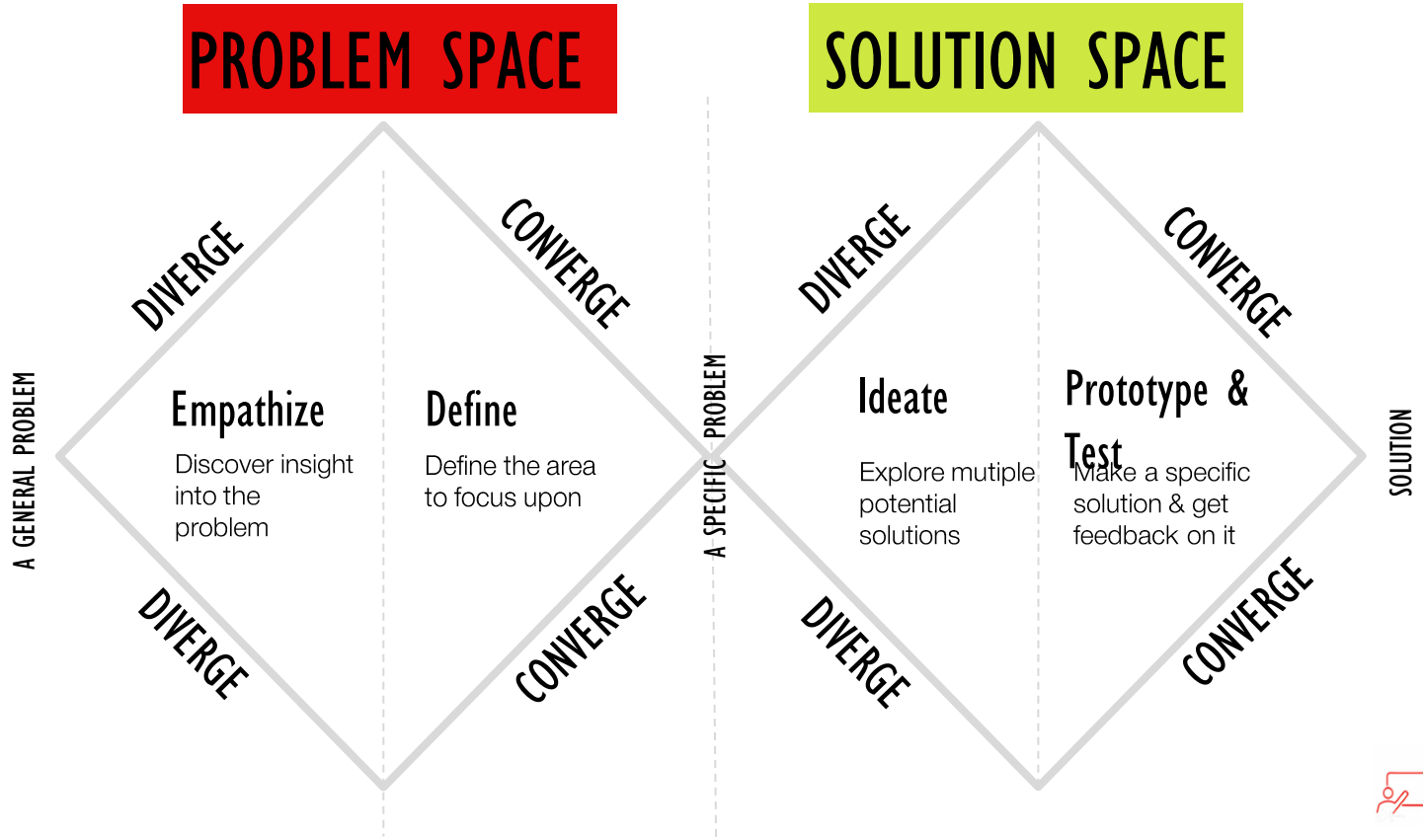
# Design Thinking

## PROCESS

Hasso Plattner Institute of Design, Stanford



# Design Thinking Double Diamond



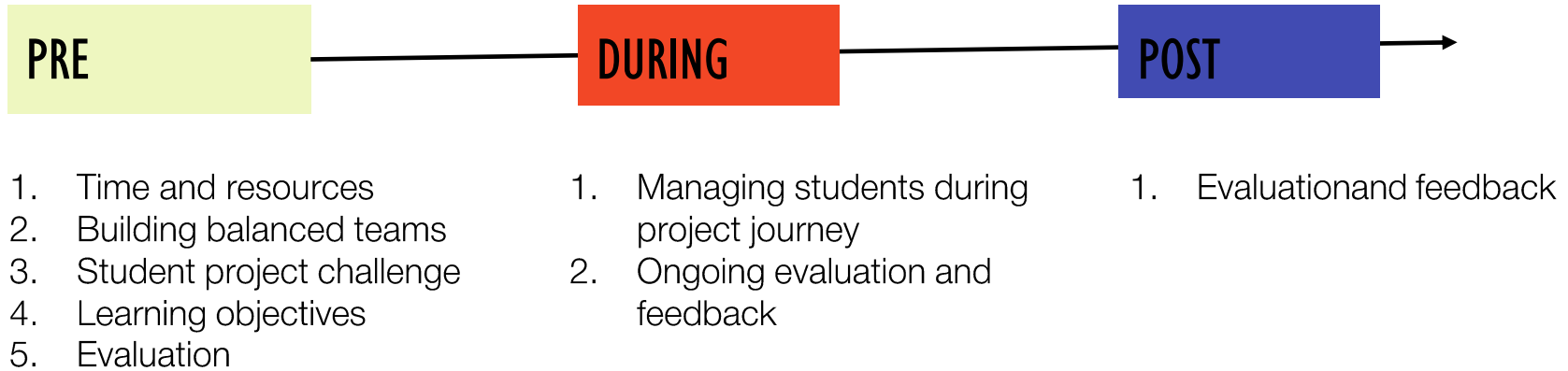
# Design Thinking

## STRUCTURE

1. Building balanced teams
2. Student project challenge
3. Evaluation
4. Managing the student journey

# Design Thinking

## STRUCTURE





# Design Thinking

PROCESS

TOOLS

STRUCTURE



# Design Thinking

## TIME

3 ECTS  
9 presential class sessions  
08.00 – 11.15  
9 weeks

## STRUCTURE

# Design Thinking

## RESOURCES

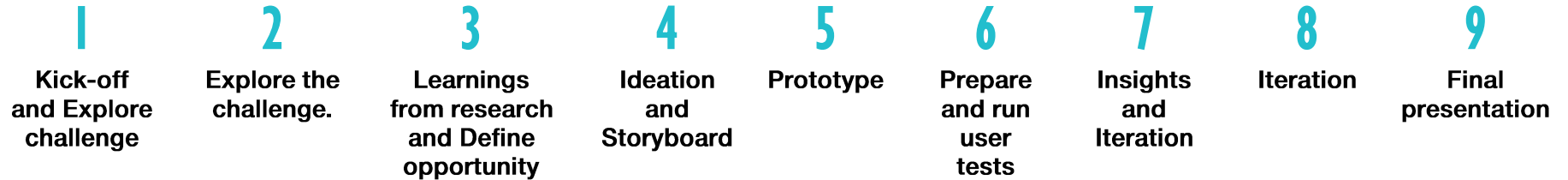
Academic & Support Team

Budget

## STRUCTURE

# Course Plan 2024

## STRUCTURE



Interviews



User Tests



# Design Thinking

## STRUCTURE

## STUDENT TEAMS

6 teams of 5 students  
Diverse MSc courses

### Student Profile

- Age: mid-20s.
- Nationalities: + 40 countries.
- Academic Background:  
Degrees in economics,  
management, or business,  
engineering, humanities, social  
sciences.



# Design Thinking

## EVALUATION

## STRUCTURE

The final grade is made up as follows:

**30%**

Assignments during the  
course

**30%**

Final deliverable

**10%**

Peer evaluation

**30%**

Individual assignment

# Design Thinking

## LEARNING OBJECTIVES

1. Apply the Design Thinking methodology in order to solve business and societal problems.
2. Identify market opportunities based on desirability: understand how to explore unmet user needs.
3. Create solutions that are desirable.
4. Validate your ideas: create early prototypes and experiments to get initial feedback for your ideas.

## STRUCTURE

### MULTI-DIMENSIONAL LEARNING

### EXPECTED LEARNINGS

#### KNOWLEDGE

What we know and understand

- Design Thinking methodology and process.
- Human centric design techniques.
- Experiments for learning

#### SKILLS AND COMPETENCIES

How we use this knowledge

- Creativity, innovation and entrepreneurship skills
- Collaboration and teamwork skills
- Communication skills

#### VALUES, ATTRIBUTES AND ATTITUDE

How we behave and engage

- Growth mindset
- Empathy
- Learning to learn

# Design Thinking

CHALLENGE

Mental Health in  
Young People

STRUCTURE

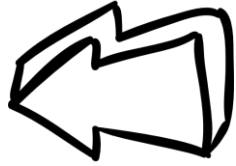






# Design Thinking

PROCESS



TOOLS



STRUCTURE

# Design Thinking

1. EMPATHY

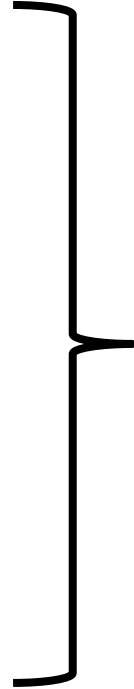


2. DEFINE

3. IDEATE

4. PROTOTYPE

5. TEST



PROCESS

+

TOOLS

## Study shows climate distress related to anxiety and action in young people

by Corinne Farrell, Emily Medcalf  
24 August 2023



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- Post this
- Share on reddit
- Share on LinkedIn
- Email a friend
- Print this story

**Imperial researchers have carried out a study to understand the psycho-social impacts of climate crisis on young people in the UK.**

The [study](#) found that distress over climate change is related to many difficult emotions in young people – even in the absence of direct climate-related experience. It can, though, also motivate them to take positive climate actions.

The work, led by Climate Cares at the Institute of Global Health Innovation, Imperial College London, was conducted with researchers at King's College London and Queensland University, Australia.

In 2020, researchers surveyed 539 young adults in the United Kingdom.

### FEATURED

Dr Emma Lawrance  
Institute of Global Health  
Innovation

### MORE

Institute of Global Health  
Innovation  
Health

By [Mared Gwyn Jones](#) & Isabel Marques da Silva

Published on 27/09/2023 - 07:00 • Updated 15:53

Share this article Comments

## Six young people from Portugal took on 32 countries in the European Court of Human Rights (ECHR) on Wednesday for failing to protect them against climate change.

[The historic trial](#) is the first time so many countries will have to defend themselves in front of any court in the world. All 27 European Union member states, the UK, Turkey, Russia and Norway are among the defendants.

The Portuguese [youth, aged between 11 and 24](#), say governments' inaction on climate change breaches their human rights and [discriminates against young people](#).

Devastating heat and wildfires in Portugal are restricting their ability to sleep and exercise, harming their physical health and causing mental distress. They also say that climate anxiety is now widespread among their generation.

# Target User Profile



Educated and concerned about  
climate change



Master Student in Spain



Under 30



Long-term orientation



Isabela Ramírez



Seeks positive impact  
and stability



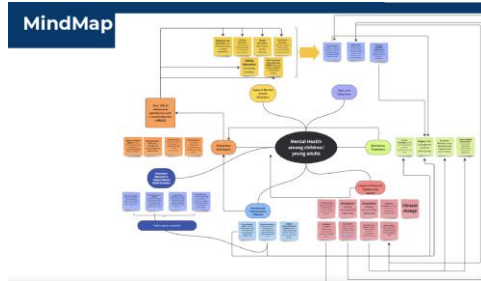
Social



Unsured of  
how to process/manage anxiety



# I. Empathy



EUROPEAN COUNCIL

to: News brief about a recent measure in the area of Human Rights (ECHR) on Wednesday for failing to protect them against climate change.

The historic trial is the first time so many countries will have to defend themselves in front of any court in the world. All 27 European Union member states, the UK, Turkey, Russia and Norway are among the defendants.

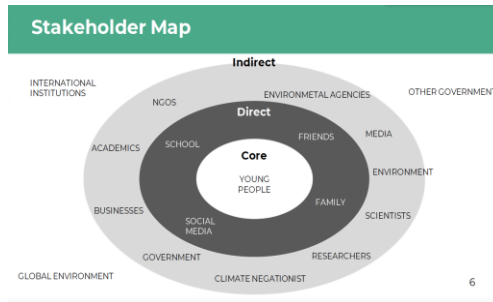
The Portuguese youth, aged between 16 and 24, say governments' inaction on climate change threatens their future rights and discriminates against young people.

Devastating heat and wildfires in Portugal are restricting their ability to sleep and exercise, harming their physical health and causing mental distress. They also say that climate anxiety is now widespread among their generation.

**Topic: How to alleviate the problem of climate anxiety in young adults?**

### Empathy Map

<p><b>SAY</b></p> <ul style="list-style-type: none"> <li>• Origin social media, news channels (especially if it is not factual but exaggerated)</li> <li>• Trigger: Not necessarily just news but direct stakeholders do not believe them or care about the problem -&gt; Loneliness, with problem.</li> <li>• Education and information is key.</li> <li>• Users usually have a good amount of knowledge on the topic.</li> <li>• Not enough support groups.</li> </ul>	<p><b>THINK AND FEEL PAINS</b></p> <ul style="list-style-type: none"> <li>• "I usually feel powerless and disarmed"</li> <li>• Overwhelmed and paralyzed</li> <li>• Not knowing where to start</li> <li>• Distress when seeing people suffer</li> <li>• Health issues</li> <li>• Distrust of politicians and corporations which spread fake news -&gt; constant insecurity</li> <li>• Media coverage insufficient</li> </ul>
<p><b>DO</b></p> <ul style="list-style-type: none"> <li>• Follow positive news and climate influencers e.g. Juan Marc (sarcastic)</li> <li>• Taking action: Volunteering, community engagement, beach clean-up, voting, use recycled materials, buy from climate conscious brands.</li> <li>• Focus on what they can control -&gt; see where they can have impact.</li> <li>• Speak to people who know about the problem.</li> <li>• Get factual information: Climate Gap, co2calculator</li> </ul>	<p><b>GAINS</b></p> <ul style="list-style-type: none"> <li>• Positivism about innovations and regulations</li> <li>• Education as a solution</li> <li>• Having people around them to believe in the topic</li> <li>• Feel connected</li> <li>• More accurate carbon measurement</li> <li>• Clear guidelines where to start</li> <li>• Positive news which cause hope and optimism</li> </ul>



### User Persona

**Isabela Ramirez**

**DEMOGRAPHICS**

- Age 25
- Occupation 'Student' (young professional)
- Education Post graduate in business/ environmental studies
- Location Barcelona
- Civil and family Status Single/ no children

**LIFESTYLE & HOBBIES**

- Sporty/active
- Likes travelling
- Needs a lot
- Active on social media
- High awareness about climate risk
- Social justice important
- Social outgoing
- Family oriented
- Has a long term vision

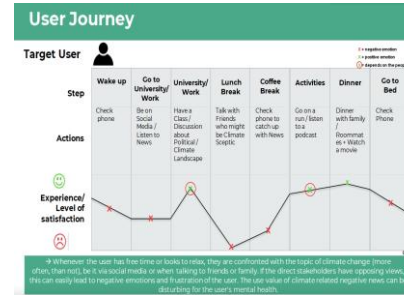
**FRUSTRATIONS AND MAIN NEEDS**

**Frustrations**

- Wanting to start a family (in the near future)
- Uncertainty of long-term goals
- Uncertainty about how to contribute to sustainability
- Political instability


**Needs**

- Stability
- Reassurance
- Positivity
- Factual news
- Accountability
- Want to have a positive impact




# I. Empathy


## Interview Summary

<b>NAME OF INTERVIEWER</b> Daphne Lilli	<b>INTERVIEW NOTES KEY LEARNINGS</b> Daphne Lilli • Feels passionate and alarmed by the urgency of climate change issues • Anxiety from the lack of awareness and action by others • Difficulty in building relationships with people who are not willing to climate issues	<b>IMPLICATIONS FOR CHALLENGE</b> • Educate feels unsure where to start and needs guidance on taking sustainable action • She experiences feelings of isolation and feels it challenging to discuss climate issues • She wants more exposure to positive news about environmental progress
<b>NAME OF INTERVIEWEE</b> Patricia Garcia	<b>DESCRIPTION OF PROFILE</b> MSc Student at ESADE	<b>QUESTIONS</b> • "I usually feel passionate and alarmed" • "The media contributes very much to anxiety but because they talk about climate change but because they do not talk about it enough"
	<b>DESCRIPTION OF PROFILE</b> MSc Student at ESADE	<b>QUESTIONS</b> • "I usually feel passionate and alarmed" • "The media contributes very much to anxiety but because they talk about climate change but because they do not talk about it enough"

## Interview Summary

<b>NAME OF INTERVIEWER</b> Marc Bou Khalil	<b>INTERVIEW NOTES KEY LEARNINGS</b> Marc Bou Khalil • He is very concerned about the urgency of climate change and the need for action, but also experienced feelings of being overwhelmed and paralyzed • He has conversations with friends, family, and colleagues to build relationships and encourage them to take action • He is very concerned about the urgency of climate change and the need for action, but also experienced feelings of being overwhelmed and paralyzed • He has conversations with friends, family, and colleagues to build relationships and encourage them to take action	<b>IMPLICATIONS FOR CHALLENGE</b> • He is very concerned about the urgency of climate change and the need for action, but also experienced feelings of being overwhelmed and paralyzed • He has conversations with friends, family, and colleagues to build relationships and encourage them to take action
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	<b>DESCRIPTION OF PROFILE</b> MSc Student at ESADE	<b>QUESTIONS</b> • "I usually feel passionate and alarmed" • "The media contributes very much to anxiety but because they talk about climate change but because they do not talk about it enough"


## Interview Summary

<b>NAME OF INTERVIEWER</b> Amrita Anand	<b>INTERVIEW NOTES KEY LEARNINGS</b> Amrita Anand • Experiences significant anxiety due to climate change, particularly as it affects her health • Challenged to discuss climate change with friends and family, leading to feelings of isolation • She has conversations with friends, family, and colleagues to build relationships and encourage them to take action • She is very concerned about the urgency of climate change and the need for action, but also experienced feelings of being overwhelmed and paralyzed • She has conversations with friends, family, and colleagues to build relationships and encourage them to take action	<b>IMPLICATIONS FOR CHALLENGE</b> • She is very concerned about the urgency of climate change and the need for action, but also experienced feelings of being overwhelmed and paralyzed • She has conversations with friends, family, and colleagues to build relationships and encourage them to take action
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	<b>DESCRIPTION OF PROFILE</b> MSc Student at ESADE	<b>QUESTIONS</b> • "I usually feel passionate and alarmed" • "The media contributes very much to anxiety but because they talk about climate change but because they do not talk about it enough"


## Interview Summary

<b>NAME OF INTERVIEWER</b> Alzbeta Androvicova	<b>INTERVIEW NOTES KEY LEARNINGS</b> Alzbeta Androvicova • Feelings of despair, anxiety because she can't do anything • "What triggers me is when I learn more facts about the science" • "I don't know how to make a difference in my life" • "The anxiety doesn't really go away, but we can do small changes, which can help" • "We should get together, talk about it and speak each other" • "Media can exaggerate things, make them seem even worse - creates pressure on anxiety, but also prevents feeling"	<b>IMPLICATIONS FOR CHALLENGE</b> • Her family is very aware about the situation, because they live in Barcelona, where they are experiencing rising sea levels - can't do anything about it • She is very concerned about the urgency of climate change and the need for action, but also experienced feelings of being overwhelmed and paralyzed • She has conversations with friends, family, and colleagues to build relationships and encourage them to take action
<b>NAME OF INTERVIEWEE</b> Patricia Garcia	<b>DESCRIPTION OF PROFILE</b> MSc Student at ESADE	<b>QUESTIONS</b> • "I usually feel passionate and alarmed" • "The media contributes very much to anxiety but because they talk about climate change but because they do not talk about it enough"
	<b>DESCRIPTION OF PROFILE</b> MSc Student at ESADE	<b>QUESTIONS</b> • "I usually feel passionate and alarmed" • "The media contributes very much to anxiety but because they talk about climate change but because they do not talk about it enough"


## Interview Summary

<b>NAME OF INTERVIEWER</b> Amrita Anand	<b>INTERVIEW NOTES KEY LEARNINGS</b> Amrita Anand • High awareness of climate change and its impacts and needs communication to others • Feels responsible for climate change and needs communication to others • She has conversations with friends, family, and colleagues to build relationships and encourage them to take action • She is very concerned about the urgency of climate change and the need for action, but also experienced feelings of being overwhelmed and paralyzed • She has conversations with friends, family, and colleagues to build relationships and encourage them to take action	<b>IMPLICATIONS FOR CHALLENGE</b> • She is very concerned about the urgency of climate change and the need for action, but also experienced feelings of being overwhelmed and paralyzed • She has conversations with friends, family, and colleagues to build relationships and encourage them to take action
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## Interview Summary

<b>NAME OF INTERVIEWER</b> Amrita Anand	<b>INTERVIEW NOTES KEY LEARNINGS</b> Amrita Anand • She experiences frustration, particularly when engaging with individuals from business sectors who appear indifferent to sustainability • Media consumption doesn't significantly contribute to her anxiety as she has become accustomed to receiving such news from business sectors • She is very concerned about the urgency of climate change and the need for action, but also experienced feelings of being overwhelmed and paralyzed • She has conversations with friends, family, and colleagues to build relationships and encourage them to take action	<b>IMPLICATIONS FOR CHALLENGE</b> • Not all news has a triggering effect, for some individuals, exposure to negative information has become a compromise that they have accepted • A potential solution is to concentrate on what is being said, rather than the source • Conversations with individuals, especially those in the business sector, who demonstrate less concern about climate change can be particularly frustrating
<b>NAME OF INTERVIEWEE</b> Patricia Garcia	<b>DESCRIPTION OF PROFILE</b> MSc Student at ESADE	<b>QUESTIONS</b> • "I usually feel passionate and alarmed" • "The media contributes very much to anxiety but because they talk about climate change but because they do not talk about it enough"
	<b>DESCRIPTION OF PROFILE</b> MSc Student at ESADE	<b>QUESTIONS</b> • "I usually feel passionate and alarmed" • "The media contributes very much to anxiety but because they talk about climate change but because they do not talk about it enough"

## Interview Summary

<b>NAME OF INTERVIEWER</b> Alzbeta Androvicova	<b>INTERVIEW NOTES KEY LEARNINGS</b> Alzbeta Androvicova • It is concerning, when people around do not really care • The main source of information is social media, news, documentaries, books • There is a disconnect between business and individuals, that we don't really care about other people suffering from climate change • We should focus more on solutions, but also about solutions	<b>IMPLICATIONS FOR CHALLENGE</b> • She usually feels overwhelmed and paralyzed that she can't do anything to change the situation • She is very concerned about the urgency of climate change and the need for action, but also experienced feelings of being overwhelmed and paralyzed • She has conversations with friends, family, and colleagues to build relationships and encourage them to take action
<b>NAME OF INTERVIEWEE</b> Patricia Garcia	<b>DESCRIPTION OF PROFILE</b> MSc Student at ESADE	<b>QUESTIONS</b> • "I usually feel passionate and alarmed" • "The media contributes very much to anxiety but because they talk about climate change but because they do not talk about it enough"
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Source: Amrita Anand, Marie Leu, Alzbeta Androvicova, Elsa Levan, Marc Bou Khalil, Daphne Lilli, ESADE 2024

# Design Thinking

1. EMPATHY

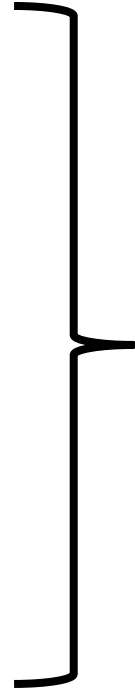
2. DEFINE



3. IDEATE

4. PROTOTYPE

5. TEST



PROCESS

+

TOOLS



## 2. Define

1. “Eco-anxiety” is a form of anxiety related to environmental issues, including climate change, pollution, deforestation, species extinction, overpopulation, and other environmental challenges.
2. ‘Doomscrolling’ (the act of spending an excessive amount of time reading negative news online) increases environmental anxiety.
3. Eco-anxiety can lead to helplessness, despair, and loss of hope for the future—especially for Gen Z or those born between 1997 and 2012. Per Yale Environment 360, climate anxiety is greatest for Gen Z, who have been bombarded with news of climate disasters on social media and in the news.



# ECO- anxiety

*anxiety caused by a dread of environmental perils, especially climate change, and a feeling of helplessness over the potential consequences for those living now and even more so for those of later generations.*



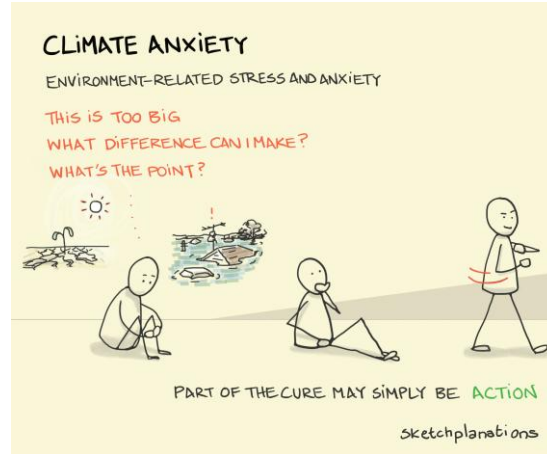
# 2. Define

## Initial Hypothesis

Impacts on life and human existence

Loss / deterioration of physical environment

Well-being tied to state of planet



Fear of future

Lack of control

Uncertainty

# Interviews Key Insights

Isolation

Anxiety

Pessimism

Powerlessness



Communication  
barriers

Insufficient  
media coverage



Education on solutions

Need to feel connected

Community support

# 2. Define

## Problem Statement

TARGET USER	NEED	OBJECTIVE
Young adults (aged 19 to 30) who are well-informed, actively engaged, and deeply concerned about climate change	To overcome the feeling of loneliness in environmental concerns	In order to create a like-minded, supportive community
	To address the uncertainty about where to start in the sustainability journey	In order to give access to accurate and factual information and actionable steps

## How Might We...?

- ... **connect like-minded users so they feel more uplifted?**
- ... **foster collaboration among young adults to avoid feelings of being powerless?**
- ... **utilize education, existing information, and media to alleviate the sense of overwhelm associated with the topic of climate change?**
- ... **provide actionable steps to fight climate change so that users feel like they have an actual impact?**

# Design Thinking

1. EMPATHY

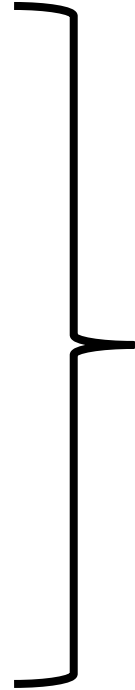
2. DEFINE

3. IDEATE



4. PROTOTYPE

5. TEST



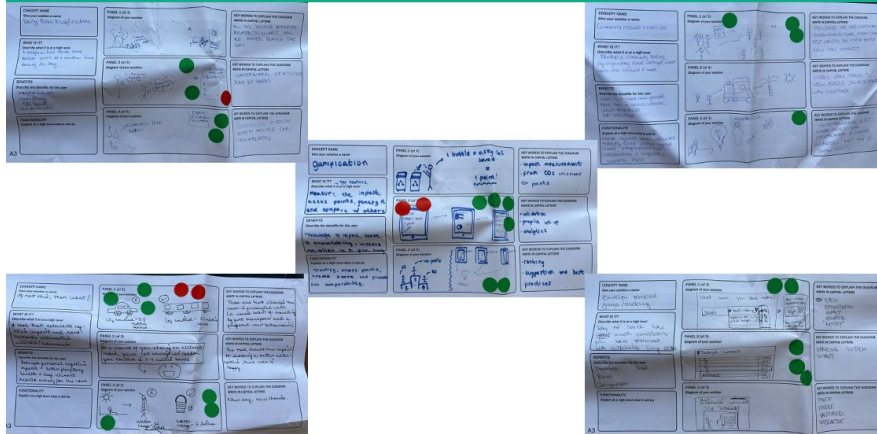
PROCESS

+

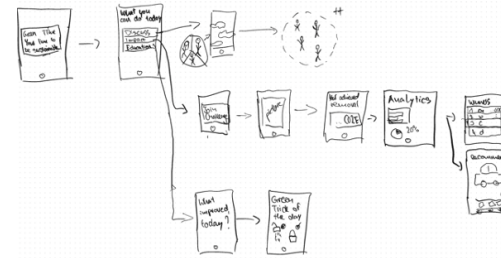
TOOLS

# 3. Ideate

## Panel Sketches



## Conceptual Solution



The app will consist of **three** different features:

- Discussion:**
  - The app will also allow users to discuss with other users
    - Some discussions will be reserved to certain groups Other discussions will be open to the public (e.g., reddit)
- Education:**
  - The app will provide users access to positive climate-related news and tips to "be more sustainable" in their daily life
  - Additionally, there will be "pop ups" twice a day that will appear on the user's phone displaying contents mentioned above.
- Challenge:**
  - Users can take part in challenges so to create a sense of action, thereby reducing climate anxiety and a feeling of loneliness
    - Once they join a challenge, they need to "prove" their impact by taking a picture and sharing it with the community (on the app).
    - For every action they do, they will get points (depending on the level of impact).
    - The user will be able to see the overall impact of every challenge individually and the aggregated impact.
    - There will be a leadership board, thereby fostering further engagement from users.
    - Once the user analyzes the result, they will be able to see "tips" to increase their impact and get more points

# 3. Ideate

## 2. Storyboard

### 1) TRIGGER

News and unfactual information can cause climate anxiety



### 2) "GreenTime" Notification

App "GreenTime" will help to effectively deal with climate anxiety by sending notifications up to three times a day. A "GreenTime" alert can also be triggered by a Smart Watch which measures stress level.



### 3) "GreenTime" Features

User can access the app and will find on the home screen the four different features: Discuss, Track, Learn, Do



### 4) Discuss

Feature allows to link users which have similar concerns. Users can chat among each others and share thoughts, tips and can join local community chats similar to Reddit.



### 5) Track

Based on an easy questionnaire users can track their environmental footprint and receive information about how they could even save more emissions. They also see the average emissions of a "GreenTime" user.



### 6) Learn

User has the possibility to receive and learn about positive news and topics. After a learning session users can answer a quiz and earn points contributing to a gamification of the app.



### 7) DO

User can find a list of activities or meet ups they can volunteer for locally depending on the time they have available. A moderator can clarify any questions users might have.



# Design Thinking

1. EMPATHY

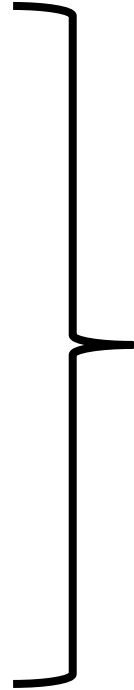
2. DEFINE

3. IDEATE

4. PROTOTYPE



5. TEST



PROCESS

+

TOOLS



# 4. Prototype

- 1** | **LEARN**  
Positive news updates
- 2** | **DO**  
Find local opportunities for volunteering
- 3** | **TRACK**  
Tracking individual carbon footprint
- 4** | **DISCUSS**  
Discussing topics with like-minded



## GreenTime



# 4. Prototype

## Design the Experiment

### MOST IMPORTANT ASSUMPTIONS TO BE TESTED

- Are people willing to download the App?
- Do users like all features of the App?
- Would people pay for features of the App?

### WE BELIEVE THAT .....

...people feeling climate anxious would download, pay for an app and actively engage with it. Through connection and guidelines, they will reduce their stress level.

### HOW WE WILL TEST IT

- Poster which will guide the users to the survey.
- 8 interviews with potential users those users, interviews will be based on the reaction prototype

### TO TEST THAT, WE WILL.....

- Ask for the attractiveness of the features
- Ask for the willingness to engage
- Ask for additional input on the optimal solution

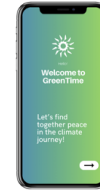
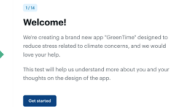
### THE METRIC WE WILL USE/ HOW WE WILL EVALUATE THE TEST

- User Feedback cards
- Outcome analysis of survey

### AND MEASURE.....

- How much do users like the features
- Is there a willingness to use the App
- Is there a willingness to pay

## User Tests



<https://app.baliparkha.com/record/72d18215-462e-4ad1-81ed-b8786ad2812>

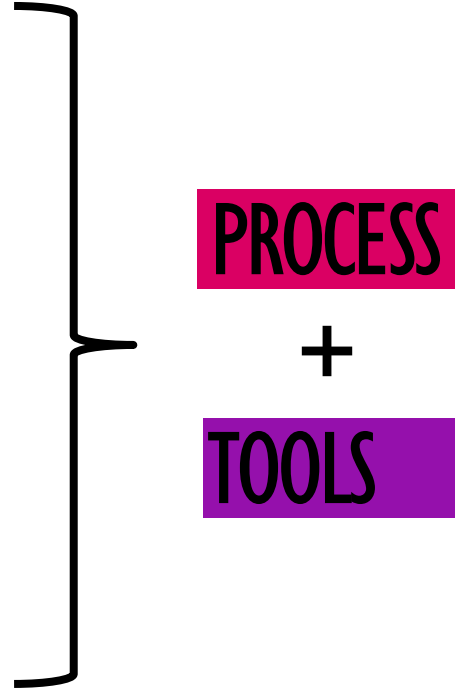
# 4. Prototype

## Prototype V1



# Design Thinking

1. EMPATHY
2. DEFINE
3. IDEATE
4. PROTOTYPE
5. TEST



# 5. Test



➔ 25 poster responses

➔ 8 qualitative interviews

## User Test Feedback Card

### CUSTOMER and PROBLEM

- Vanessa feels climate anxious mainly when she is learning more facts about climate science, talking to knowledgeable but pessimistic people and due to specific events like Hurricane Doran
- It influences her voting decisions, lifestyle and shopping choices and feels distressed about the future due to the actions of big corporations
- She spends time in nature and tries to talk to like-minded people
- Needs community support to talk about climate anxiety and uplift each other
- Believes media exaggerates climate issues, which can raise anxiety but also creates necessary pressure to change

### CUSTOMER LIKES OBSERVED

- Vanessa really likes the visuals of the app and the features it provides
- She believes that a learn tab can be very beneficial since we don't see enough good news and breakthroughs
- She likes the "CO2" aspect as she can learn more how to take practical steps to take action and feel more proactive

### CUSTOMER DISLIKES OBSERVED

- She is afraid that tracking emissions could spike a level of anxiety for some people, because she would get controlled with that feature
- Focus on individual actions does not fully address her concerns about the larger systemic change

### New questions, uncertainties or ideas

- Adding a feature of also sharing some books, podcasts, movies that are released on climate topics
- Simplify the CO2 tracking feature to avoid overwhelming users
- Users appreciate being able to customize their app experience, including notification settings

## User Test Feedback Card

### CUSTOMER and PROBLEM

- Silvana has a deep appreciation for nature
- She experiences anxiety and emotional distress related to climate change – mainly after seeing direct effect of climate change and due to different priorities with peers and family
- She struggles to balance sustainable living with systemic constraints
- She needs community and support network to freely discuss climate-related fear and anxiety
- She believes education is needed on both problem and solutions part to climate change
- She advocated for small-scale actions and personal changes to create a positive impact

### CUSTOMER LIKES OBSERVED

- Daily notifications of positive environmental news is refreshing and motivating
- A community forum could allow her to connect with like-minded individuals

### CUSTOMER DISLIKES OBSERVED

- Engaging with people who have different views on climate change could be frustrating and stressful
- Even positive notifications can feel like an obligation if they're too frequent

### New questions, uncertainties or ideas

- Make sure there is a strong moderation in the discussion forum to ensure respectful and constructive conversations, e.g. flagging inappropriate content
- Flagging inappropriate content, especially when exacerbated by politics, social or religious issues. The energy of the discussion forum could be used to the client's best during her day, avoiding negative and stressful emotions
- Incorporate features that address systemic changes and promote responsibility

## User Test Feedback Card

### CUSTOMER and PROBLEM

- Necher feels quite pessimistic about the future and finds it challenging to make people change their opinions or take action on climate issues
- He regularly encounters the problem of lack of alignment when discussing climate change with others
- He tries to reduce his environmental footprint in his daily life by taking the stairs as often as possible and daily change of habits
- Difficulty in influencing others and the lack of positive news on environmental progress

### CUSTOMER LIKES OBSERVED

- Necher believes that the "Silicon Valley" culture is something that helps people to discuss with a lot of the most relevant and impactful daily facts
- Users are engaged in the "learn" feature as it provides positive, factual information

### CUSTOMER DISLIKES OBSERVED

- He feels that this kind of feature is hard to build a community of like-minded people
- Users also do not see some experts in the field as it could structure the discussion
- He also proposed the idea of interviewing experts
- More structured discussions, maybe led by some experts in the field, could improve the quality of the information

### New questions, uncertainties or ideas

- More expert-led content and structured discussions
- Users also want to have some expert insights, not only in the "learn" feature, but also in the "Silicon Valley" one

## User Test Feedback Card

### CUSTOMER and PROBLEM

- Luaine feels powerless and dismayed by the enormity of climate issues
- She experiences anxiety from the lack of awareness and action by others
- Luaine frequently feels the problem, especially when exposed to indifferent media coverage
- She is now taking actions by avoiding air travel, being vegetarian, and buying second-hand goods
- Personal actions provide a sense of contribution

### CUSTOMER LIKES OBSERVED

- She still believes that the "Learn" feature seems very informative which could help reducing her feelings of powerlessness
- "I like the 'Do' feature as it really could push people towards taking actionable steps"

### CUSTOMER DISLIKES OBSERVED

- What didn't they like? Why? What did they say that you hadn't considered before?
- She hopes that we could integrate a "success stories" or "testimonial" (once app is more developed) to enhance motivation and credibility
- "Incorporating success stories from other users would provide additional motivation"

### New questions, uncertainties or ideas

- More success stories in the "Do" feature
- Users need dynamic and community-driven content to maintain engagement and motivation

## User Test Feedback Card

### CUSTOMER and PROBLEM

- Elena has climate anxiety caused by climate changes after the environment and after her health directly, the anxiety that anxiety triggers can be the driving concern for climate change. More substantial visible changes in the climate and severe issues in the family, especially when exacerbated by politics, social or religious issues. The energy of the discussion forum could be used to the client's best during her day, avoiding negative and stressful emotions
- "The development of a form of climate anxiety which may only come when they when my day-to-day health and well-being is becoming really for me to stay informed about it"
- "Basically I have personally experienced anxiety and emotional distress related to climate change particularly as it affects my health directly for me to stay the changing climate patterns exacerbate my allergies which are now a year round concern"

### CUSTOMER LIKES OBSERVED

- She likes the "Learn" feature as it provides positive, factual information
- Users are engaged in the "learn" feature as it provides positive, factual information

### CUSTOMER DISLIKES OBSERVED

- What didn't they like? Why? What did they say that you hadn't considered before?
- She didn't like the idea of quiz as a reminder. She feels the pressure "I feel if I have a knowledge gap it will increase more my anxiety"

### New questions, uncertainties or ideas

- She would like to have online seminars/panels per month accessible from the app with an expert on climate change
- Be able to book some psychological counselling related to climate change directly on the app

## User Test Feedback Card

### CUSTOMER and PROBLEM

- Laura experiences significant anxiety particularly when trying to convince others—friends and family—about the urgency of climate change and the necessity of collective action
- She feels frustrated when seeing "false reports" and misinformation
- While she has been working for her to "work on how she can control" "I cannot control other people's change by myself, but if I try to reduce my CO2 emissions through my diet and transportation choices, it's already a start—and that's what has been helping with my anxiety"

### CUSTOMER LIKES OBSERVED

- Personalized features like the "learn" and "track" features
- Valid Facts, Tips, Recommendations, and Motivations
- Personalized Recommendations
- Competitive aspect and featured the social comparison through the "Learn" feature
- Community engagement with the app
- Supporting the "Do" feature could include recommendations for environmentally friendly products and adding a forum for connecting with friends and family and facilitating small groups

### CUSTOMER DISLIKES OBSERVED

- While she has been working for her to "work on how she can control" "I cannot control other people's change by myself, but if I try to reduce my CO2 emissions through my diet and transportation choices, it's already a start—and that's what has been helping with my anxiety"

# 5. Test

## User Tests Insights and Modifications

01

### Multiple Triggers > Climate Anxiety

Personalization

- Quiz
- Suggestion
- On/Off feature

02

### More clarity

Tutorial

03

### DEPTH in the learn section

Webinars, courses, podcasts and success stories

04

### HEALTHY gamification

Streak feature

05

### Premium version isn't the answer to all

Partnership with sustainable brands - promo codes

# 5. Test

## New Prototype



Source: Amrita Anand, Marie Leu, Alzbeta Androvicova, Elsa Levan, Marc Bou Khalil, Daphne Lilli, ESADE 2024

**Day 1**  
**Session 2**  
**11.30 — 13.00**

# **TOOLS FOR PROJECTS**

## **PROJECT TEAM COLLABORATION**



# Session II Objectives

1. Understand Project-Based Learning (PBL)
2. Clarify the importance of team collaboration
3. How to deal with a distributed team
4. How to use Teach-BeAst provided Tools:
  - Structure of the manual;
  - Miro boards;
  - Slide deck;
  - DT tools;
5. •How to implement DT into your syllabus by using DT Tools and Techniques

# Session II Agenda

- |               |   |
|---------------|---|
| 11.30 – 12.00 | Let's introduce Project-Based Learning (PBL)              |
| 12.00 – 12.30 | Team Dynamics   |
| 12.30 – 13.00 | Supporting tools to implement PBL into university courses |

# PROJECT BASED LEARNING?

PBL is a learner-centric pedagogy with a theoretical foundation based on **constructivism**, where individuals construct knowledge through interacting with their environment (Altay 2014; Savery and Duffy 1995).

# PROJECT BASED LEARNING?

Thomas Markham (2011) describes project-based learning (PBL) thus: *"PBL integrates knowing and doing. Students learn knowledge and elements of the core curriculum but also apply what they know to solve authentic problems and produce results that matter. PBL students take advantage of digital tools to produce high-quality, collaborative products. **PBL refocuses education on the student, not the curriculum**—a shift mandated by the global world, which rewards intangible assets such as **drive, passion, creativity, empathy, and resilience**. These cannot be taught out of a textbook, but must be activated through experience."*

# PROJECT BASED LEARNING?

Blumenfeld et al. elaborate on the processes of PBL: *"Project-based learning is a comprehensive perspective focused on teaching by **engaging students in investigation**. Within this framework, students pursue solutions to complex problems by asking and refining questions, debating ideas, making predictions, designing plans and/or experiments, collecting and analyzing data, drawing conclusions, communicating their ideas and findings to others, asking new questions, and creating artifacts."* The basis of PBL lies in the authenticity or **real-life application of the research**. Students working as a team are given a "driving question" to respond to or answer, then directed to create an artifact (or artifacts) to present their gained knowledge. Artifacts may include a variety of media such as writings, art, drawings, three-dimensional representations, videos, photography, or technology-based presentations.

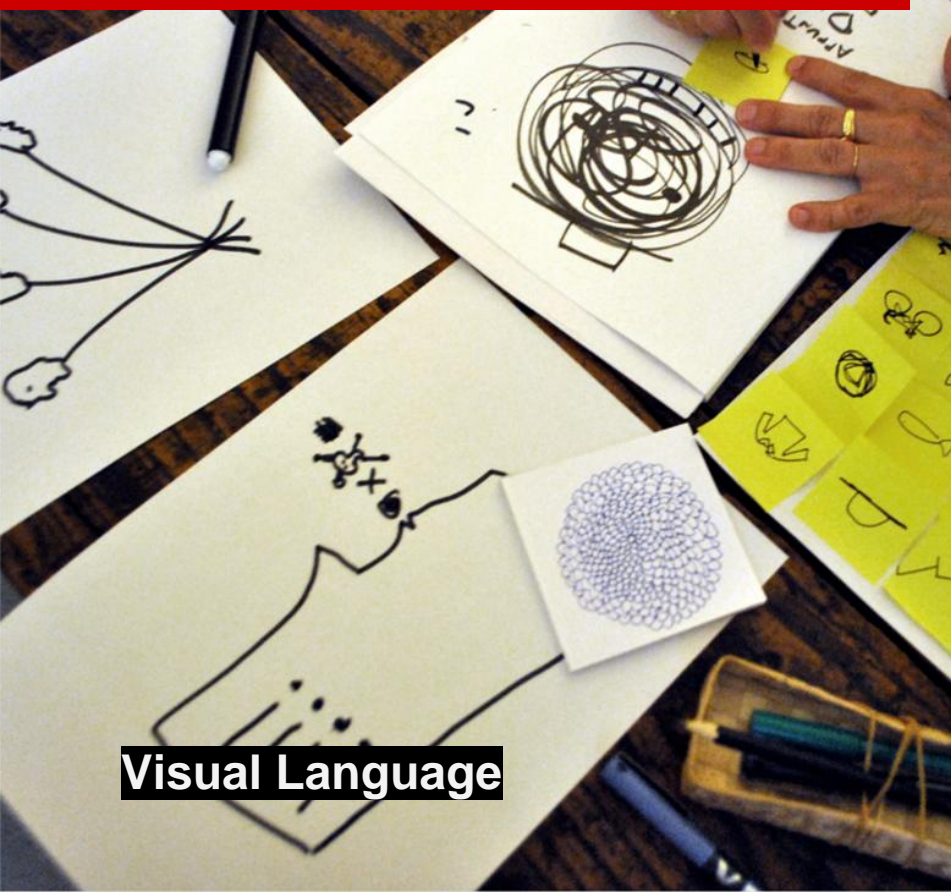
# PROJECT BASED LEARNING?

PBL provides a powerful alternative to the conventional teacher-centric cognitivist model of learning (Carroll et al. 2010) by challenging students to formulate new-to-the-world ideas, where the **necessary skills or knowledge to accomplish the tasks are not specified** (Dym et al. 2005; Simon 1996).

# PROJECT BASED LEARNING?

Students are invited to explore uncertain paths and **no homogeneity of response** is demanded. Rather, a diversity of response is encouraged, providing opportunities for the individual to develop **his or her own interpretations** of the given topic (Hanney 2018).

# INNOVATION & CREATIVITY



**Visual Language**



**Experimentation**







# DESIGN AND EDUCATION?



**AGAIN, YOU?**

## **YOU ARE ALL DESIGNERS!**

**Teaching is a creative design act by nature.  
Every day you create learning experiences,  
ways of collaborating with colleagues,  
of using classroom and university spaces,  
of engaging with students...**

# INTRODUCTION

## The education context

Many agree that **engagement** and **motivation** are fundamental aspects in today's education and various paths have been explored in this direction.

**BUT**

Little is known about how to support young practisioners in **forming their identity**, which is considered a **key driver** to face this challenge.

(Adams et al., 2011, Tonso, 2006; Stevens et al., 2008)

# Background

## Engineering Education in Reggio Emilia

a **laboratory** to develop a **new paradigm of education**,  
inspired by both PBL (Dym et al, 2005) and Reggio  
Emilia Approach (Malaguzzi, 1993)



# PRINCIPLES

Education based on relations

**Multiplicity over uniformity**  
**Uncertainty over standardization**  
**Circularity over linearity**  
**Collectivity over individuality**  
**Visibility over restriction**  
**Affectivity over detachment**

# PURPOSE

Professional and human identity



Who is the young practitioner?





# REGGIO - Project Based Learning



Image of the learner

# **Student as Engaged Practitioner**

**Students are producers of new knowledge, able to envision the future and to shape it today. They have creative energies and interests to improve the context, quality and prospect of human life.**





**Role of the learner**

# Network



**Students' social network is integrated into their learning experience to create a rich and diverse educational environment. They engage with families, friends, clients, citizens, academics and professionals. In this rich and complex scenario, the system of relationships has a virtually autonomous capability to educate.**



**Role of the Educator in Relation to the Student**

## **Partner & Co-Learner**

**Educator is a partner and co-learner in the students' learning experience who respects and considers the opinions of the group and individuals. Instead of knowing the 'right' answers, Educators provide cognitive scaffolding and encourage active exploration.**



**Role of the Educator towards educational practice**

# **Researcher and Reflective Practitioner**

**Educators engage each other in deep dialogues, mutual criticism and self-examination of teaching instruments and behaviors. Engaging in pedagogical research and documentation of learning activities, they bring new considerations, ideas, and opportunities into practice.**





**Context of the Knowledge to be Learned**

## **Science and Art**



**The student is capable of interacting with any stakeholder through the synthesis of all the expressive, communicative and cognitive languages. Science and art are integrated by promoting the penetration of artistic and humanistic disciplines into the technical environment to help young professionals find their own way of creating, discovering, and exchanging their talents with others.**



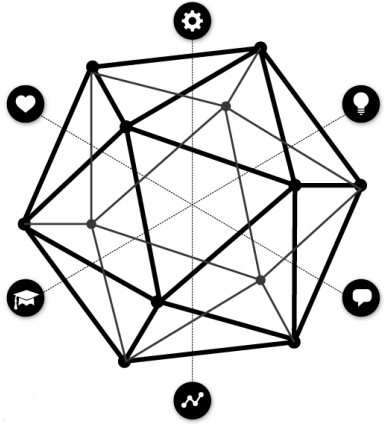
**Context of the Knowledge to be Learned -  
Learning Environment**

## Ecosystem



**In addition to designated Collaborative Spaces on campus and within partner organizations, the learning environment includes the entire ecosystem. Learners become integrated into their local ecosystem to access available resources to prototype, test and validate their ideas and solutions.**

# EDUCATION BASED ON RELATIONS



an education that goes beyond economic objectives: it must not only prepare students to be capable practitioners, but also enable them to **discover their inner selves, as individuals and as citizens**. In addition, as the development of one's identity is related to interaction and confrontation with others, education needs **focus on relations, on collectivity and on participation**.





“

## I'D RATHER HAVE A GREAT TEAM WITH BAD TOOLS

than a bad team with great tools.

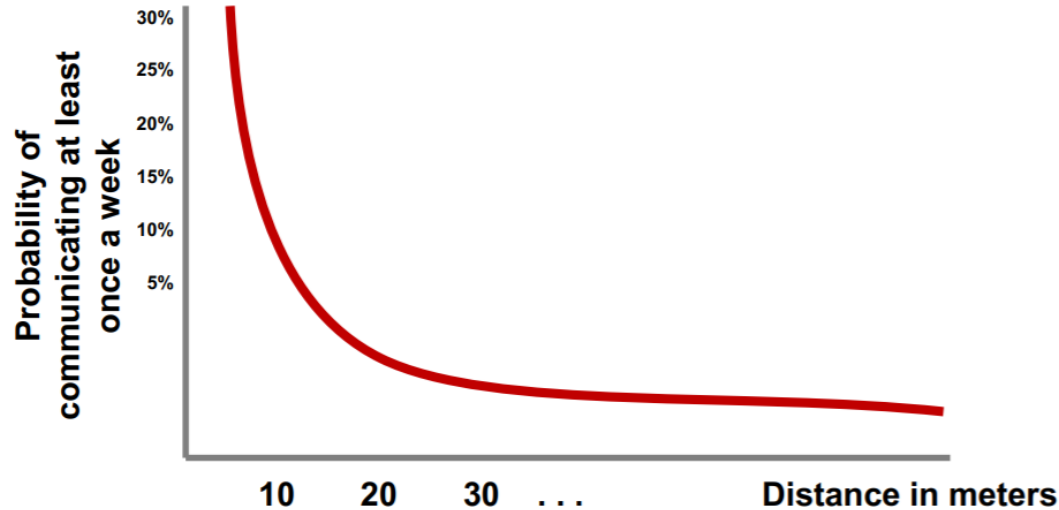
The great team will find ways to communicate well,  
regardless of the tools.

**SCOTT BERKUN** / Author & Speaker, Berkun Media

# What is the primary difference between a co-localized and a distributed team?

- Proximity
  - ‘real’ and ‘perceived’
- The positive effects of proximity (Kiesler and Cummings, 2002)
  - *Others’ physical presence* increases attention, social impact, and familiarity (Milgram, 1975)
  - *Face to face communication* enables coordination (Allen, 1977)
  - *Sharing a physical space* increases similarity in experiences and expectations and favors the creation of a shared context
  - *Spontaneous communication* engenders the creation of strong ties

# Allen's study on the correlation between distance and frequency of communication



Allen, 1977

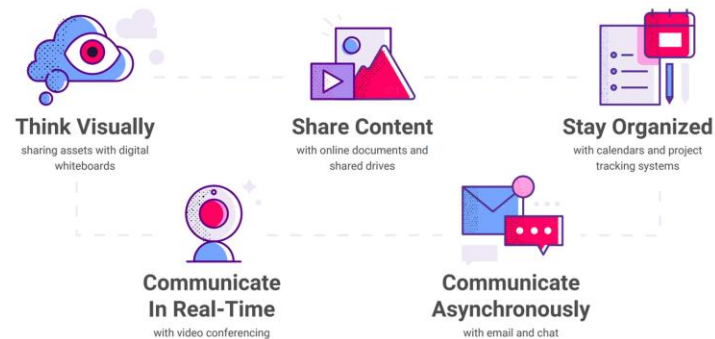
# The elements to design a distributed team

1. Roles
2. Competences
3. Task design
4. Norms and protocols
5. Knowledge management systems
6. Performance evaluation
7. Incentives and compensation
8. Training

# Tools

## Not another tool!

We hear that all time. While tool fatigue is all too common, remote workshops rely on applications to make the interaction possible. Choose tools you'll use based on five key capabilities needed for remote workshops:



The Definitive Guide To Facilitating Remote Workshops  
Authors: Mark Tippin, Jim Kalbach, David Chin  
First Edition: June 2018





**Session 3**

**14.30 — 16.00**

**Session 4**

**16.30 — 17.30**

# TOOLS FOR PROBLEM SPACE



# Session III Objectives

1. How to use Teach-BeAst provided Tools:
  - Structure of the manual;
  - Miro boards;
  - Slide deck;
  - DT tools;
2. How to implement DT into your syllabus by using DT Tools and Techniques

# Session III Agenda

14.30 – 16.00 Design Thinking Tools -> PROBLEM SPACE

## TECHNICAL-BASED COURSES

### Goal

Equip students for careers in software engineering, mechanics, electronics, and other tech-driven fields – or every time your students design practical solutions. Technical-based courses focus on **problem-solving based on provided technologies or methodologies**.

### Key Characteristics:

- 1) Focus on Problem Solving**– Design and development competencies to solve real-world problems;
- 2) Laboratory Work** – Practical work with hardware and software.

### Target audience

- Students aiming for careers in technology
- Future software engineers, data analysts, cybersecurity specialists, and technologists.

### Learning outcomes

- Design and implement **technological solutions**.
- Mastery of programming, software development, **digital tools** or development of mechanical output.
- Proficiency in **applying computational** and **logical thinking** to problem-solving.

### Deliverables

- Working **prototypes** or **digital tools** (e.g. apps, algorithms)
- **Technical reports** on software or system development
- Coding **projects** or **technology-driven solutions** addressing real-world problems

### PBL

Course duration often takes up **2/3** of the total amount of hours

**Example:** 40/60 h per semester with focus on project-based learning and practical application (6ETCS course).

## SCIENCE-BASED COURSES

### Goal

Prepare students for careers in research, healthcare, environmental sciences, and other scientific fields. Science-based courses focus on **understanding the natural world through the scientific method**.

### Key Characteristics:

- 1) Focus on Natural & Physical World** – Theoretical knowledge, empirical observation, and experimentation;
- 2) Laboratory Work** – Hands-on experiments using scientific equipment and techniques;

### Target audience

- Students interested in natural sciences and research.
- Future scientists, researchers, healthcare professionals, and environmental specialists.

### Learning outcomes

- **Develop deep understanding** of natural and physical phenomena
- **Mastery of the scientific method:** hypothesis, experimentation, analysis.
- Proficiency in data interpretation and experimental techniques.

### Deliverables

- **Research papers** or **reports** based on experimental findings.
- **Presentations** of scientific models, theories, or ecological analyses.
- **Laboratory results** and **data interpretations**.

### PBL

Course duration often takes up **1/3** of the total amount of hours.

**Example:** 20/60 h per semester with focus on project-based learning and challenge-based innovation (6ETCS course).

# How we used design thinking in the two archetypes?

## TECHNICAL-BASED COURSES

### Structure

**5 Missions**  
**1 Week per Mission**

### Goals

- Create solutions which are human centered (**Desiderability**)
- Explore the economical aspect of solutions (**Viability**)

### Deliverables

- Design Brief
- Technical Proposal of the final solution
- Economic Evaluation
- (Technological) Solution
- Final Presentation
- Personal Reflection

## SCIENCE-BASED COURSES

### Structure

**5 Missions**  
**3h Class and an elective 1h follow-up**

### Goals

- **Understand how ones own science can be relevant** in real-world challenges

### Deliverables

- Challenge Presentation
- Opportunities presentation
- Solution concepts
- Personal Refelction

# LEARNING OUTCOMES AFTER PBL IMPLEMENTATION

- **Problem-Solving Skills**
- **Collaboration and Teamwork**
- **Critical Thinking and Reflection**
- **Empathy and User-Centred Approach**
- **Adaptability and Resilience**

- **Practical Application of Technical Skills**
- **Systems Thinking**
  - (ability to think holistically about systems, understanding the interconnectedness of components)
- **Prototyping and Iteration**
- **Efficiency and Optimization**
- **Technical Communication**

- **Inquiry-Based Research**
  - (DT helps structure experiments, hypotheses testing, and exploration)
- **Scientific Literacy and Data Interpretation**
- **Hypothesis Development and Testing**
  - (iterative nature of Design Thinking is aligned with the scientific method)
- **Integration of Theoretical Knowledge**
- **Ethical and Societal Impact**
  - (awareness of how scientific solutions can affect communities and ecosystems)

# DT for Tech-Based Courses

## PBL LESSON EXAMPLE:

TOTAL COURSE: 6 ECTS

ALLOCATED TO DT: 2 ETCS

## SET UP

### TOOLS

Miro board  
Mission 1  
Course syllabus

## DESIGN BRIEF

### TOOLS

1  
week

Miro board  
Mission 1  
Design Brief

## BENCHMARKING

### TOOLS

1  
week

Mission 2  
Actors Map  
Benchmark  
Competitors map

## NEED/FINDING

### TOOLS

1  
week

Mission 3  
Interview Cards  
AEIOU Frame  
Affinity Diagram  
Personas

## SOLUTION CREATION

### TOOLS

1  
week

Mission 4  
Design Principles  
Brainstorming

## PRETOTYPING AND TESTING

### TOOLS

1  
week

Mission 5  
Prototype and test  
template  
Technical data sheet

## PROJECT CLOSING

### TOOLS

Mission 6  
Presentation storyboard  
Individual reflection doc  
Reflective diary  
template



Co-funded by  
the European Union

# DT for Science-based courses

**PBL LESSON EXAMPLE:**  
TOTAL COURSE: 6 ECTS

## SET UP

### TOOLS

Miro board  
Mission 1  
Presentation slides

## CHALLENGE EXPLORATION

### TOOLS

30  
min

Miro board  
Mission 1  
Presentation slides

## DISCIPLINE TO CHALLENGE

### TOOLS

30  
min

Miro board  
Mission 2  
Presentation slides

## OPPORTUNITY IDENTIFICATION

### TOOLS

45  
min

Miro board  
Mission 3  
Presentation slides

## BRAINSTORMING ON EPOs

### TOOLS

45  
min

Miro board  
Mission 4  
Presentation slides

## EXTERNAL SOLUTION TEST

### TOOLS

1  
week

Miro board  
Mission 5  
Presentation slides

## PROJECT CLOSING

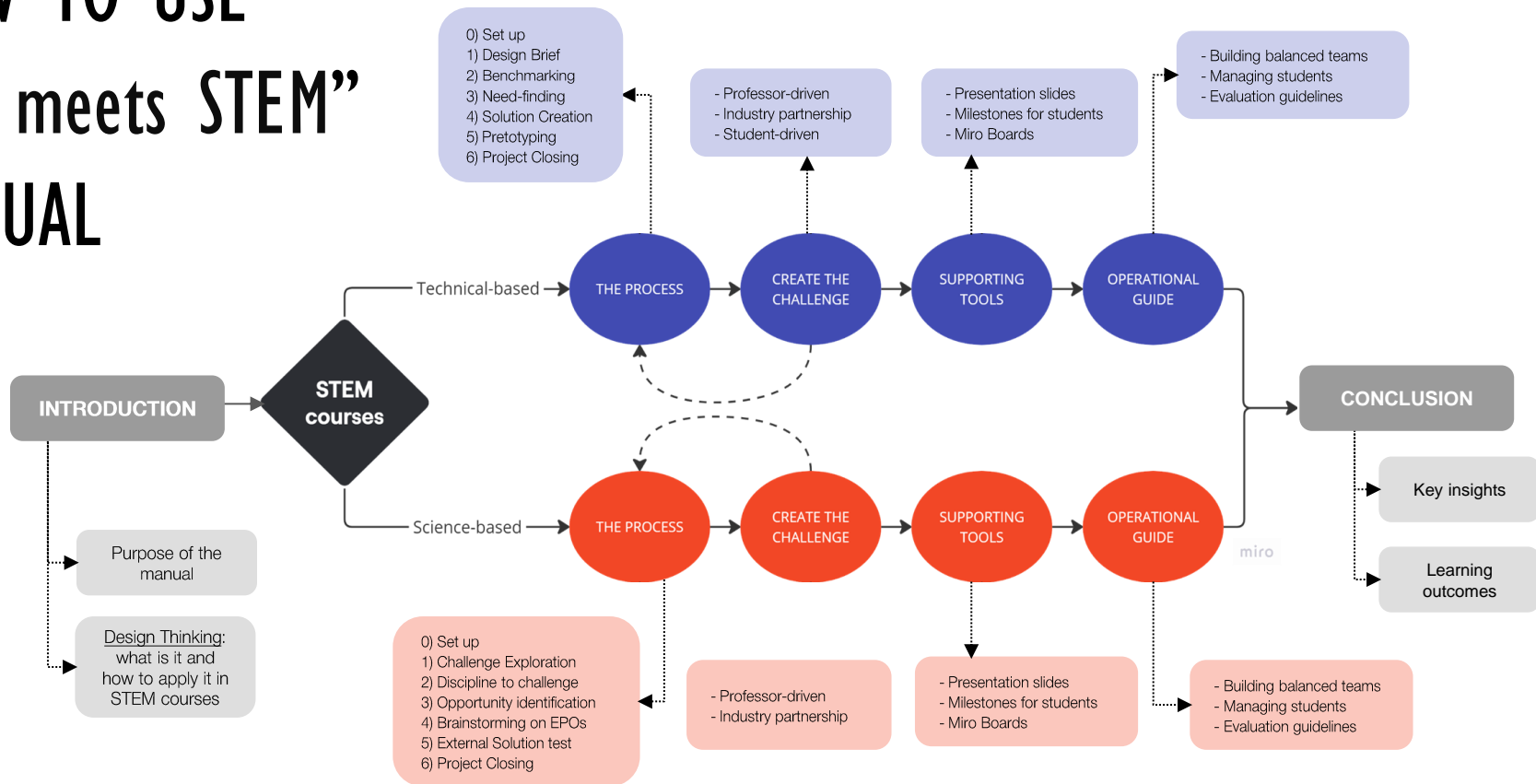
### TOOLS

Miro board  
Mission 6  
Presentation slides  
Evaluation tool



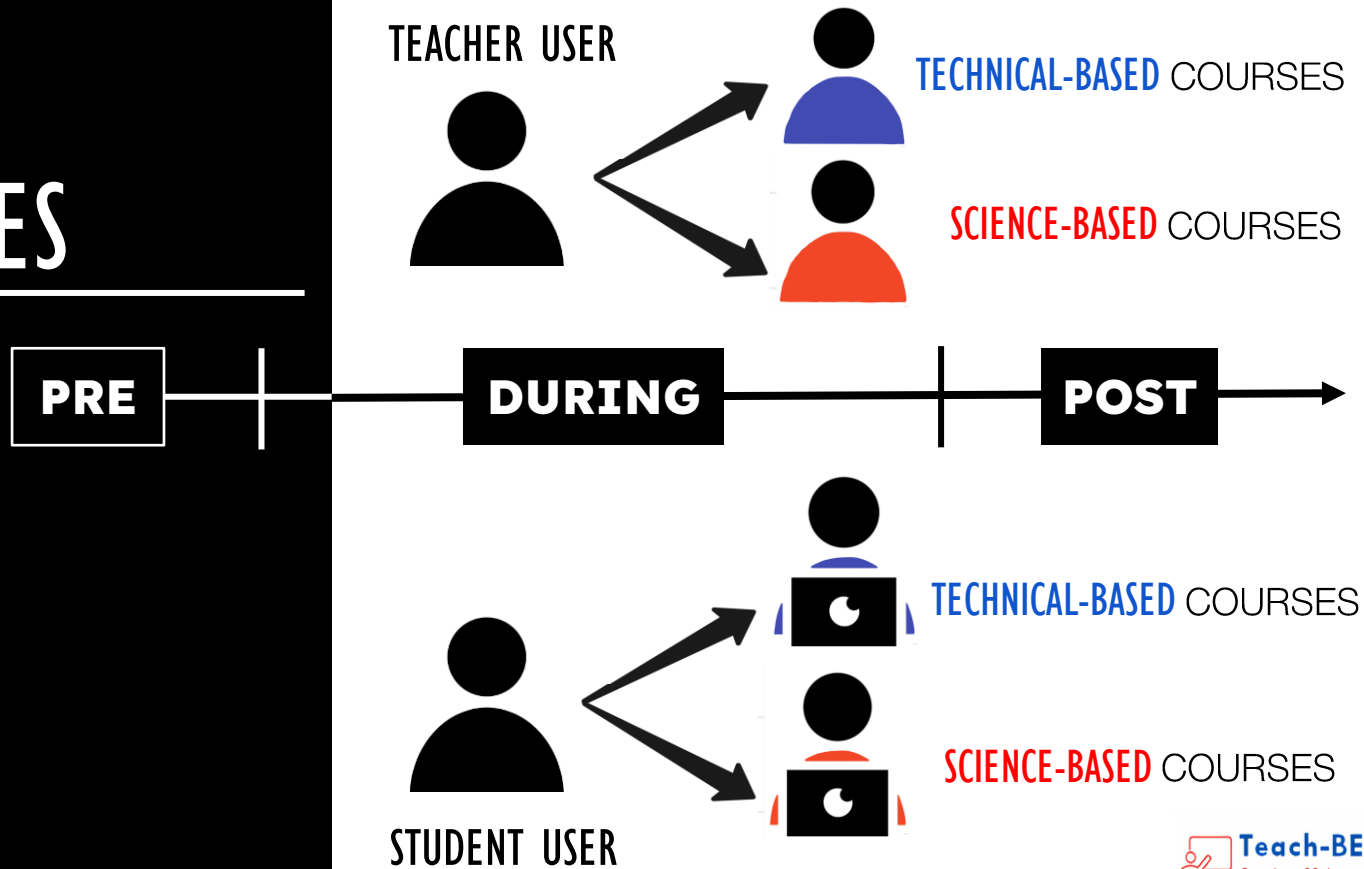
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# HOW TO USE “DT meets STEM” MANUAL



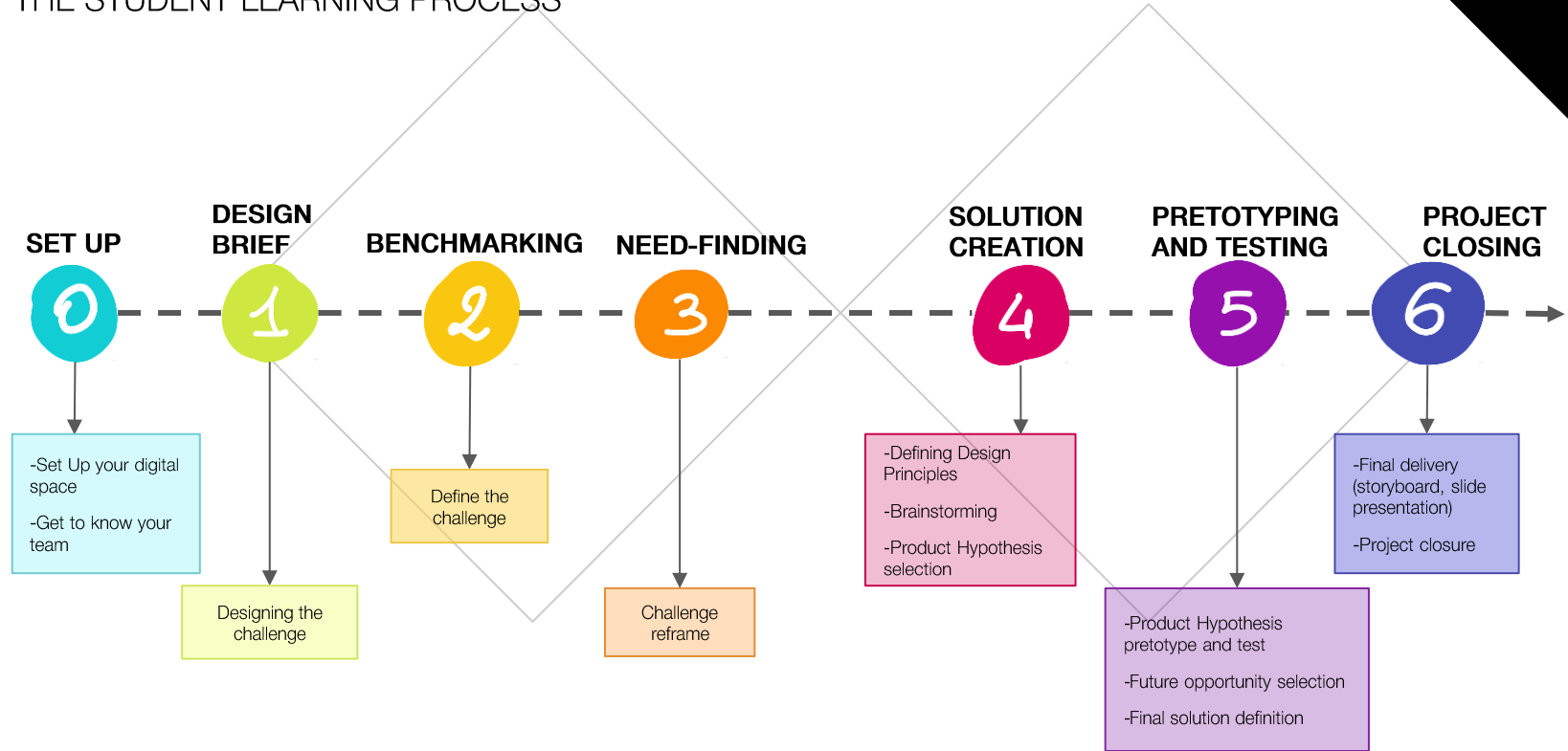


# TWO DIFFERENT PERSPECTIVES



# TECHNICAL-BASED COURSES

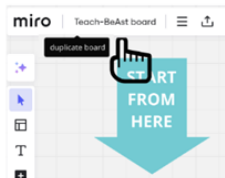
## THE STUDENT LEARNING PROCESS



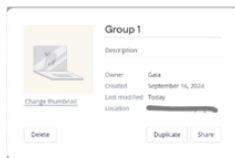
# LET'S START!



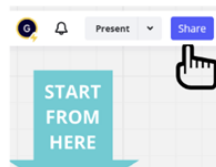
## SET UP YOUR TEAM'S DIGITAL SPACE



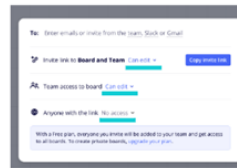
1. Register on [www.miro.com](https://www.miro.com)
2. Make a copy of this board for your team (**one person per team only**), clicking on the board name on the top left of your screen.



3. Name the board "Gruppo X [team number] - TB", clicking again on the board name.



4. Share the board with all your team mates and your professor, clicking on the "Share" button on the top right of your screen.



5. Invite your professor and your team mates via mail, **making sure the sharing settings are correct** (as shown above).



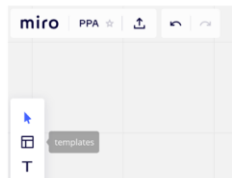
6. Check out the **Course Syllabus** to keep track of each phase timing and deadlines.

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## GET TO KNOW MIRO



**Take your time to explore MIRO:** it's a quite intuitive tool, but if you'd like to use it **like a pro** you can find many videos online which display all its functionality, for example [this one](#).



**Tip:** In the toolbar on the left, you can browse through **many templates** you'll might find useful.



This is **your workspace**: feel free to personalize it, add tools and organize the whole space according to how it works better for you and your team!

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## Member Card (one per participant)

Double click to write  
your name here

Snap a picture of  
your funniest face  
and place it here

Place here a photo of  
what you see outside  
your window

What is your field of  
interest?

REPLACE EACH  
QUESTION WITH  
YOUR ANSWER



If you were an animal,  
which animal would you  
be?



If you could meet a celebrity (not  
necessarily a living one) who would  
it be and why?



What do you expect from  
this course?



What's your superpower  
that can help you in this  
challenge?

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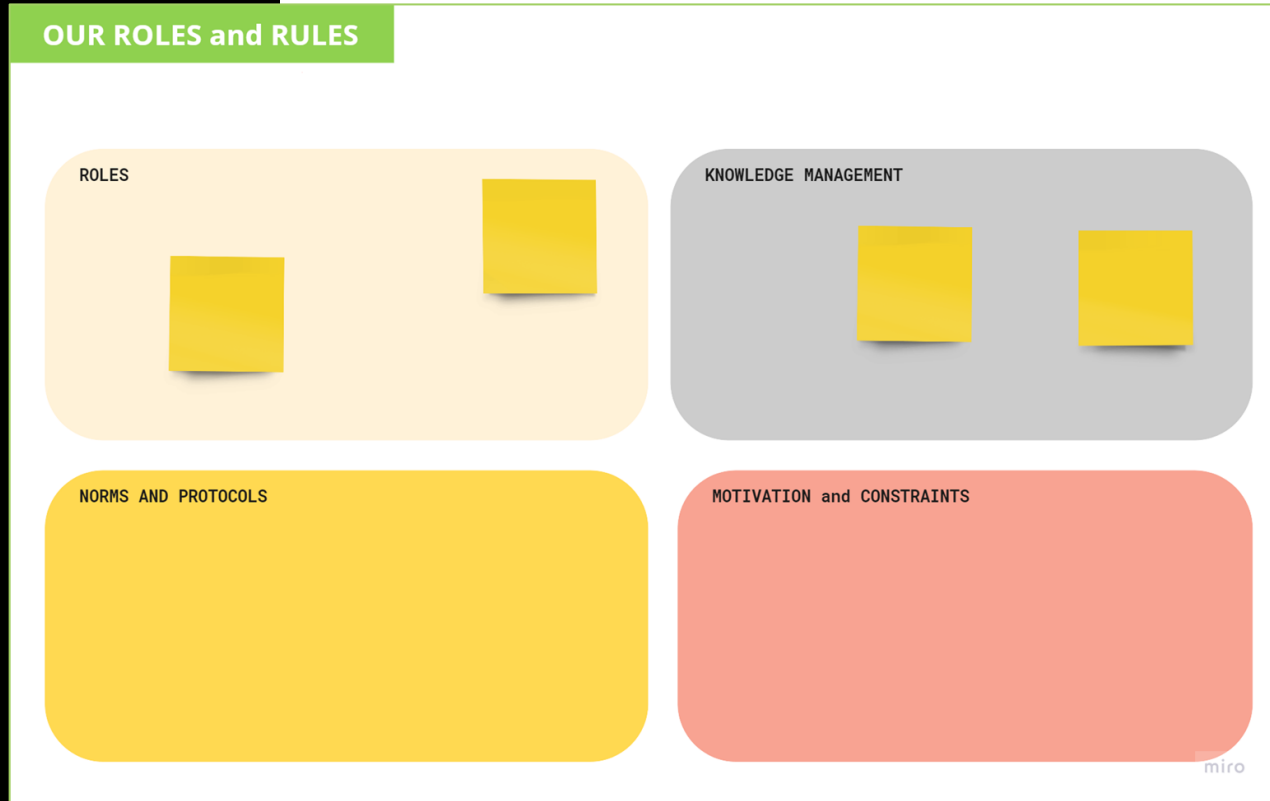
# GET TO KNOW YOUR TEAM!

## OUR FLAG

DRAW HERE  
YOUR  
TEAM'S  
FLAG

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# SET YOUR ROLES AND RULES



# DESIGN BRIEF

## What is it?

A **Design Brief** is a document outlining the key information necessary to initiate a project. It defines the challenge, project aspirations, objectives, constraints, and assumptions, along with performance metrics to evaluate success. This serves as the foundation for guiding the project team's efforts.

## How to do it?

Start by clearly defining the project challenge. Analyse the current situation, set specific objectives using the SMART approach, and identify any constraints or assumptions. Lastly, break down objectives into measurable performance metrics and document everything in a concise format, ensuring the brief is no longer than two pages.

# DESIGN BRIEF



## DESIGN BRIEF

Who?

What? Goals

With what? Available  
materials, resources

Why? Problem

Who else? Competition,  
alternatives

How much? Budget,  
restrictions

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# WALLET CHALLENGE



# Design Brief

Listen carefully to the challenge proposed by the instructor and work with your team to develop the design brief.

## DESIGN BRIEF

Who?

What? Goals

With what? Available materials, resources

Why? Problem

Who else? Competition, alternatives

How much? Budget, restrictions



PAUSE

Time needed: 5 minutes

# ACTORS MAP

## What is it?

The **actor map** maps out all the actors, called stakeholders, directly and indirectly connected to the company. Stakeholders can be users, customers, service providers, partners, institution representatives, etc...

## How to do it?

Start from the inner ring placing the stakeholders who have a core role.

Place in the external rings the actors who are less directly related to the challenge but need to be taken into consideration. Update it as you progress.

# ACTORS MAP

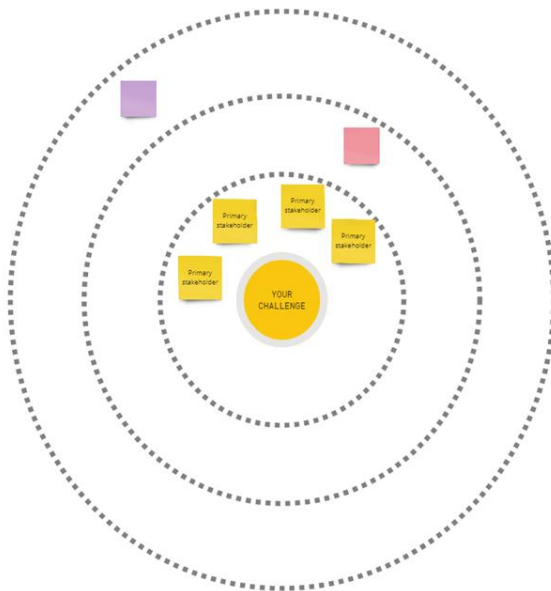


## ACTORS MAP

Map the stakeholders connected to your challenge.

Stakeholders can be users, customers, service providers, partners, institution representatives, etc... Start from the inner ring placing the stakeholders who have a core role.

Place in the external rings the actors who are less directly related to the challenge but need to be taken into consideration.



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# BENCHMARK



## What is it?

**Benchmarking** is the process of researching how others have addressed similar challenges, analysing relevant trends, technologies, and products to gather insights. It helps identify potential solutions and best practices that can guide the team's approach to the current project.

## How to do it?

Start by exploring various sources to see how similar problems have been solved, focusing on solutions that are relevant to your challenge. Create a comprehensive archive of potential solutions but prioritise the most impactful ones due to limited time. Use organised tools and templates to capture and present your findings efficiently.



# BENCHMARK



## BENCHMARK

Collect here interesting case studies and existing solutions to your challenge.  
Can you find any emerging pattern? Feel free to re-arrange them in a matrix

						...
Name (link)	Name (link)	Name (link)	Name (link)	Name (link)	Name (link)	
what is it (in a tweet)	what is it (in a tweet)	what is it (in a tweet)	what is it (in a tweet)	what is it (in a tweet)	what is it (in a tweet)	
why it is interesting?	why it is interesting?	why it is interesting?	why it is interesting?	why it is interesting?	why it is interesting?	

### PRO TIPS:

Incorporate the link to the online resource  
After collecting the material, try to rearrange the contents  
in a map or diagram. Do you see anything interesting?

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# COMPETITORS MAP

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## What is it?

The **competitors map** is used to study both direct and indirect competitors to understand their solutions, how they communicate value, and what sets them apart. It helps identify strategies for differentiation and market positioning.

## How to do it?

Begin by analysing direct competitors, focusing on their offerings, value propositions, and differentiation strategies. Then, expand your research to include indirect competitors who meet the same needs with alternative solutions. Stay focused on insights relevant to your project's challenge while keeping an open mind for potential opportunities.

# COMPETITORS MAP



## COMPETITORS MAP

Identify other's strengths and weaknesses,  
asses recognized good practices.

Current state



**Direct Competitors**  
Offer the same solution



**Indirect competitors**  
Offer a different solution that solves the same need/problem

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# STEEP: Trend analysis

## What is it?

**Trend analysis** involves studying current social, technological, economic, environmental, and legal trends that impact the project. It helps identify emerging opportunities, risks, and influences that could shape the project's approach and outcomes.

## How to do it?

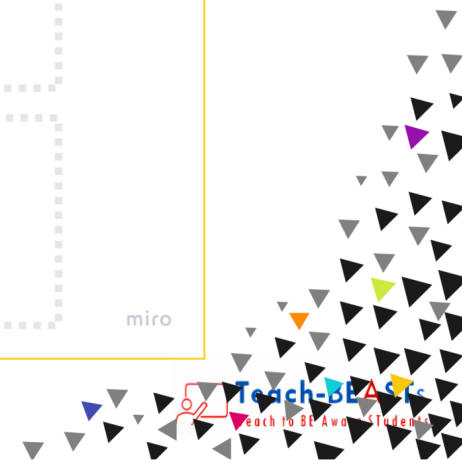
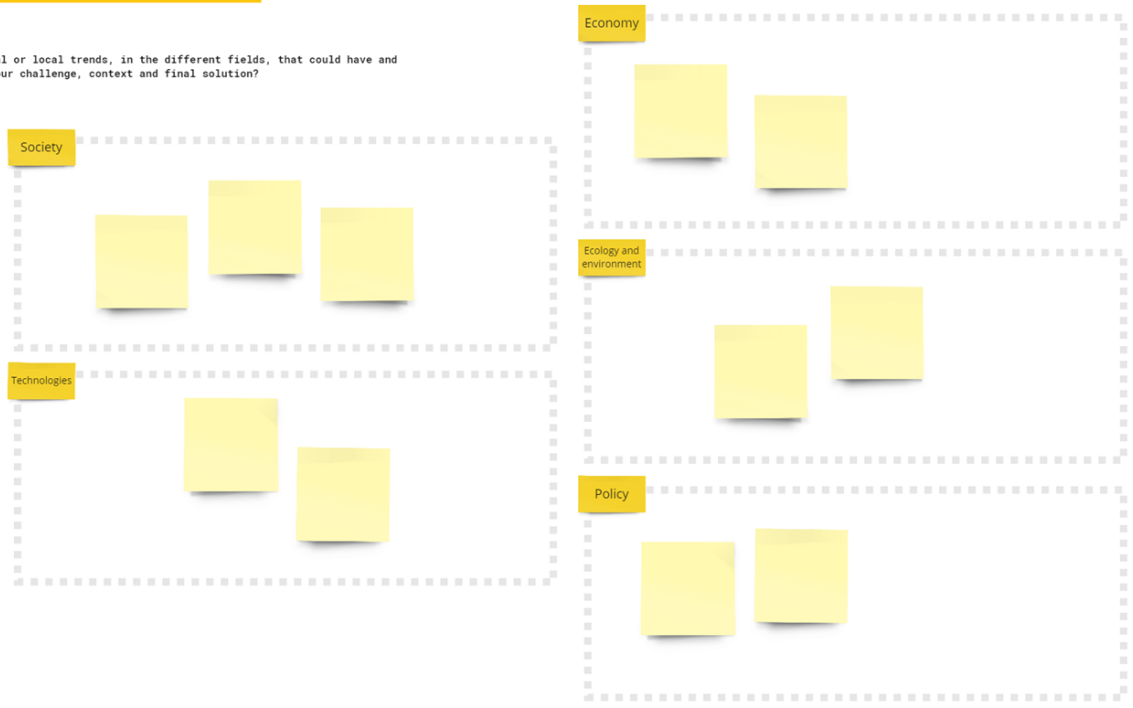
Research social, technological, and economic trends, along with sustainability concerns and legal changes, that directly or indirectly affect your topic. Look for patterns and emerging technologies and assess how current economic conditions or regulations might influence your project.



# STEEP: Trend analysis

## STEEP - Trend Analysis

Which are global or local trends, in the different fields, that could have and influence in your challenge, context and final solution?



# BENCHMARK HIGHLIGHTS



## BENCHMARK HIGHLIGHTS

Use this board to sum up the most interesting learnings you gained in this phase.

The 3 most relevant benchmark case studies

The 3 most relevant trends

The 3 most relevant competitors

The most interesting literature review and other sources:

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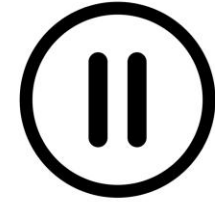


# Competitors Map

# Competitors Map

Who are your competitors? Explore online and brainstorm to understand how various solutions address the needs you've identified.

## COMPETITORS MAP



PAUSE

Time needed: 5 minutes

# INTERVIEW GUIDELINES



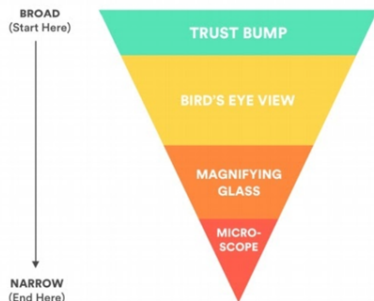
## INTERVIEW GUIDELINES

Use the following frame to define with your team a common guideline for interviewing your user.

Keep in mind this is a general structure, feel free to adapt it according to your specific challenge and to add questions "on-the-go" as your user mentions interesting themes.

Also, keep in mind that you'll might want to discover different things from different users.

### THE INTERVIEW LIFECYCLE



#### INTRODUCE YOURSELF AND YOUR SCOPE

We are a team of students working on a university research project about ... (our project is supported by the company X /TBD with the company/)

We would like to interview you because we want to investigate your experience about ...

The data we collect will be used internally, and we won't share your personal data such as name age etc...

If you agree, we would like to record the conversation/take some pictures etc...

#### GET TO KNOW YOUR USER

1. Tell me about your typical day
2. Tell me about that time when you did/saw/used...
3. Can you tell me more about...? Can you show me how...
4. Why...why....why...why...why....
5. Is there anything you would like to add?
6. So if I understood correctly you said... (Wrap up)

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# INTERVIEW CARD

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## What is it?

An **Interview Card** is a tool for documenting key insights from user interviews. It helps capture important quotes, summarize observations, and highlight "nuggets" of information that can guide the project by reflecting users' needs and behaviours.

## How to do it?

After each interview, record key takeaways such as memorable quotes, observations, and insights. Summarize the conversation in a concise manner and highlight any surprising findings or recurring themes. Keep the cards updated to inform ongoing project decisions

# INTERVIEW CARD

## INTERVIEW CARD

Once you identified what you want to explore with your user, use this template during the interview to keep track of the most relevant elements from the conversation with your user (create a copy of the template and use one for each interviewee)  
Feel free to adapt the frame with the crucial informations for your challenge

### NAME

Role

About him/her  
...

Paste here a picture of  
your user  
(ask for permission!)

### FEELINGS

What does he/she think, how does he/she feel about it, what does he/she desire, what does he/she are afraid of?

### UNEXPECTED THINGS

Contradictions, questions, things we didn't know before!

Key quotes:  
" "very interesting quote!"  
-Name

"very interesting quote!"  
-Name

"very interesting quote!"  
-Name

### PROBLEMS

Which painpoints does he/she experience?

### NEEDS (remember they are VERBS)

## INTERVIEW CARD

Once you identified what you want to explore with your user, use this template during the interview to keep track of the most relevant elements from the conversation with your user (create a copy of the template and use one for each interviewee)  
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Key quotes:  
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-Name

"very interesting quote!"  
-Name

"very interesting quote!"  
-Name

### PROBLEMS

Which painpoints does he/she experience?

### NEEDS (remember they are VERBS)

# OBSERVATION FRAME (AEIOU)



## What is it?

The **AEIOU** framework is an observation tool used to capture insights during fieldwork. It stands for Activities, Environments, Interactions, Objects, and Users, and helps structure your observations for better understanding of user behaviour and context.

## How to do it?

While observing users, document the activities they engage in, the environments they operate in, how they interact with others, the objects they use, and who the users are. Organise these observations into the AEIOU categories to identify patterns or unexpected behaviours. This structured approach helps surface hidden needs and drives empathetic insights.



# OBSERVATION FRAME (AEIOU)

## OBSERVATION FRAME (AEIOU)

Once you have identified which environment/context/moment to observe, use the following form to guide your observation and keep track of what you learn. You'll might want to observe more than one environment: if so create a copy for each observation you engage in.

### ACTIVITIES

- General impression
- Summary of activities
- Elements, features, notes



### ENVIRONMENT

- General impression
- Style, materials, atmosphere
- Floor plan
- Scenes
- Elements, features, notes



### INTERACTIONS

- General impressions (who is interacting with whom/what?)
- Scenes of interaction (How?)
- Elements, features, notes



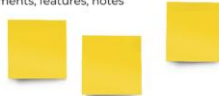
### OBJECTS

- General impressions (Which tools are involved? How?)
- Inventory of key objects
- Elements, features, notes



### USERS

- General impressions (Who is present? Role, responsibilities)
- Scene of user in context
- Elements, features, notes



### HOW?

take notes,  
sketches  
pictures

collect things

# AFFINITY DIAGRAM



## What is it?

An **Affinity Diagram** is a tool used to organize and group individual statements, observations, or ideas into categories based on their relationships. It helps reveal patterns, themes, and connections in the collected data, enabling teams to focus on key insights.

## How to do it?

After gathering needs from interviews, write each need on sticky notes or cards. Then, group similar needs together, looking for connections or emerging themes. As patterns appear, categorize them under broader headings. This visual clustering makes it easier to identify core insights that can drive the project forward.

# AFFINITY DIAGRAM



## AFFINITY DIAGRAM

While you share back your learnings with your team, identify recurring topics and themes by grouping together quotes and evidences.



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# PERSONAS

## What is it?

**Personas** are fictional, detailed profiles that represent key types of users based on research. They bring users' stories, behaviours, needs, and frustrations to life, helping guide the design process with empathy.

## How to do it?

Using the insights from your research, create a vivid description of each persona, focusing on specific behaviours, needs, and pain points. Include personal stories, motivations, and frustrations that directly relate to the project's challenge. Ensure each persona is a relatable character, not just a list of traits, so the design team can empathize with them throughout the project.

## PERSONAS

# PERSONAS

Now that you have a much more clear picture of your users it is time to synthetize your learnings in personas.

Remember: a personas represent a group of people with similar habits and behaviours, even if from their ID cards they look like they have nothing to share.

Start from the 2 most relevant stakeholders you have identified, and later make sure you have a persona for each most relevant need you identified.

As for the interview cards, feel free to add details to the structure that are relevant for you.

### NAME AND KEY CHARACTERISTIC (es. John the traditionalist)

Prepresent here  
your persona (use a  
picture or a drawing)

About him/her and his/her context

...

He/she likes

...

He/she dislikes

...

His/her aim or desire

...

How does he/she relate with the challenge?  
Which are his/her habits regarding it?

...

What is important to  
him/her?

...

Which are his/her fears,  
painpoints and  
frustrations?

...

NEED

REMEMBER THAT ABOUT AGE YEARS

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"A  
representative  
quote"

# RECAP STORYBOARD



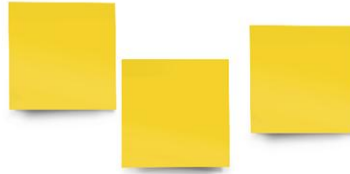
## RECAP STORYBOARD

Use the following space to organize your work so far.  
Use post it to discuss with your team relevant content before moving to actual slides.

### Challenge



### Context



### Needs

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**09.00 — 09.15**

# **DAY 2**

# **WELCOME!**

Grow your own food	You have traveled to more than 5 countries	You have learned a dance in the last 12 months	You have a driving license	You like to cook
You are not on Instagram	You have run a marathon	You have been to ESADE's Rambla de Innovación before	You're going on vacation next month.	You have a pet
You have a favorite color when using post-its	You play a musical instrument	<b>bingo</b>	You wear black shoes today	You speak three or more languages.
You are left-handed	You have read all the Harry Potter books.	You play sports	You don't have a driver's license	You have seen the EuroVision contest this year
You have to explain your favorite music genre to others because it is unique.	You can tell a joke spontaneously	You've had a crazy idea about a topic lately and you want to share it.	You paint or draw as a hobby	You have heard of or have experience with Design Thinking?



# Agenda

## DAY 2

09.00 - 09.15	Day 2 Opening & plan for the day
09.15 – 10.00	Session 5 : Tools for creating and testing the solution (Solution Space)
10.00 – 11.00	Session 6: Course Transformation: Syllabus improvement with PBL (I)
11.00 - 11.30	<i>Coffee break</i>
11.30 - 13.00	Session 7 : Course Transformation: Syllabus improvement with PBL (II)
13.00 - 14.30	<i>Lunch break</i>
14.30 – 15.30	Session 7 : Course Transformation: Syllabus improvement with PBL (II)
15.30 – 16.00	Session 8 : Course transformation: Create Supporting slides
16.00 - 16.30	<i>Coffee break</i>
16.30 - 17.30	Session 10: Challenge development
17.30 – 18.00	Day 2 close and wrap up

# TOOLS FOR STUDENTS



## What is it?

An online whiteboard with templates for DT process

### **Technical-based** courses:

[https://miro.com/app/board/uXjVLPnGSK0=/?share\\_link\\_id=626323210028](https://miro.com/app/board/uXjVLPnGSK0=/?share_link_id=626323210028)



### **Science-based** courses:

[https://miro.com/app/board/uXjVLPnybPY=/?share\\_link\\_id=453446907949](https://miro.com/app/board/uXjVLPnybPY=/?share_link_id=453446907949)



# Missions

## What is it?

An instructions manual which explains to students what they need to do to apply the different tools in their project.

# TOOLS FOR STUDENTS



0

## SET UP

### TOOLS

Miro board  
MISSION 1  
Course syllabus



1

## DESIGN BRIEF

### TOOLS

Miro board  
MISSION 1  
Design Brief



2

## BENCHMARKING

### TOOLS

MISSION 2  
Actors Map  
Benchmark  
Competitors map  
STEEP Trends Analysis



3

## NEED/FINDING

### TOOLS

MISSION 3  
Interview Cards  
AEIOU Frame  
Affinity Diagram  
Personas



4

## SOLUTION CREATION

### TOOLS

MISSION 4  
Design Principles  
Brainstorming



5

## PRETOTYPING AND TESTING

### TOOLS

MISSION 5  
Prototype and test  
template  
Technical data sheet



6

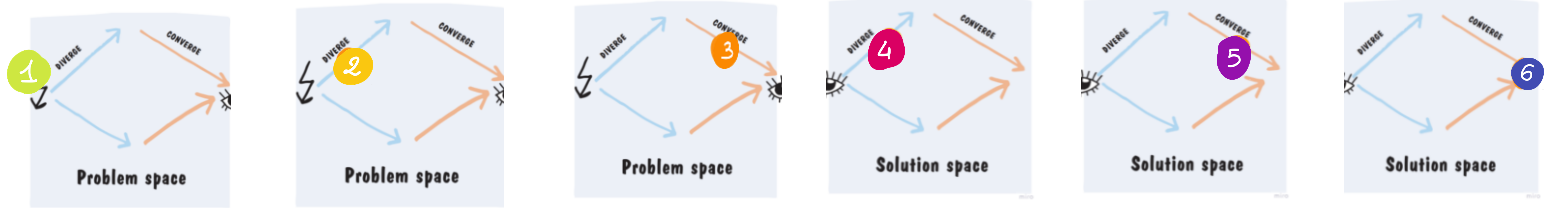
## PROJECT CLOSING

### TOOLS

MISSION 6  
Presentation storyboard  
Individual reflection doc  
Reflective diary template



# TOOLS FOR STUDENTS



0

1

2

3

4

5

6

SET UP

DESIGN BRIEF

BENCHMARKING

NEED/FINDING

SOLUTION  
CREATION

PRETOTYPING  
AND TESTING

PROJECT  
CLOSING

TOOLS

Miro board  
MISSION 1  
Course syllabus

TOOLS

Miro board  
MISSION 1  
Design Brief

TOOLS

MISSION 2  
Actors Map  
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Competitors map  
STEEP Trends Analysis

TOOLS

MISSION 3  
Interview Cards  
AEIOU Frame  
Affinity Diagram  
Personas

TOOLS

MISSION 4  
Design Principles  
Brainstorming

TOOLS

MISSION 5  
Prototype and test  
template  
Technical data sheet

TOOLS

MISSION 6  
Presentation storyboard  
Individual reflection doc  
Reflective diary  
template

# TOOLS

# FOR PROFESSORS

## DT meets STEM manual

Insert QR to manual

SCAN ME



## Supporting slide deck

Insert QR to manual

SCAN ME



**Day 2**

**Session 5**

**09.15 — 10.00**

# **TOOLS FOR SOLUTION SPACE**

# DESIGN PRINCIPLES

## What is it?

**Design principles** are guiding strategies that emerge from research and insights. They are specific, actionable directives used to evaluate and inspire potential solutions during the design process, helping teams focus on meaningful opportunities and discard irrelevant ideas.

## How to do it?

Start by reviewing the challenge, research findings, and personas. Identify key topics or themes and transform them into insights that reflect emotions, behaviours, and expectations. Then, write clear and memorable principles, focusing on project-specific guidelines rather than generic statements. Use real quotes and examples to make them intuitive.

# DESIGN PRINCIPLES

## DESIGN PRINCIPLES

Create a new board for every design principle you come up with.



REPRESENTATIVE IMAGE

### DESIGN PRINCIPLE n. X

Title

Description

Evidences

Quotes, observations...

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# BRAINSTORMING



## What is it?

**Brainstorming** is a creative technique used to generate a large quantity of ideas in a short time. It encourages open, non-judgmental sharing of ideas to spark innovation and collaboration among team members.

## How to do it?

Set a timer for 5 minutes of individual ideation, where each team member writes down their ideas using distinct colours. Afterward, share ideas without judgment, allowing new concepts to emerge through group discussion. Organize the ideas by themes or similarities to identify patterns and prioritize promising directions for development.

# BRAINSTORMING



## BRAINSTORMING

HOW TO GENERATE FUTURE HYPOTHESIS IN 4 STEPS: HYPOTHESIS IN 4 STEPS:

- 1- Set a timer and allow 5 minutes of individual ideation.
- 2- Once the 5 minutes are over, allow 2 extra minutes if ideas still flow.
- 3- Once all the participant have written down the future hypothesis, share them among the team. One member at a time, briefly describe the FH you have written/illustrated. IT'S NOT A MOMENT TO JUDGE OR DISCUSS THE IDEAS.

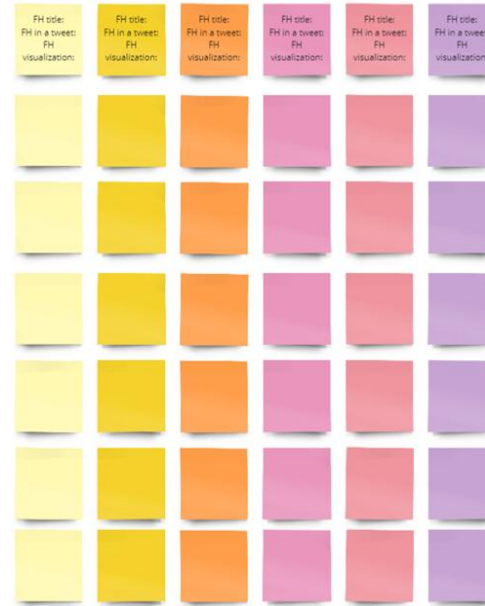
Usually during this share back phase new ideas or strategies to improve someone else's idea come up: Write down your new ideas on a new post it, and share it afterwards within the team.

- 4- Cluster similar future hypothesis.

Keep in mind the BRAINSTORMING GOLDEN RULES as you go:

1. Encourage wild ideas
2. Defer judgment
3. Go for volume
4. Build on the ideas of others
5. One conversation at a time
6. Be visual\* ←
7. Stay on topic
8. Headline, give it a title
9. One idea = one post it

\*USE THE "PREN" TOOL OR MAKE A QUICK SKETCH BY HAND, AND TAKE A PICTURE OF IT



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# PRODUCT HYPOTHESIS SELECTION

## What is it?

A **Product Future Hypothesis** (FH) is a potential solution or idea generated during brainstorming, selected based on its potential to teach the team something valuable about user needs. It serves as a testable assumption to guide early experimentation.

## How to do it?

Select the top three Future Hypotheses by voting on the ideas with the most learning potential. For each selected FH, decide what you want to learn and plan a quick experiment (prototype) to test it. The prototype should be a simple, fast way to gauge interest or validate assumptions, like showing a mockup or getting quick feedback from users.



# PRETOTYPE AND TEST

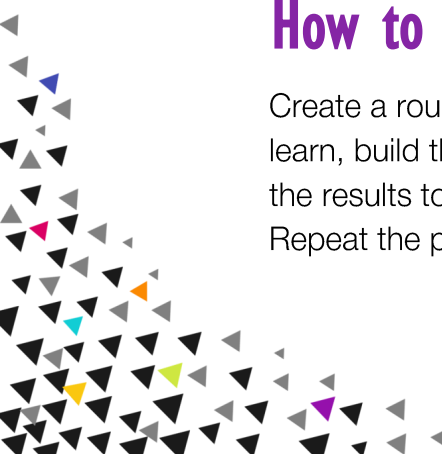


## What is it?

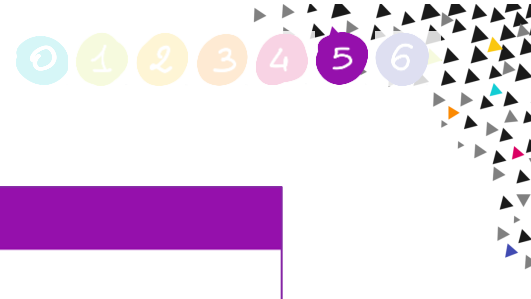
**Pretotyping** is a quick, low-fidelity version of your concept used to **test** a Product Hypothesis. It helps validate specific needs, gather user feedback, and uncover new questions, focusing on learning rather than polishing the final product.

## How to do it?

Create a rough, simple version of your idea that can be quickly tested. Prepare by defining what you want to learn, build the prototype, and test it with users to collect feedback. Keep it focused, build early, and reflect on the results to refine your approach. The goal is to learn from user reactions, not to present a finished product. Repeat the process as needed for deeper insights.



# PRETOTYPE AND TEST



## PRODUCT HYPOTHESIS PRETOTYPE AND TEST

PRETOTYPE NAME

PASTE HERE AN IMAGE  
OF YOUR PRETOTYPE

WHAT WORKED +



WHAT DIDN'T -



USER AND NEEDS

Whom is your FH for? And for what?

ASSUMPTION: WHAT DO YOU EXPECT?

e.g. people would love to personalize their working  
environment...

TESTED ON WHOM? HOW?

...

NEW QUESTIONS ?



NEW IDEAS !



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# BEST PRODUCT OPPORTUNITY

## SELECT PRODUCT FUTURE OPPORTUNITY

According to your test, which future hypothesis have you validated?  
Which is the most promising one?

Notes about the product  
opportunity

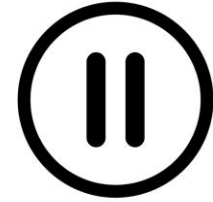
PASTE HERE ONE OF  
THE THREE MOST  
PROMISING AND  
VALIDATED FUTURE  
OPPORTUNITIES

PO -  
NAME

miro

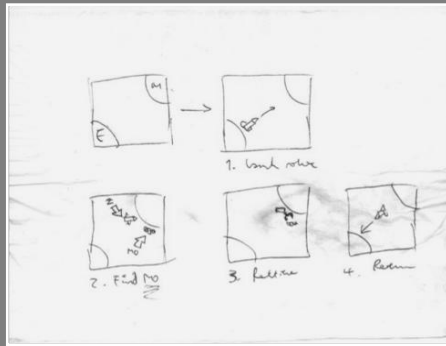
# Testing

Collaborate with your partner to develop a low-resolution prototype aimed at answering a specific question or conveying an idea.



PAUSE

Time needed: 10 minutes



**rough**

NASA "moon mission"



**rapid**

IDEO surgical tool



**right**

Feynman and the O-Ring

# Testing

It's time to test your idea, gather feedback, and make final adjustments to your solution. Find someone to test your prototype with, collect feedback on your idea, and refine the final details.

## PRODUCT HYPOTHESIS PRETOTYPE AND TEST

PRETOTYPE NAME

PASTE HERE AN IMAGE  
OF YOUR PRETOTYPE

WHAT WORKED +



WHAT DIDN'T -



USER AND NEEDS

Whom is your FH for? And for what?

ASSUMPTION: WHAT DO YOU EXPECT?

e.g. people would love to personalize their working environment...

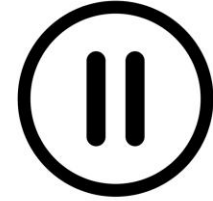
TESTED ON WHOM? HOW?

...

NEW QUESTIONS ?



NEW IDEAS !



PAUSE

Time needed: 15 minutes





# SOLUTION VISION



## TECHNICAL DATA SHEET

Use this space to describe the proposed solution.  
It can either be a description, a visual representation...

miro



**Teach-BEASTs**  
Teach to BE Aware Students



# ECONOMIC EVALUATION

Cost estimation

COSTS


REVENUE


miro

**Day 2**

**Session 7**

**11.30 — 13.00**

# **COURSE TRANSFORMATION I**

## **SYLLABUS IMPROVEMENT**

# Transformation of syllabus subject-matter content

## ACTIVITY 70 min

1. **Review your syllabus in terms of STRUCTURE (ECTS, no of students/teams, form of classes, students' profile, learning outcomes).**
2. **Identify the key content areas or themes** from your current syllabus that can be transformed into problem-solving or project-based units.
3. **List the major topics or units** in your course, then reframe each as a problem to be solved or as part of a project-based learning (PBL) component.
4. **Align** your subject-matter content selected with your journey (Tech or Science).

# Transformation of syllabus subject-matter content

## ACTIVITY 15 min

1. **Review your syllabus in terms of STRUCTURE (ECTS, no of students/teams, form of classes, students' profile, learning outcomes).**
2. **Identify the key content areas or themes** from your current syllabus that can be transformed into problem-solving or project-based units.
3. **List the major topics or units** in your course, then reframe each as a problem to be solved or as part of a project-based learning (PBL) component.
4. **Align** your subject-matter content selected with your journey (Tech or Science).

# Real-World Learning Outcomes Alignment

## ACTIVITY 15 min

1. **Ideate real-word challenge(s)** relevant to your course /discipline (e.g. climate change, healthcare, etc.)
2. **Identify key competencies or profesional skills** your students need to tackle these challenges
3. **Revise your current learning outcomes** to ensure they are directly linked to the skills and knowledge needed to address these real-word challenges



## ● Example — part I (5 min.)

### Ideate Real-World Challenge(s) Relevant to Your Course

#### Example

- In a **Civil Engineering course**, a real-world **challenge** could be *designing sustainable, disaster-resistant housing for regions prone to earthquakes.*

#### Example

- For a **Biology course**, the **challenge** could be *creating solutions to reduce the impact of invasive species on local ecosystems.*

## ● Example — part 2 (5 min.)

### Identify Key Competencies or Professional Skills Your Students Need to Tackle These Challenges

- **Example (Civil Engineering):** Competencies needed could include **structural analysis, sustainable materials, teamwork, and project management.**
- **Example (Biology):** Students would need skills in **ecological research, data analysis, problem-solving, and environmental policy knowledge.**

## ● Example — part 3 (5 min.)

### Revise Your Current Learning Outcomes to Ensure They Are Linked to These Skills

- **Example (Civil Engineering):**

*Before:* "Students will understand principles of building design."

*After:* "Students will apply principles of structural design and sustainable building materials to develop earthquake-resistant housing solutions."

- **Example (Biology):**

*Before:* "Students will understand the impact of invasive species."

*After:* "Students will research and analyze the impact of invasive species and propose strategies to mitigate their effects on local ecosystems."

# Transformation of syllabus subject-matter content

## ACTIVITY 45 min

1. Review your syllabus in terms of **STRUCTURE** (ECTS, no of students/teams, form of classes, students' profile, learning outcomes).
2. **Identify the key content areas or themes** from your current syllabus that can be transformed into project-based units.
3. **List the major topics or units** in your course, then reframe each as part of a project-based learning (PBL) component.
4. **Align** your subject-matter content selected with your journey (Tech or Science).

# Transformation of Syllabus Subject-matter content *cont.*

## ACTIVITY 45 min

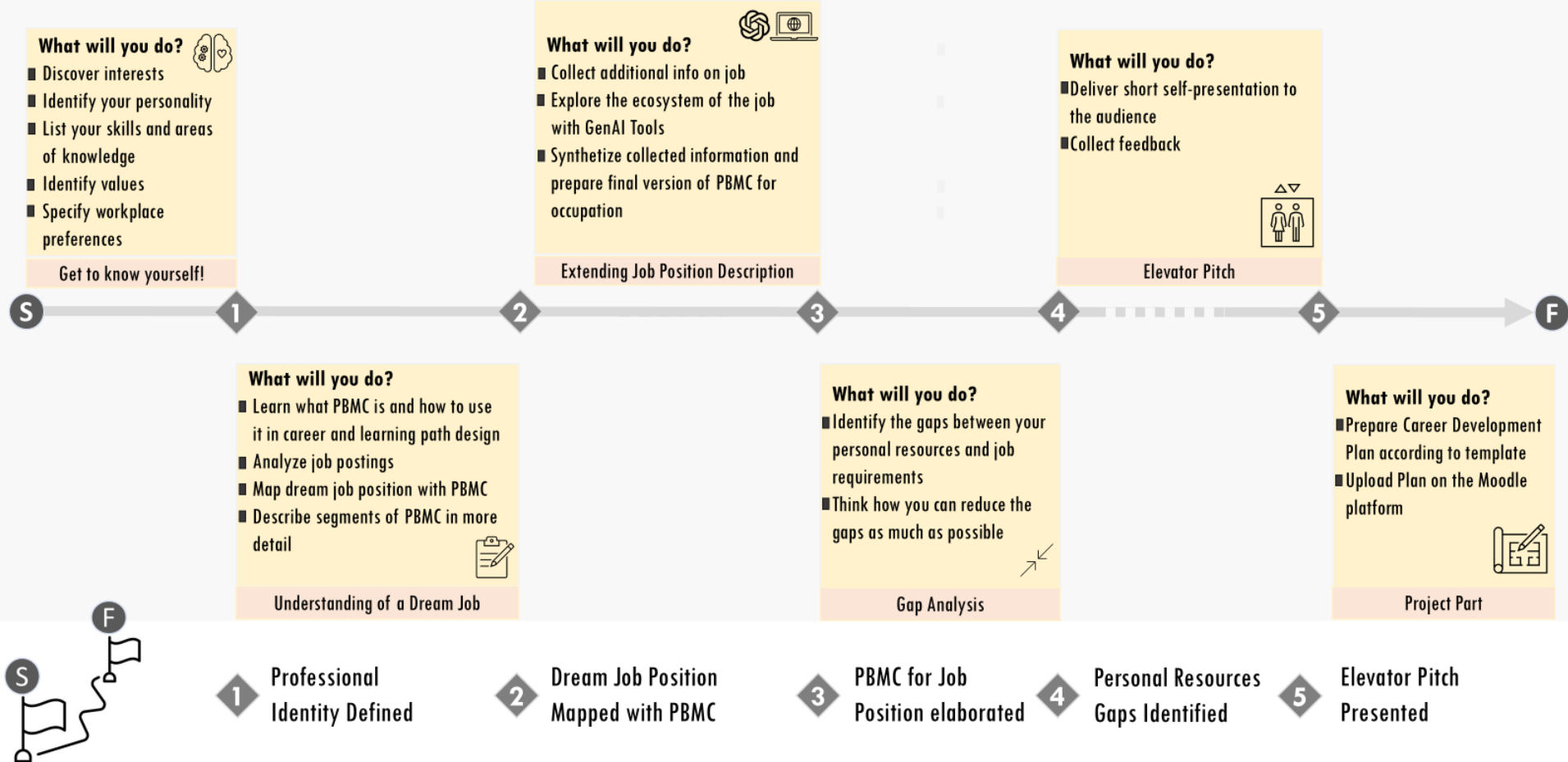
When reorganizing the content remember about areas that are related to following issues:

- **Challenge statement** formulation and understanding.
- **Teams' organization**
- **Resources** students will need to use to solve the challenge.
- **Project milestones**, that will break the challenge into smaller, actionable tasks or milestones that align with the content areas.
- **Time frame** for planned tasks.
- **Key points** in the project where students will **present their work** and **receive feedback** from peers and instructors.
- **Opportunities** for students to **revise their work** based on feedback collected before moving on to the next milestone.
- **Points** in the course where **reflection will be a key component**, encouraging students to **think about their learning process, not just the final product**.

# EXAMPLE



## Personal Business Model – Course Roadmap



**Day 2**

**Session 8**

**14.30 — 15.00**

# **COURSE TRANSFORMATION**

**Create supporting slides**

# Structuring the Content of the Slide Deck

## ACTIVITY 15 min

1. Review your transformed syllabus and identify **key content phases** that will guide students through the problem-solving or PBL process.
2. For each phase, draft **one or two slides** that introduce the content, focusing on how it connects to real-world problems.
3. Ensure each slide emphasizes **learning objectives**, the **problem or challenge** to be addressed, and how students will engage with the content through activities or projects.
4. Share your initial slide structure with a peer and gather feedback on clarity and organization.



# Embedding Interactive Elements

## ACTIVITY 15 min

1. **Choose a section** of your syllabus where students will iterate on a project or prototype.
2. **Design interactive elements** for your slide deck (e.g., embedded questions, polls, or activities) that encourage students to reflect on their progress and gather feedback.
3. For each interactive slide, **outline how students will use the feedback to refine their work**, and provide space for student reflection or discussion.
4. **Test your interactive slides** with a peer and gather feedback on their effectiveness and ease of use.

**Day 2**  
**Session 9**  
**15.30 — 17.00**

# CHALLENGE DEVELOPMENT

# STEM Innovation Challenge definition

Step #1 - Define Technical Learning Goals

Step #2 - Identify a Relevant Real-World Problem

Step #3 - Incorporate Interdisciplinary Elements

Step #4 - Complete Learning Goals with Soft Skills

Step #5 - Define your Aim

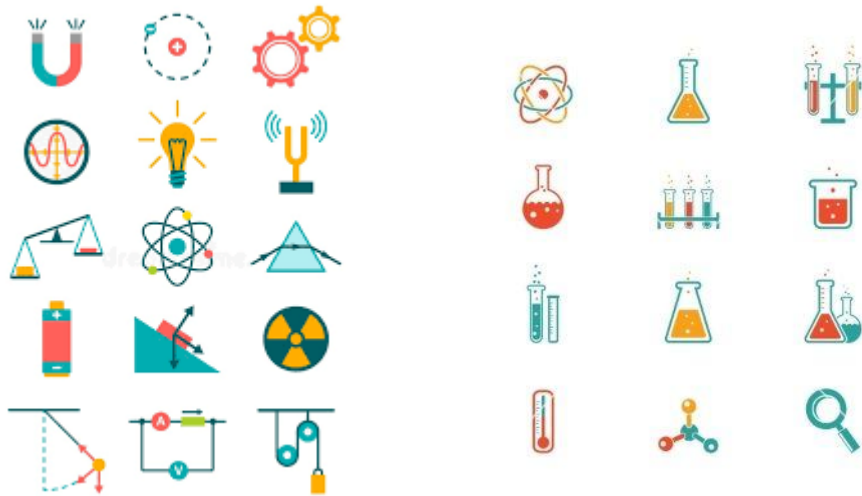
Step #6 - Create an Open-Ended Problem Statement

## Step #1 - Define Technical Learning Goals

Before creating challenges, it's crucial to align them with **specific learning objectives**.

**Content Mastery:** Ensure that challenges will need to incorporate key STEM concepts teach in your course

(e.g., forces in physics, chemical reactions, coding basics...).



## CONTEXT – Knowledge

The increasing amount of knowledge that is created everyday

Leads to Specialization

Means Complex Knowledge

## Step #2 - Identify a Relevant Real-World Problem

The second step of a STEM innovation challenge should be rooted in **addressing a real-world issue**.

This helps to motivate participants, making them more engaging and demonstrates practical applications, making the challenge relevant and impactful for students.

The problem can be found in three different ways:

- **Challenges created by professors:** professors define/choose a real problem and present it to class.
- **Challenges presented by firms or other organizations:**



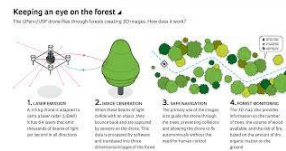
- Entities raised by professors.
- Entities raised by students.



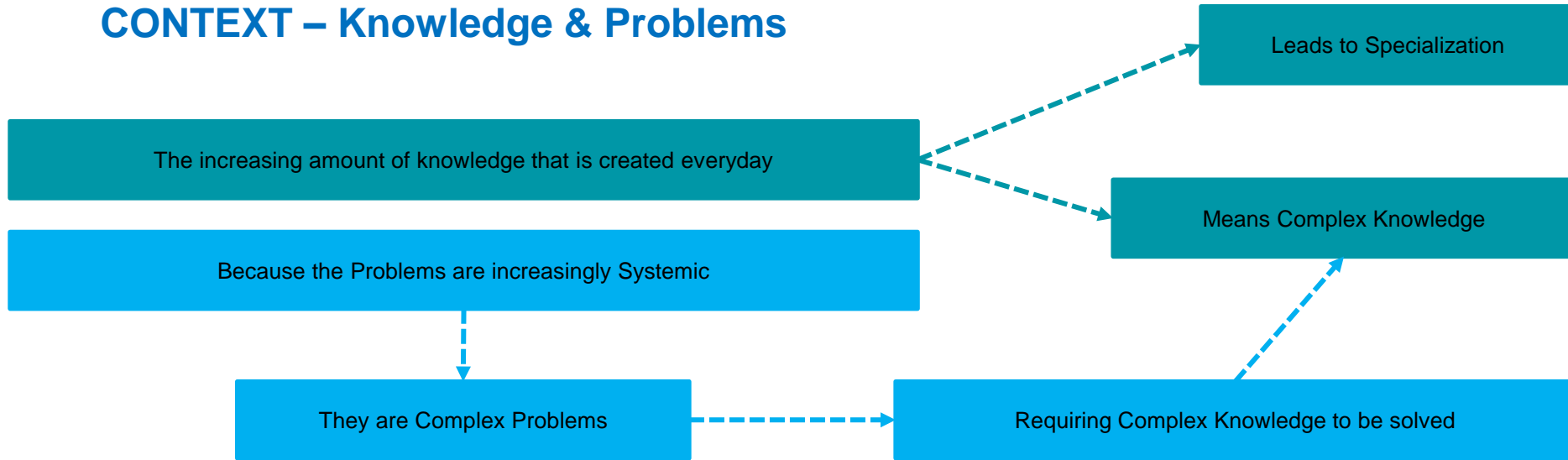
**Example 1:** “Develop a system that reduces plastic waste in urban areas using sustainable materials or innovative recycling methods.”



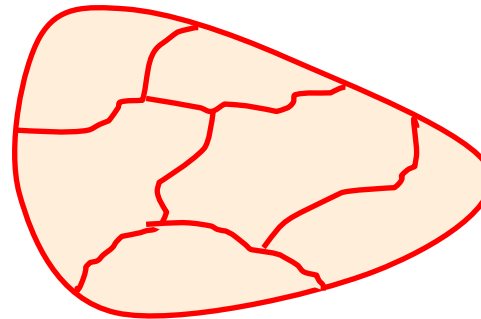
**Example 2:** “Develop a drone that can monitor forest health, using engineering to design the drone, technology for sensors and data collection, and biology for understanding environmental indicators.”



## CONTEXT – Knowledge & Problems



**A System**  
a set of interdependent elements

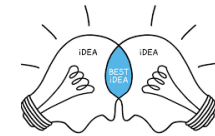


**Interactivity**  
**Iterativity**

**Note 1:** Universities can **help teachers and students** in adopting STEM Innovation Challenges in partnership with other entities with some organizational measures as data bases with contacts, online forms for applications for challenges, and for applications for grants.

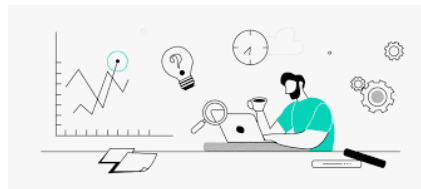


**Note 2:** Universities facing the actual **trend to develop a more intense collaboration with other organizations**, namely firms, can get a relevant contribute through challenges, because they serves the interest of the different entities in a concrete and practical way.



**Note 3:** STEM Innovation Challenges can also help **Research Centers** in different ways:

- To find interesting **students for research activities**.
- To find interesting **students for other activities** in addition to research (information search, diagramming, to make repetitive analysis, to make applications to grants, etc.).
- To find **new and fresh perspectives** over the researches under development or in conception.



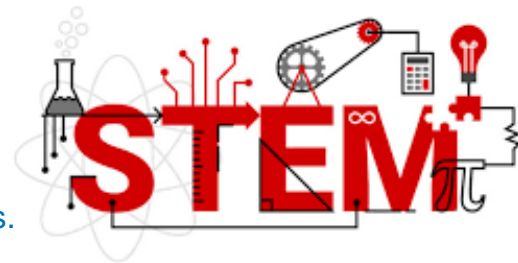


## Step #3 – Incorporate Interdisciplinary Elements

STEM innovation challenges should **leverage multiple disciplines** to solve problems.

A challenge should require participants to integrate knowledge from different STEM areas, such as:

- **Science:** Applying scientific principles like physics, chemistry, or biology.
- **Technology:** Using software, coding, or digital tools.
- **Engineering:** Designing and building prototypes.
- **Mathematics:** Using calculations, modelling, or data analysis to justify decisions.



Because the **amount and diversity of knowledge** necessary to solve the problem we talk in **TEAMS** to deal with the **STEM Innovation Challenge...**

## CONTEXT – But what kind of TEAMS?

These teams has to be **Innovation Systems** (Learning Systems is another name).

The requirements for **successful Innovations Systems** are:

- They need **Competences\***.
- **Several** competences.
- **Complementary** competences.
- That **cooperate** between them.
- To be **innovative** (create innovations).
- **Relevant** innovations.
- Successful in the **market**.



**Very difficult to achieve  
and to keep successful**



**Proof**



**Change of  
Paradigm**

\* **Competences:** capacity to answer concrete questions and solve concrete problems.



## Step #4 – Complete Learning Goals with Soft Skills

Beyond the hard skills, nowadays the **labour market demands professionals with strong soft skills** too.

The challenge can be a beautiful opportunity to enable the development of this kind of skills by students, as for example:

- **Problem-Solving Skills:** Focus on challenges that encourage critical thinking, innovation, and real-world problem solving.
- **Collaboration & Communication:** Design tasks that require teamwork and effective communication, which are vital in STEM fields.
- **Creativity and Innovation:** Allow space for open-ended solutions, fostering creativity.



Challenges involving different entities and/or disciplines/courses, can provide rich experiences, new contacts, improved relationships, and a capability of teams (team building) for the students involved.



Entities and/or disciplines/courses, can provide rich experiences, new contacts, improved relationships, and a capability of teams (team building) for the students involved.

## Step #5 – Define your Aim

Different projects in different scientific areas can have various aims:

- The aim of the process can be **to develop several solutions** from the same challenge until a **unique solution** is gained.
- Can be **to achieve different perspectives** on a challenge, e.g. problem definition, problem solving process, knowledge(s) to use, etc.
- Can be **to compare different approaches** in terms of time, costs, resources involved, etc.
- Can be **to integrate different parts of the project**, developed by different teams to shorten time and costs.



## Step #6 – Create an Open-Ended Problem Statement

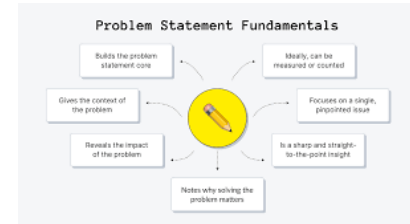
Allow **flexibility** in how participants can approach the challenge.

The problem statement should encourage **multiple solutions**, fostering innovation.

The ideal, is **to present to students a need**, the challenge to be generic and not an already given problem.

Characteristics of a **good problem statement**:

- **Broad enough** to allow creative thinking.
- **Focused enough** to provide structure.
- Leads to both **practical and innovative solutions**.



**Example Problem Statement:** “How can we use AI and robotics to improve food security in urban areas?”

Do You remember the **Changes of PARADIGM?**

**Day 2**  
**Session 10**  
**17.00 — 17.30**

# CHALLENGE DEVELOPMENT

## STEM Innovation Challenge definition

## Step #1 - Define Technical Learning Goals

Contents from your course? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Step #2 - Identify a Relevant Real-World Problem

Created/choosed by professor

☐

Firm

From firm raised by professor

☐

From firm raised by students

☐

## Step #3 - Incorporate Interdisciplinary Elements

Engineering?

☐

Technology?

☐

Science?

☐

Mathematics?

☐

## Step #4 - Complete Learning Goals with Soft Skills

Problem Solving Skills

☐

Collaboration &amp; Communication

☐

Creativity &amp; Innovation

☐

## Step #5 - Define your Aim

Develop several solutions

→ To gain unique solution

☐

Achieve different perspectives

☐

Compare different approaches

☐

Integrate different parts of the project

☐**Lets Create a STEM Innovation Challenge!!!**

## Step #6 - Create an Open-Ended Problem Statement

Broad enough to allow creative thinking

☐

Focused enough to provide structure

☐

Leads to both practical and innovative solutions

☐

Example Problem Statement: How can we use AI and robotics to improve food security in urban areas?

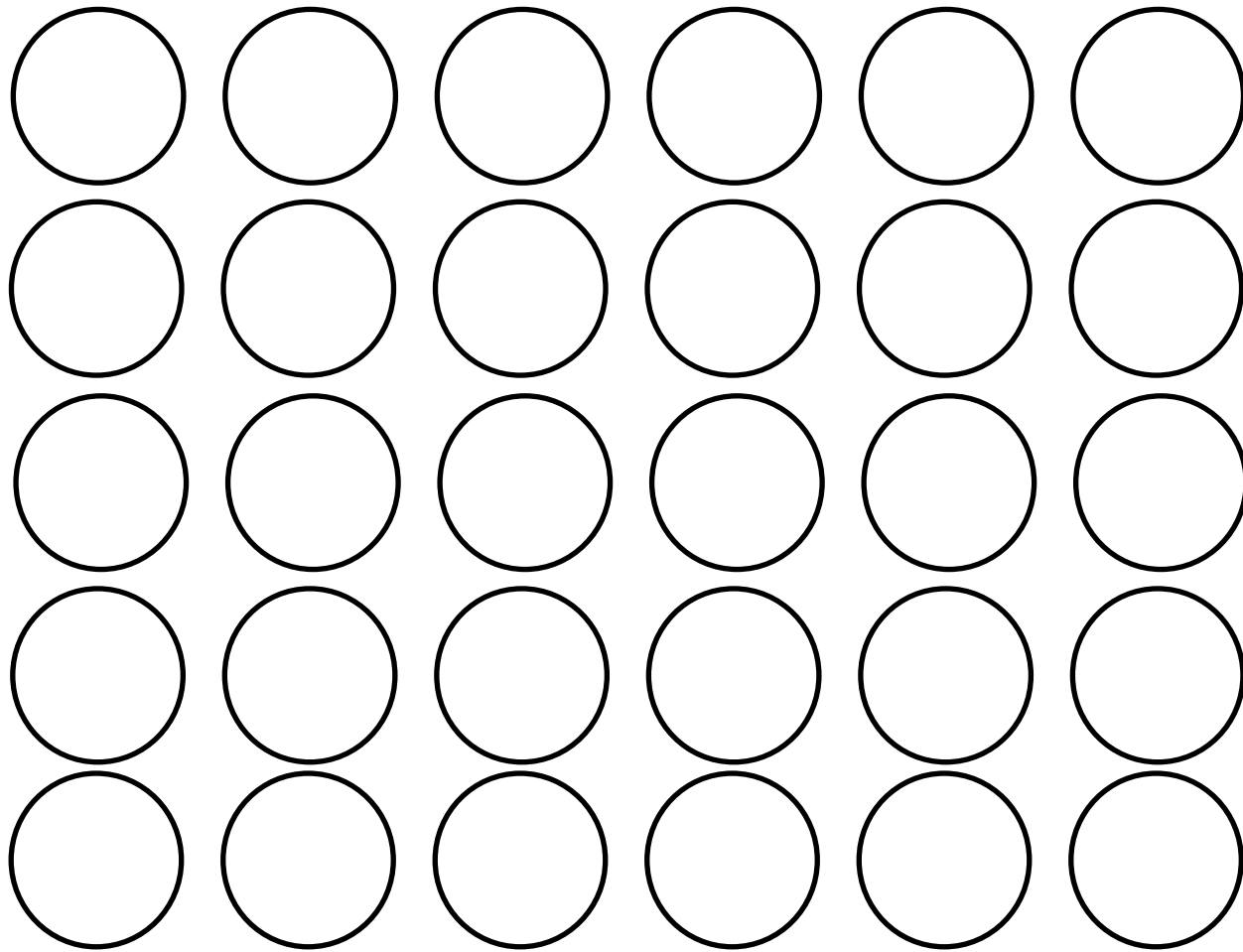
**09.00 — 09.15**

**DAY 3**

**WELCOME!**



# IDEO Circles Challenge



ACTIVITY 5 min

# Agenda DAY 3

October 23rd, 2024

Venue: Fusion Point, Rambla of Innovation, ESADE Campus Sant Cugat

09.00 - 09.15

Day 3 Opening & plan for the day Esade

09.15 - 11.00

Session 11: Evaluation of PBL courses UNIBO

*11.00 - 11.30*

*Coffee break*

11.30 - 13.00

Session 12: Course transformation cont. UNIBO

*13.00 - 15.00*

*Lunch break*

15.00 - 16.00

Session 13: Supporting structure Esade

*16.00 - 16.15*

*Coffee break*

16.15 - 16.45

Session 14: Share & Feedback: Course Transformation Esade

16.45 - 18.00

Workshop close and feedback Esade

**Day 3**

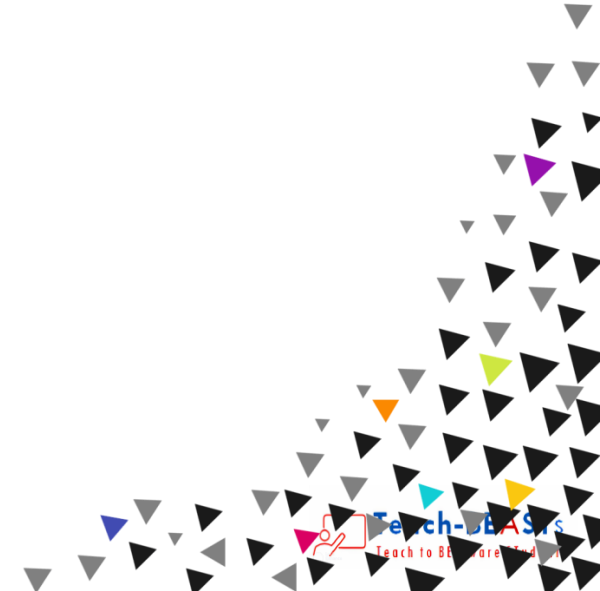
**Session 11**

**09.15 — 11.00**

# EVALUATION IN PBL COURSES

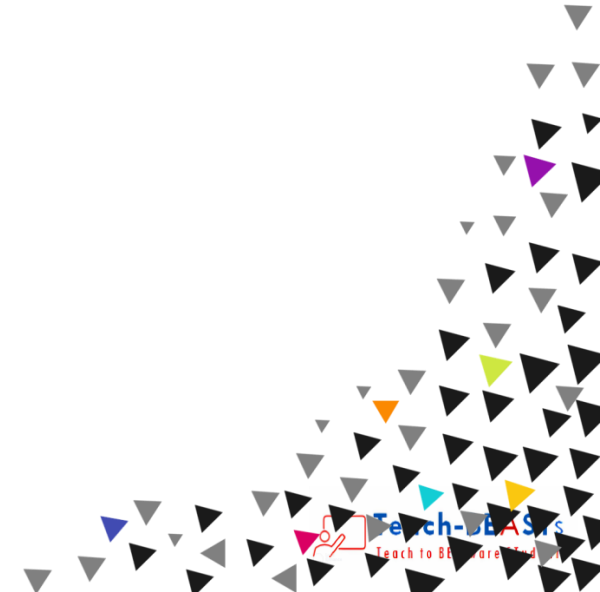
# Session 11 Objectives

1. What are the challenges in the evaluation of PBL?
2. How can those challenges be overcome?
3. What tools are available in the toolkit?
4. What is experiential learning?
5. How to evaluate an individual reflection?



# Session II Agenda

09.15 – 09.30	Groupwork exercise
09.30 – 10.00	The rationale of evaluating PBL
10.00 – 10.20	Evaluating an individual reflection
10.20 – 10.30	Experiencing reflective writing
10.30 – 11.00	Develop your own evaluation



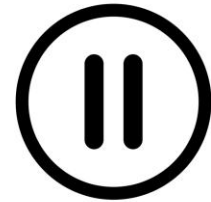
# Evaluation on the fly

**Form Groups:** Divide into 5 groups.

**Design Phase:** Spend 5 minutes designing the best paper airplane you can. The goal is for it to fly as far as possible. You can use information available online.

**Create Your Airplane:** Using a sheet of paper, build your airplane in 3 minutes. Make sure it's unique and easy to identify.

**Wait for Instructions:** Once finished, wait for further instructions from the facilitator.



PAUSE

Time needed: **10** minutes

# EVALUATION IS AN ONGOING DISCUSSION


nature

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## Project-based learning: an analysis of cooperation and evaluation as the axes of its dynamic

[Berta de la Torre-Neches](#) , [Mariano Rubia-Avi](#), [Jose Luis Aparicio-Herguedas](#) & [Jairo Rodríguez-Medina](#)

*Humanities and Social Sciences Communications* **7**, Article number: 167 (2020) | [Cite this article](#)

**12k** Accesses | **11** Citations | **14** Altmeter | [Metrics](#)

### Abstract

Project-based learning is an active method that develops the maximum involvement and participation of students in the learning process. It requires the teacher to energize the learning scenario by promoting the cooperation of students to investigate, make decisions

- Evaluation should offer the students opportunities to **learn through the evaluation process**.
- The students describe **imbalances in the efforts** made to carry out the assignments.
- Students engage in **different experiences and dynamics**.
- Students **acquire skills and attitudes** hard to evaluate.

# GOALS FOR EVALUATION

## Goal 1 Compare

Provide a mark which can be fitted in the current evaluation system.

## Goal 2 Individual

Account for individual efforts.

## Goal 3 Group

Account for group results.

## Goal 4 Learn

Enhance students learning.

## Goal 5 Skill & Attitude

Account for skills and attitudes developed.



# Tool 1: Output Evaluation

## Group Evaluation

Create a group evaluation, which will evaluate the final output of the course. It might be:

- Write Report
- Presentation
- Multimedia Content
- Prototype or Product

## Evaluation Grid

Create a detailed rubric that outlines the key components to be assessed, such as creativity, presentation skills, and adherence to guidelines. Share this rubric with the students in advance.

1

3

4

# Tool 1: Output Evaluation

Criteria	Rubric	Evaluation
Content	Is the context accurately represented? Does it cover all relevant needs? Are the organizational processes clearly analyzed and mapped? Are the stakeholders correctly presented, and have all their needs been identified? Are the performances properly designed? Does it use simulation elements to support the design?	The context is well represented, and the needs identified during prototyping are generally reported, although the food truck prototype does not delve into why some customers might not buy food from the truck. What are the hidden needs and obstacles? The company's needs are well described. There is no evidence of process mapping. The solution is interesting and relevant to the context, even though the make-or-buy analysis is not detailed. How long would it take a person to conduct the market analyses that would be outsourced to the software? Is this cost, multiplied by 8 openings, greater or less than the investment in the software plus the remaining analysis cost? The assessment of the organizational impact of the solution "in the context of a lack of delegation capability" is not thoroughly explored. The performance design is superficial
Methodological rigor	Are the relevant tools used correctly? Is the pertinent literature cited and used?	The tools are used correctly, although the results of the qualitative prototypes could have benefited from quotes to reinforce the findings. The Business Model Canvas (BMC) is missing, although it was shared with the company during the presentation. Why was it valuable for the presentation but not for the report? There are no references to the literature.
Creativity and independent contribution	Did the team manage to go beyond what was asked? Is what was presented surprising or remarkable in some way?	The executive summary provides a clear and effective overview of the project. The social impact of the project is considered. The infographic is aesthetically pleasing and provides relevant information about the solution. The video promotes and narrates the details of the solution but does not focus on the company's needs.
Work organization	Is it clear who did what and how the project was organized? Was the time that the team and individuals spent on the project reported?	The division of roles is clearly defined. The time allocated by each member to each individual activity is reported.
Presentation	Is the presentation clear and well-prepared? Are all materials polished? Does the presentation present a plausible story for the organization's evolution?	The presentation is clear and well-prepared. It effectively presents the solution, starting from the company's needs.
Final Grade	27	





This is what we call  
social loafing





# Tool 2: Peer Evaluation

Journal of Marketing Education

Impact Factor: 2.8

5-Year Impact Factor: 3.4



Available access | Research article

First published online May 19, 2008

## Social Loafing on Group Projects: Structural Antecedents and Effect on Student Satisfaction

[Praveen Aggarwal](#) and [Connie L. O'Brien](#) [View all authors and affiliations](#)

[Volume 30, Issue 3](#)

<https://doi-org.ezproxy.unibo.it/10.1177/0273475308322283>



Contents



PDF / ePub

... More

### Abstract

To respond to the expectations of the industry and business school accreditation bodies, marketing faculty have been making extensive use of group projects in their curricula. A common problem with the use of student groups, however, is

### Evaluate your mates on a 1 to 10 scale

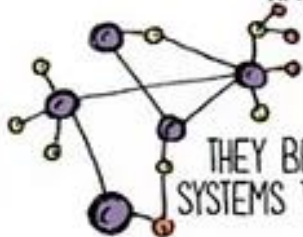
TEAM:			To A	To B	To C	To D	To E
From A	Collaboration and Teamwork	-					
	Communication and Clarity	-					
	Responsibility and Accountability	-					
	SCORE		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
From B	Collaboration and Teamwork		-				
	Communication and Clarity		-				
	Responsibility and Accountability		-				
	SCORE	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
From C	Collaboration and Teamwork			-			
	Communication and Clarity			-			
	Responsibility and Accountability			-			
	SCORE	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!



THEY LEARN  
PROJECT MANAGEMENT



THEY GROW MORE  
EMPATHETIC



THEY BECOME  
HACKERS AND  
REBELS

THEY BECOME  
SYSTEMS THINKERS



THEY BECOME EXPLORERS



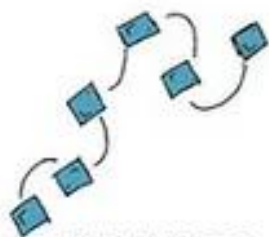
THEY BECOME WILDLY  
AND UNABASHDELY  
DIFFERENT



THEY ARE  
MORE ENGAGED  
IN THE LEARNING



THEY BECOME  
PROBLEM-SOLVERS



THEY ENGAGE  
IN ITERATIVE  
THINKING



THEY THINK DIVERGENTLY  
THINKING OUTSIDE THE BOX BY  
THINKING DIFFERENTLY ABOUT THE BOX



THEY MAKE DEEP  
CONNECTIONS BETWEEN  
IDEAS



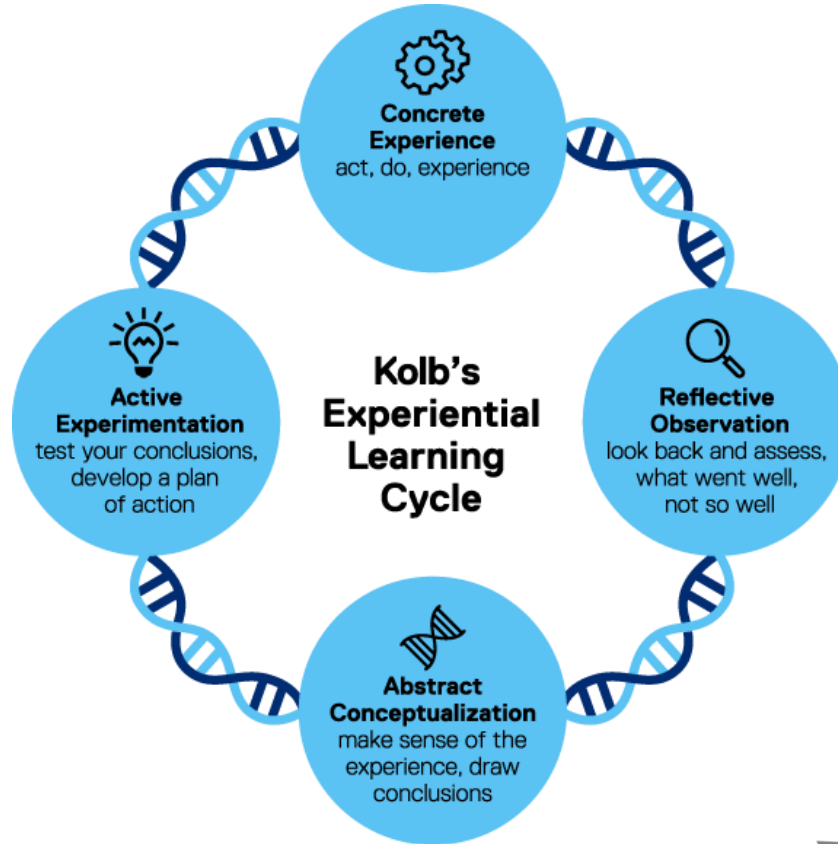
THEY ARE READY FOR  
THE CREATIVE ECONOMY



THEY LEARN TO TAKE  
CREATIVE RISKS

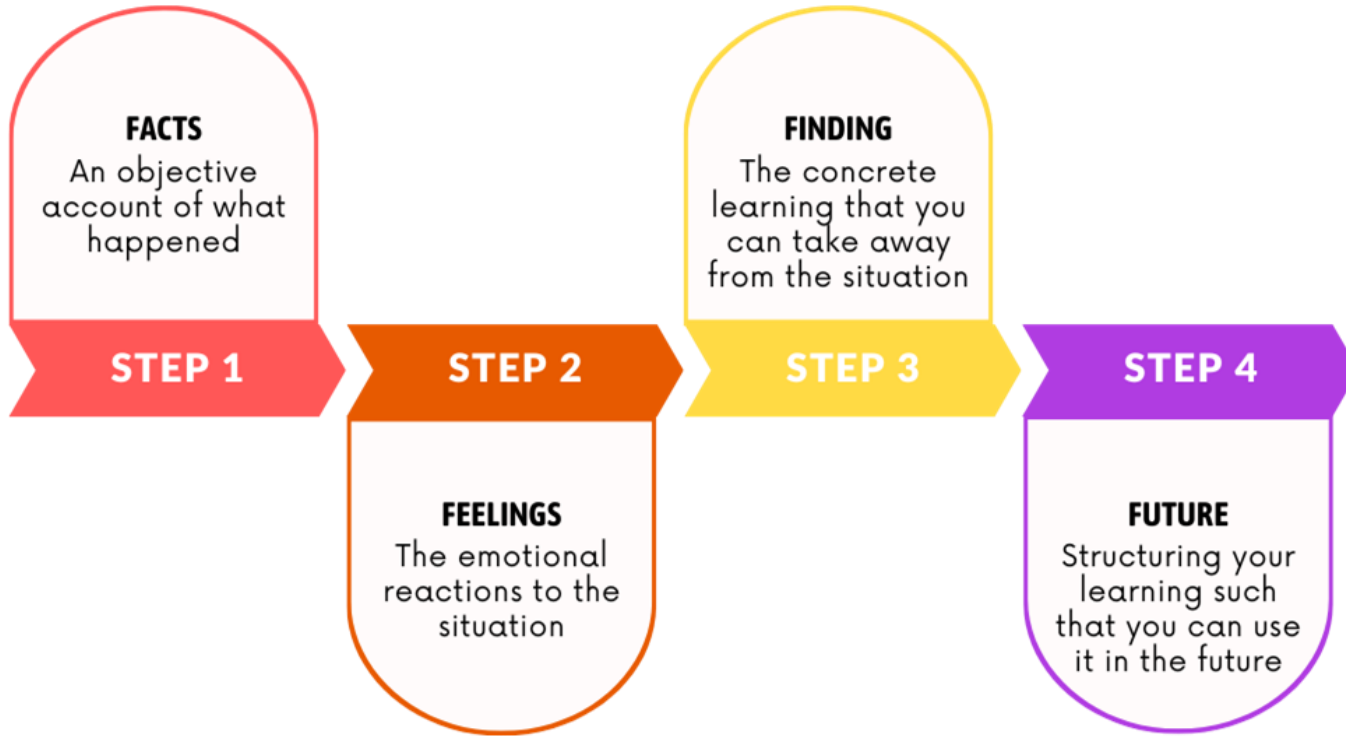


# Experiential Learning



J. Dewey, 1938  
D. Kolb, 1984  
G. Gibbs, 1988

# Four F's of Active Reviewing



Adapted from Roger Greenaway's 'The Active Reviewing Cycle'



# Supporting tool: Reflective Diary

Phase	Supporting questions	Milestone 1	Milestone 2	Milestone 3
FACT	<i>What specific activities did you conduct? Describe in detail what happened during these activities. Focus only on objective facts: What have you been doing? How did people respond? Did you notice any interesting facts? What was one of the challenges you faced while doing this activity? How did you figure out the solution?</i>			
FEELINGS	<i>How did you feel during these activities? Reflect on your emotions and reactions. How did other people involved feel during the activities? Observe and describe their emotional responses</i>			
FINDING	<i>Based on what happened and how people felt, what did you learn during these activities? Abstract from what you observed and consider how you can generalize these learnings. What broader insights can you draw from your experiences?</i>			
FUTURE	<i>How will you apply what you have learned in the future? Think about how you can apply these lessons to other challenges you face. How can what you learned in this activity be applied to your life and work? What advice would you give to another group working on this activity based on your experiences and insights?</i>			

# Tool 3: Final Reflection

## Individual Reflection

*Rationale: Experience plus reflection equals learning. - John Dewey*

Experiential learning transcends mere participation in activities, demanding reflection, critical analysis, and synthesis to maximize the effectiveness of your course experiences and prepare you for your future professional life. This guide aims to facilitate a deep, personal reflection on your journey throughout the course, inviting you to explore the learnings and insights gained from your diverse experiences, contemplate your professional and personal growth, and identify strategies to further enhance your learning. We encourage you to approach this reflection not as a routine task, but as a valuable opportunity to create a meaningful record of your experiences, consolidate your knowledge, and recognize your progress. By engaging in this reflective process, you'll be better equipped to connect theory with practice, identify patterns in your learning and decision-making, develop critical thinking skills essential for your professional future, and cultivate self-awareness and emotional intelligence. To make the most of this document, set aside dedicated time for reflection, review your course materials, notes, and experiences, consider both successes and challenges, be honest and specific in your observations, and focus on actionable insights for future growth. Remember, the depth and quality of your reflection directly impact the value you'll derive from this exercise, so embrace this opportunity to gain clarity on your progress and chart a course for your continued development as a professional. For more information on the significance of reflective practice in experiential learning, please refer to the annex.

### Design Thinking Mindset

Before writing the Individual Reflection, it is suggested that the Design Thinking Mindset questionnaire, available at <https://designthinkingmindset.unibo.it/>, be completed to support the reflection on different components of design thinking.

### Format

Your reflective paper should capture the essence of your learning journey throughout the

- Ask students to fill a **two pages reflection**
- Use the **provided instructions**
- Provide clear guidelines for **evaluations based on:**
  - Variety
  - Depth
  - Relevance

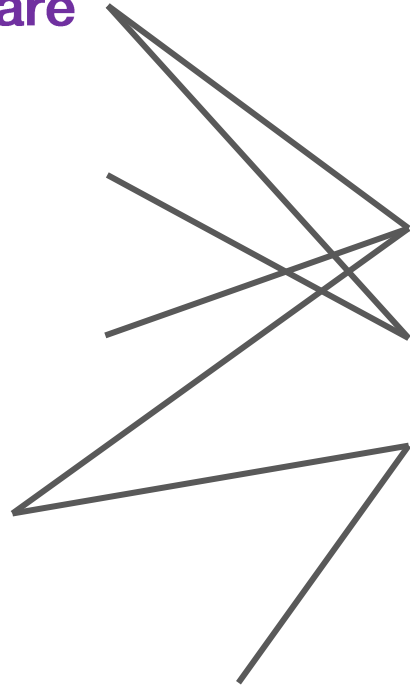
Goal 1 Compare

Goal 2 Individual

Goal 3 Group

Goal 4 Learn

Goal 5 Skill & Attitude



Tool 1: Output Evaluation (70%)

Tool 2: Peer Evaluation (10%)

Tool 3: Final Reflection (20%)





# Evaluate the reflections

# Evaluate the reflection

*You will be provided with a set of Reflections. Read them individually, and then discuss in your group the evaluation of each dimension using the following template:*

**Variety** - Evaluate the range of aspects the learner has included in their reflection.

**Depth** - Assess how thoroughly the learner has reflected on each aspect presented:

- Have they provided specific examples to support their reflections?
- Have they abstracted and generalised their conclusions?
- Have they considered how to apply their learnings in future situations?

**Relevance** - Determine the applicability of the reflected aspects to the student's professional life:

- Has the learner connected their reflections to the course content?
- Have they built upon the theoretical material and frameworks provided during the course?
- Are their insights relevant to their future professional development?



PAUSE

Time needed: **20** minutes





# Reflect the evaluations

# Reflect the evaluation

*Using the following question, reflect on what you learnt in the previous experience*

## **FACT**

What specific activities did you conduct? Describe in detail what happened during these activities. Focus only on objective facts: What have you been doing? How did people respond? Did you notice any interesting facts? What was one of the challenges you faced while doing this activity? How did you figure out the solution?

## **FEELINGS**

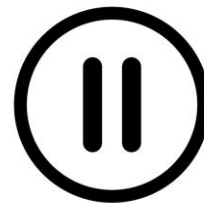
How did you feel during these activities? Reflect on your emotions and reactions. How did other people involved feel during the activities? Observe and describe their emotional responses

## **FINDING**

Based on what happened and how people felt, what did you learn during these activities? Abstract from what you observed and consider how you can generalize these learnings. What broader insights can you draw from your experiences?

## **FUTURE**

How will you apply what you have learned in the future? Think about how you can apply these lessons to other challenges you face. How can what you learned in this activity be applied to your life and work? What advice would you give to another group working on this activity based on your experiences and insights?



PAUSE

Time needed: 10 minutes

**Day 3**

**Session 12**

**11.30 — 13.00**

# **COURSE TRANSFORMATION**

## **Evaluation**



**Day 3**

**Session 13**

**15.00 — 15.45**

# **SUPPORT MANAGING STUDENTS THROUGH PROJECT JOURNEY**

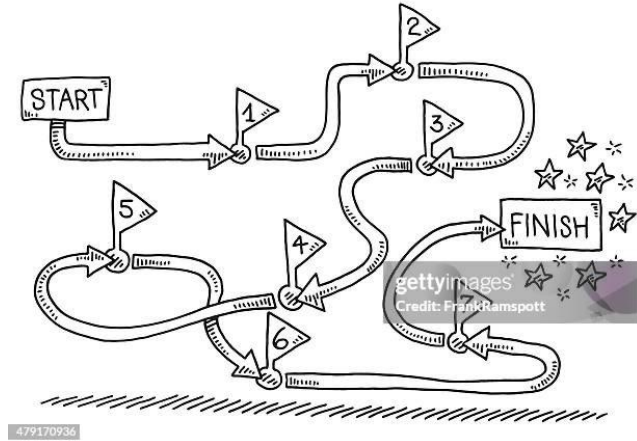
# Manage Students

1. Set clear expectations
2. Open communication
3. Promote collaboration
4. Identify and address challenges

# Manage Students

## Set clear expectations

1. Learning objectives
2. Timeline: course plan
3. Deliverables
4. Evaluation criteria



# Design Thinking

## LEARNING OBJECTIVES

1. Apply the Design Thinking methodology in order to solve business and societal problems.
2. Identify market opportunities based on desirability: understand how to explore unmet user needs.
3. Create solutions that are desirable.
4. Validate your ideas: create early prototypes and experiments to get initial feedback for your ideas.

## STRUCTURE

### MULTI-DIMENSIONAL LEARNING

### EXPECTED LEARNINGS

#### KNOWLEDGE

What we know and understand

- Design Thinking methodology and process.
- Human centric design techniques.
- Experiments for learning

#### SKILLS AND COMPETENCIES

How we use this knowledge

- Creativity, innovation and entrepreneurship skills
- Collaboration and teamwork skills
- Communication skills

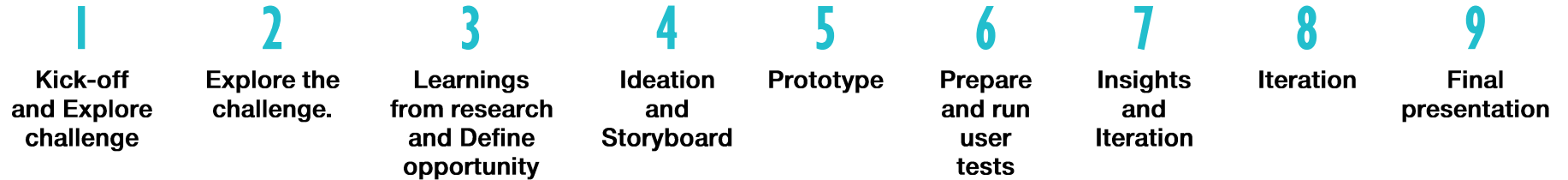
#### VALUES, ATTRIBUTES AND ATTITUDE

How we behave and engage

- Growth mindset
- Empathy
- Learning to learn

# Course Plan 2024

## STRUCTURE



Interviews



User Tests



# Design Thinking

## EVALUATION

## STRUCTURE

The final grade is made up as follows:

**30%**

Assignments during the  
course

**30%**

Final deliverable

**10%**

Peer evaluation

**30%**

Individual assignment

# Manage Students

1. Set clear expectations
2. Open communication
3. Promote collaboration
4. Identify and adress challenges

# Manage Students

## Open communication

1. Address doubts
2. Feedback
3. Check-ins



# Manage Students

## Feedback

### 1. Be Specific and Actionable

**Specificity:** Instead of general comments like “Good job,” provide detailed feedback. For example, “Your analysis in the second paragraph was strong because you used relevant evidence.”

**Actionable Steps:** Offer clear, actionable steps for improvement. For instance, “To strengthen your argument, consider adding more data to support your claims.”

### 2. Balance Positive and Constructive Feedback

**Highlight Strengths:** Start by acknowledging what the student or team did well. This builds confidence and reinforces good practices.

**Constructive Criticism:** Follow up with areas for improvement, but frame them positively. For example, “Your presentation was engaging. To make it even better, try to incorporate more visual aids.”

### 3. Encourage Self-Reflection

**Self-Assessment:** Before giving your feedback, ask students to reflect on their own work. This makes them more receptive to your comments and helps them develop critical thinking skills.

**Guided Reflection:** Provide questions or prompts to guide their self-assessment, such as “What part of your project are you most proud of?” or “What challenges did you face?”

# Manage Students

## Feedback

### 4. Create a Trusting Environment

**Open Dialogue:** Foster an environment where students feel safe to ask questions and make mistakes. This encourages them to view feedback as a tool for learning rather than criticism.

**Regular Check-Ins:** Schedule regular feedback sessions to discuss progress and address any concerns early on.

### 5. Use a Growth Mindset Approach

**Effort and Improvement:** Praise effort and progress rather than innate ability. For example, “I can see you’ve put a lot of effort into this project, and your research skills have really improved.”

**Encourage Persistence:** Emphasize that mistakes are part of the learning process and encourage students to keep trying.

### 6. Timely and Contextual Feedback

**Immediate Feedback:** Provide feedback as soon as possible after the task. This helps students connect your comments with their actions.

**Contextual Relevance:** Tailor your feedback to the specific task and the individual or team’s needs.

# Manage Students

## Feedback

### 7. Incorporate Peer Feedback

**Peer Reviews:** Encourage students to give feedback to each other. This not only helps them learn to critique constructively but also to receive feedback from multiple perspectives.

**Structured Sessions:** Guide peer feedback sessions with clear criteria and examples of constructive comments.

### 8. Avoid the “Feedback Sandwich”

**Direct Approach:** Instead of the traditional “feedback sandwich” (positive-negative-positive), be direct but supportive. Acknowledge strengths, address areas for improvement, and provide a clear path forward.

# Manage Students

1. Set clear expectations
2. Open communication
3. Promote collaboration
4. Identify and address challenges

# Manage Students

Promote collaboration

Guided



Missions



Autonomy

# Manage Students

Promote collaboration



# Manage Students

1. Set clear expectations
2. Open communication
3. Promote collaboration
4. Identify and address challenges

# Manage Students

Identify and adress challenges

1. Time Management
2. Group conflict



# Manage Students

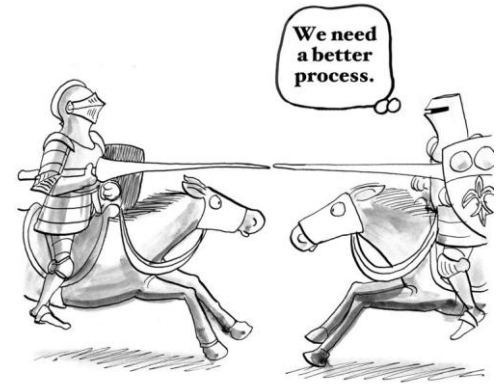
## Group conflict

Conflict is a clash between individuals that arises out of a difference in opinions, attitudes, interests, behaviors, or perceptions there of.

(Glasl, F.)

Conflict is part of human nature

Conflict is a driver of change



# Manage Students

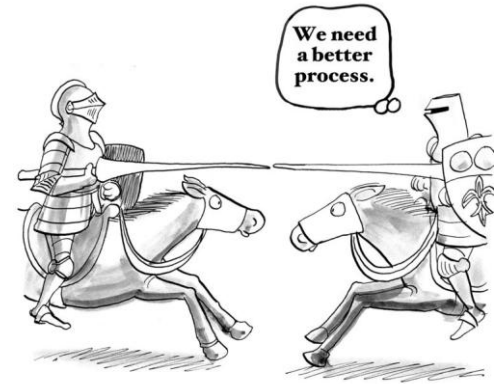
## Group vs Team

A team can be defined as a small number of people with complementary skills who are committed to a common purpose, performance goals, and approach for which they hold themselves mutually accountable.

(Katzenbach, Smith 2005)

Teamwork is essential for performance

Good teamwork is a guarantee for conflict

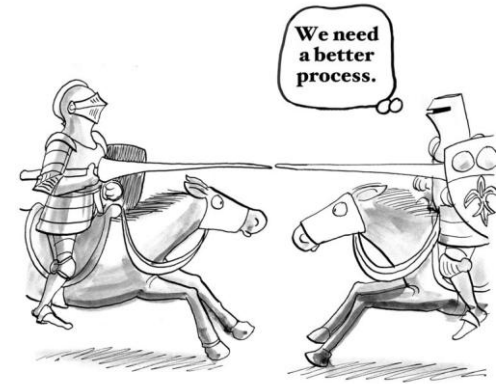


# Manage Students

## Group conflict

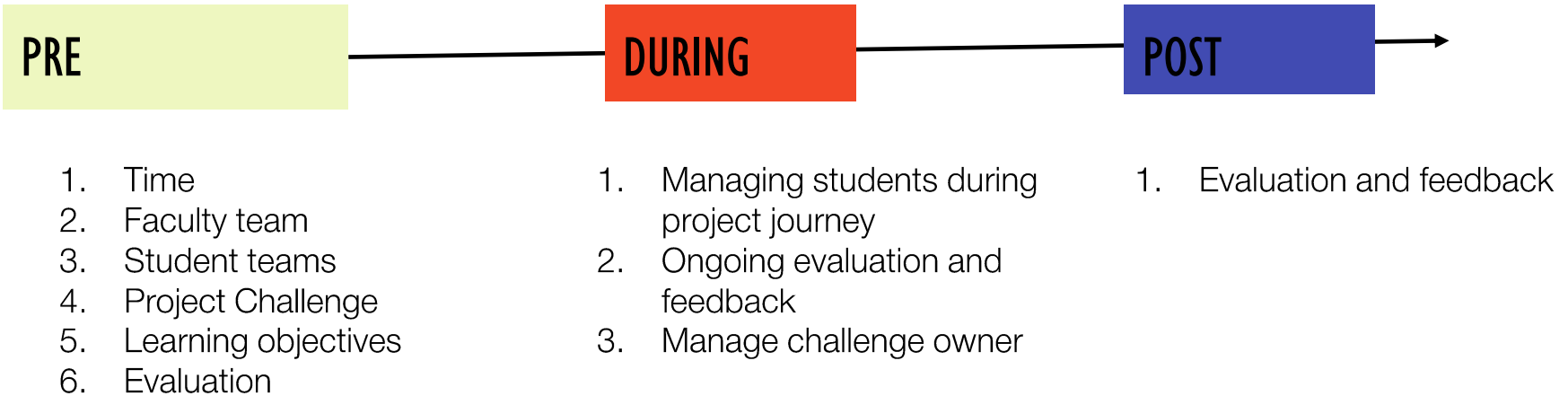
It is NOT avoiding, hiding, ignoring or eliminating conflict.

Handling conflict in the best possible way to transform the frustrating energy and destructive dynamics into creative energy and nurturing relationships.



# Design Thinking

## STRUCTURE

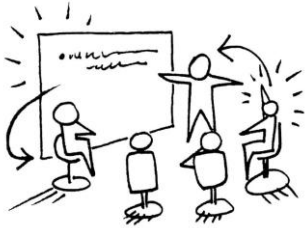


Manage  
Course

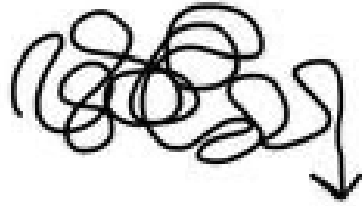
Resources



# Your Roles



“Lecturer”  
Knowledge



Facilitator of  
the course



Coach  
Team through  
the process

Source: <https://gamestorming.com/tag/facilitation/>

# Your Roles: Coach

“Design thinking **coaching** is about helping teams to **recognize** and then **realize their potential**.” (HPI,2022)

# Your Roles

You are the jelly!

Hold the team together

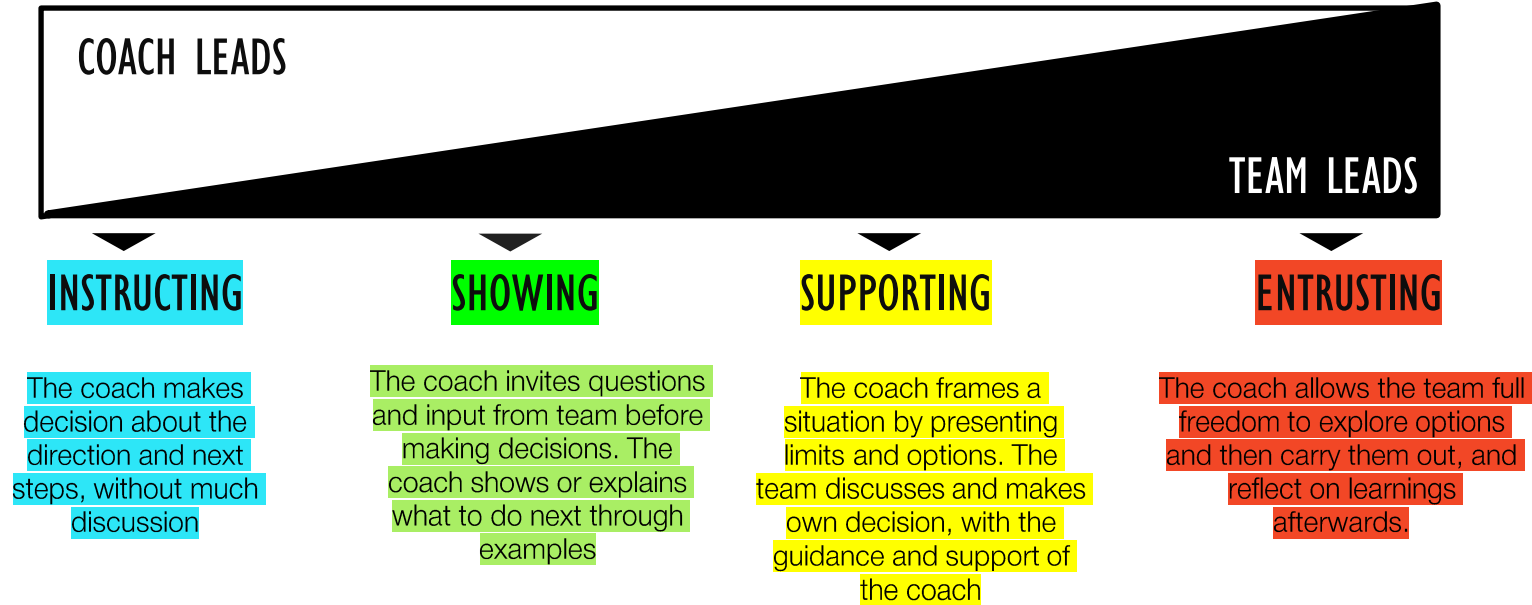
Absorb shocks

Ensure everyone is on the same page

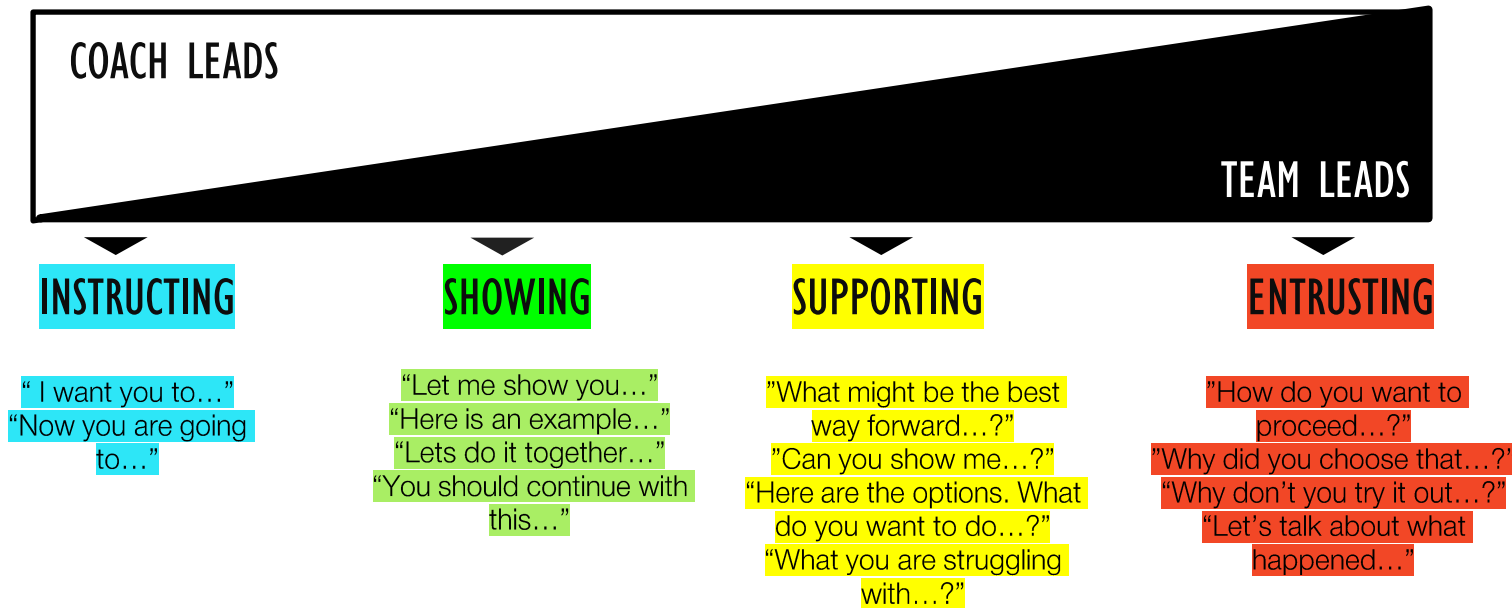




# Different modes of coaching



# Different modes of coaching



# 10 RULES OF COACHING

## 1. Help the team discover their intrinsic motivation

Let their interests be a driving force. The team will succeed best if we understand their motivations, and empower them with ownership.

## 2. Ask questions

The role of the coach is not to provide solutions or to make decisions, our job is to ask the right questions to help the team progress.

## 3. Coach towards goals

Coaching (vs. facilitation) is a goal-oriented activity. The team should set their own goal, the coach's job is to help them get there by supporting their process.

## 4. Keep the team on the same page

Coaching and asking the right questions will help the team stay in an aligned mindset during the process. This relates to for example divergent and convergent mindset, alignment in goals and aligned understanding of the problem or an idea.

## 5. Create psychological safety

Model behaviour that creates a safe space for creativity by providing encouragement, neutral feedback without judgement and expressing interest towards their ideas. Ambiguity is often the culprit for (internal) friction, and individual's progress is to be able to identify that.

# 10 RULES OF COACHING

## 6. Engage the team in reflection and feedback

Reflection is a powerful in making learning more explicit. Giving feedback helps team members recognise each others' efforts, increase a sense of belonging and improve team performance.

## 7. Facilitate team dynamics

Help the team to use their full potential. Different disciplines and quieter voices sometimes need help in being recognised. Conflict is inherent in teamwork. Facilitate conflict resolution and emphasise that conflict should not be personal and only relate to e.g. a task or process.

## 8. Provide resources

Find and or ensure the team finds the resources they need to proceed. This may mean knowledge, an extra pair of hands, methods, materials etc.

## 9. Be explicit about your role

Often coaches have also domain expertise to bring to the table. Be explicit if and when you switch hats.

## 10. Be responsive

Sometimes you have to change your tactic. Be creative.

# 10 RULES OF COACHING

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# COACHING TIPS AND TOOLS

## Support the team in keeping track of time

Make sure they progress and intervene when analysis paralysis sets in. Help them to make decisions by providing different perspectives. Give them a specific time frame to give them a deadline. Emphasise that making 'a' decision is more important than making 'the right' decision.

## Ask questions

The rationale for asking questions is that the team can uncover information about or for themselves. Asking the right questions enables teams to access knowledge they did not know they had. It can be helpful to think about the first word: open-ended questions often begin with "what," "how," "who," "where," and "when."

## Give a specific target

Always try to give the team a target, which is either a specific goal/number based (like 30 questions) or time based. That takes them away from quality requirements.

## Encourage disengaged team members

If some participants are disengaged, give them whiteboard markers, post-it notes, ask them to stand up around the whiteboard etc. Having the tools in hand and standing up/being active often empowers them.

# COACHING TIPS AND TOOLS

## Don't force it

Sometimes a break is the most useful method. It may give the team time to reflect and give clarity.

## Encourage creativity

Even the wildest ideas can be scaled back. To prompt creativity you can suggest e.g. the following methods: Mash-Up Innovation, 'Random word' by Edward de Bono any other lateral thinking strategies, worst solution ideation and flipping it back, 100 ideas etc.

## Listen

Have no prejudgement, listen actively, align yourself with the team's perspective and seek clarification. Explore whether there might be more behind the words than is actually being said.

## Champion quick and dirty prototypes

The reason for prototyping especially in the early stage is to communicate and explore. Encourage the team to forget any technical concerns and emphasise that the prototype should be of low-resolution. Often teams take more time to decide not to prototype than it takes the time to make the lowest resolution prototype.



# Agenda DAY 3

October 23rd, 2024

Venue: Fusion Point, Rambla of Innovation, ESADE Campus Sant Cugat

09.00 - 09.15	Day 3 Opening & plan for the day Esade
09.15 - 11.00	Session 11: Evaluation of PBL courses UNIBO
11.00 - 11.30	<i>Coffee break</i>
11.30 - 13.00	Session 12: Course transformation cont. UNIBO
13.00 - 15.00	<i>Lunch break</i>
15.00 - 16.00	Session 13: Supporting structure Esade
16.00 - 16.15	<i>Coffee break</i>
16.15 - 16.45	Session 14: Share & Feedback: Course Transformation Esade
16.45 - 18.00	Workshop close and feedback Esade



**Day 3**  
**Session 14**  
**16.30 — 16.45**

# SHARE CONTENT Q&A

**Day 3**  
**Session 14**  
**16.45 — 17.00**

# **YOUR CONTRIBUTION COUNTS!**

# How to share your work with us

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## **Before** uploading your material:

- Highlight changes made to your syllabus, in order to help us identify them;
- Take pictures of the notes you took on your booklet that you're considering relevant to let us understand the process you've been through during the workshop;
- Collect the new supporting material you developed for your STEM course;

# How to share your work with us

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## How to **upload** your material:

- Join the shared folder we created;
- Find your team;
- Get into your personal folder (the one with your name);
- Upload the material required;

# How to share your work with us

SHARED FOLDER WHERE TO UPLOAD YOUR WORK

# Brief recap

## Useful material to implement PBL into your course:

- "DT meets STEM" [manual](#) (first draft);
- "Teach-BeAst Barcelona training master slide" [slide deck](#) used during the workshop;
- [Evaluation Tools](#);
- Link to: [Miro boards](#);
- "[Missions](#)", guidelines documents for students explaining DT stages and tools.
- Link to: [Syllabus example](#) updated with PBL process;
- Your [notes in the personal Booklet](#)

**Day 3**

# WORKSHOP FEEDBACK

# Feedback. Day 3

I learnt...

I liked...

I wish...





# Project Team



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# THANK YOU