

# Challenge-Based Learning (CBL)



- CBL definition
- How does this innovative methodology work?
- What is a *Teamcher*?

- Definition
- Who can participate?
- How to come up with a challenge?
- I've thought of a challenge: what's next?

- CBL phases: *Engage, Investigate, Act*
- Splitting into teams
- Moodle
- Rubrics
- Questions
- Self-assessment

- Challenges office
- Learn more
- *Teacher Hub ECIU* (Teachers community)

## 1 How to begin CBL?

*Pre-Classroom Activity*

### Personal development

**Course guide.** Add a text to support the potential implementation of Community-Based Learning (CBL) opportunities

### Consider the following aspects:

Course content and its relationship to the challenge

Objectives to be covered

Additional training required

Course planning (*scheduling of submissions, visits...*)

Role of local stakeholders involved (*Local councils, foundations, associations...*)

Assessment criteria

**Contact the**  
(*if you're looking for challenges and/or they need to be further defined*)

Reach out to external stakeholders

Pay a visit to the context

Agree on expectations, needs, meeting schedules, commitments and deadlines

**How will we communicate?**  
(*platform, WhatsApp...*)

## 2/a How to implement CBL?

*Classroom Activity*

Explain what CBL is to participants

**Start with the presentation of the Big Idea** (overall problem) and the overall challenge with external stakeholders

Form teams and assign roles

**Define the specific sub-challenge** for each team

Encourage questions, hypotheses and theoretical research within each team

Ensure the 3 Phases, and allow time for reflection between them:

## 2/b How to implement CBL?

*Fieldwork and Practical Development*

### Site Visits

Fieldwork

### Supervision

Team Mentoring

## 3 Continuous assessment

Continuously monitor the teams  
(*in-person and virtual*)

Schedule agreed meetings with local agents

Recommend planning deliverables per phase

Facilitate reflection at the end of each phase

Schedule team presentations

Use assessment rubrics already familiar to students

## 4 Post-challenge impact

**How will you collate results?**  
(*Documents, videos, graphics...*)

**How will you evaluate external stakeholders' participation?**

Plan which documents to share and whether permissions are needed  
(*social media, website, article...*)

Gather feedback from participants  
(*survey, oral, written...*)

Use the to guide impact planning

Publish documentation on of the  
UAB (*"Challenge-Based Learning" collection*)

# What is CBL?

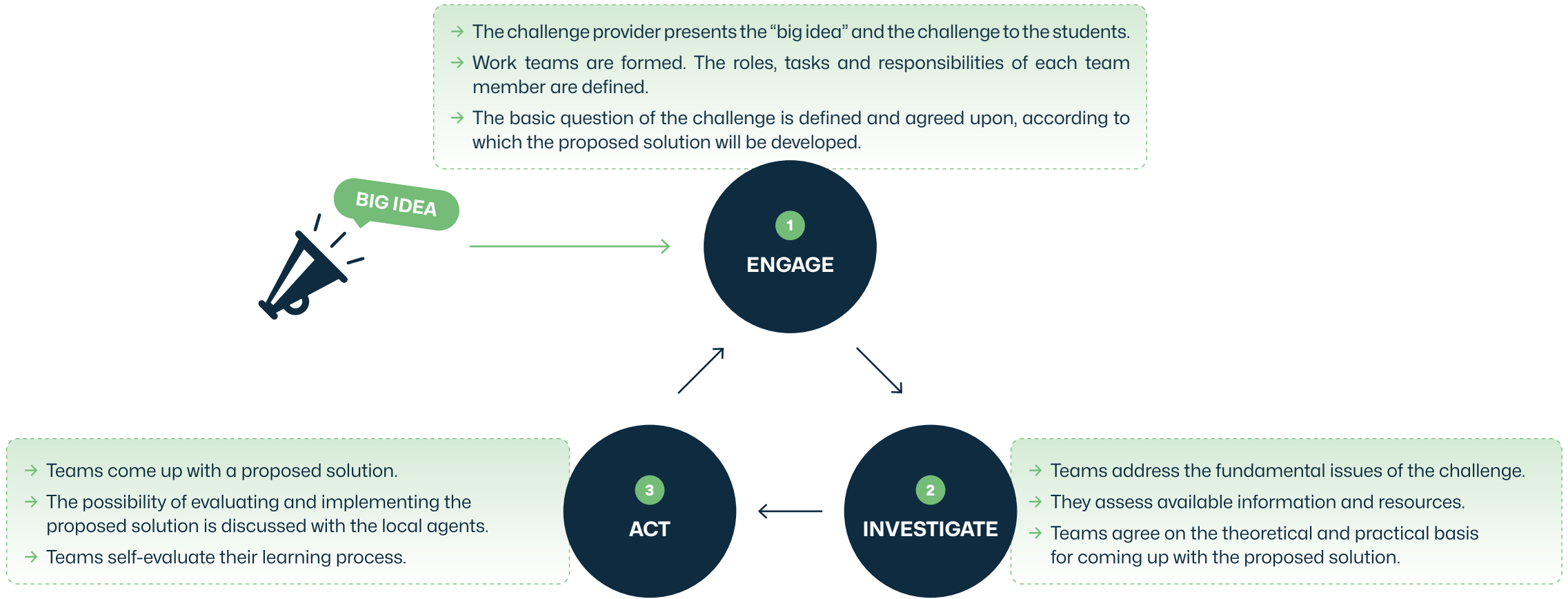
Challenge-Based Learning (CBL) takes place through the **identification, analysis and design of a solution to a sociotechnical problem**. The **learning experience** is typically multidisciplinary, involves different stakeholder perspectives, and aims to find a **collaboratively developed solution, which is environmentally, socially and economically sustainable**.

*(Kohn Radbeg et. al 2020, p22).*



# What is CBL?

The Challenge-Based Learning framework is organized into three interconnected phases—Engagement, Investigation, and Action—each with three main steps. Between each phase, it is essential to allow time for reflection to review what has been learned and guide the next steps.

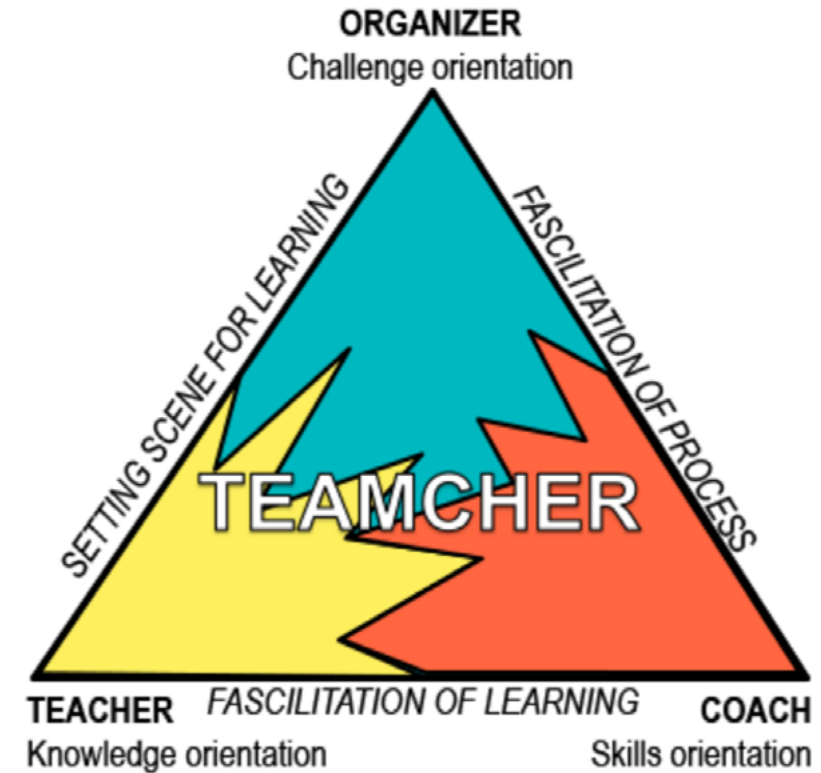


# What is a *Teamcher*?

A *Teamcher* is a versatile educator who brings together three key roles to effectively support Challenge-Based Learning (CBL):

- 1 **Teacher** – Focused on delivering knowledge and fostering conceptual understanding.
- 2 **Coach** – Dedicated to developing students' skills and empowering them to take ownership of their learning.
- 3 **Organizer** – Responsible for designing the learning environment and situating challenges within meaningful contexts.

By blending these roles, **the Teamcher creates a dynamic, engaging, and student-centered** learning experience that balances knowledge, skill-building, and real-world application. This role can be fulfilled by an individual educator or shared among a multidisciplinary team, with each member contributing their unique expertise to enrich the learning journey.



HOW TO MAKE GOOD TEACHERS GREAT IN CHALLENGE-BASED LEARNING. Proceedings of the 18th International CDIO Conference, hosted by Reykjavik University, Reykjavik Iceland, June 13-15, 2022.

# What is a challenge?

Challenges are **learning experiences** focused on addressing real-world problems, developing possible solutions, and creating impact.

Key characteristics include:

- They are linked to global issues (Big Ideas) like poverty, sustainability, housing, and more.
- They don't have a single clear solution, but allow for multiple possible approaches that lead to improvement.
- They are connected to topics such as circular economy, energy, sustainability, entrepreneurship, technology, resilient communities, and more.

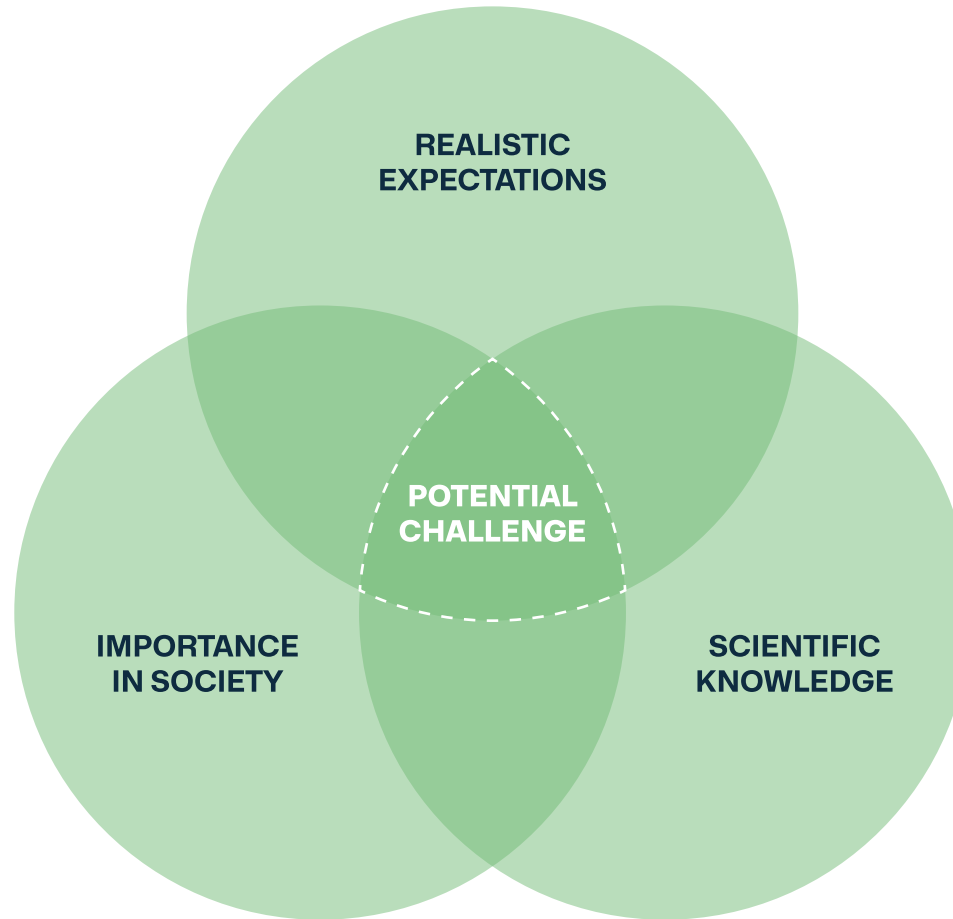
# How do you define a challenge?

## **Realistic expectations.**

*A challenge is more than a personal concern, but it shouldn't be too abstract either.*

## **Clear representation in society with an easy understanding and explanation.**

*Agents working directly with communities have a clear understanding of the challenge and are committed to working together on its solution.*



## **Scientific knowledge.**

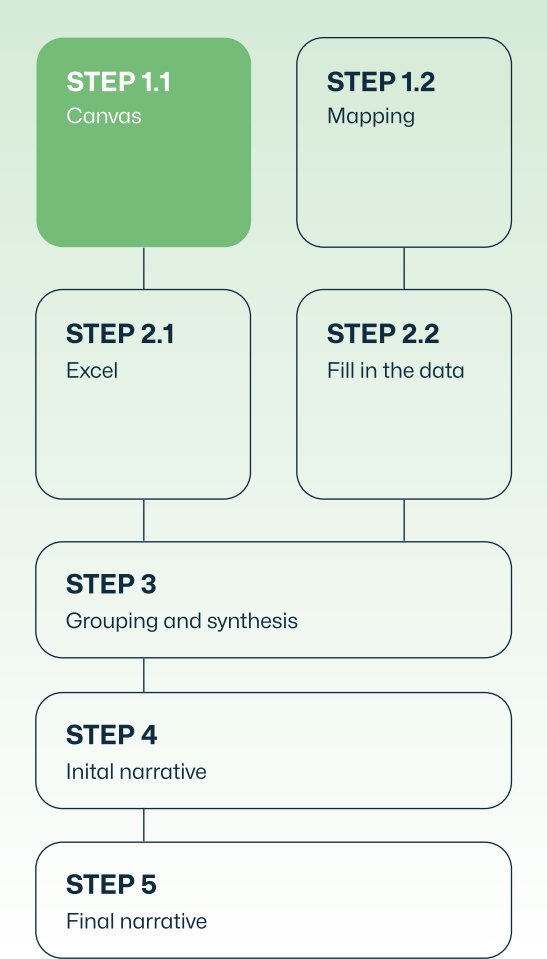
*Scientific knowledge is key to solving a challenge. New knowledge is also produced while working on a challenge and/or knowledge is shared between the parties involved.*

# How do you define a challenge?

The CBL canvas: a useful tool for defining and documenting challenges

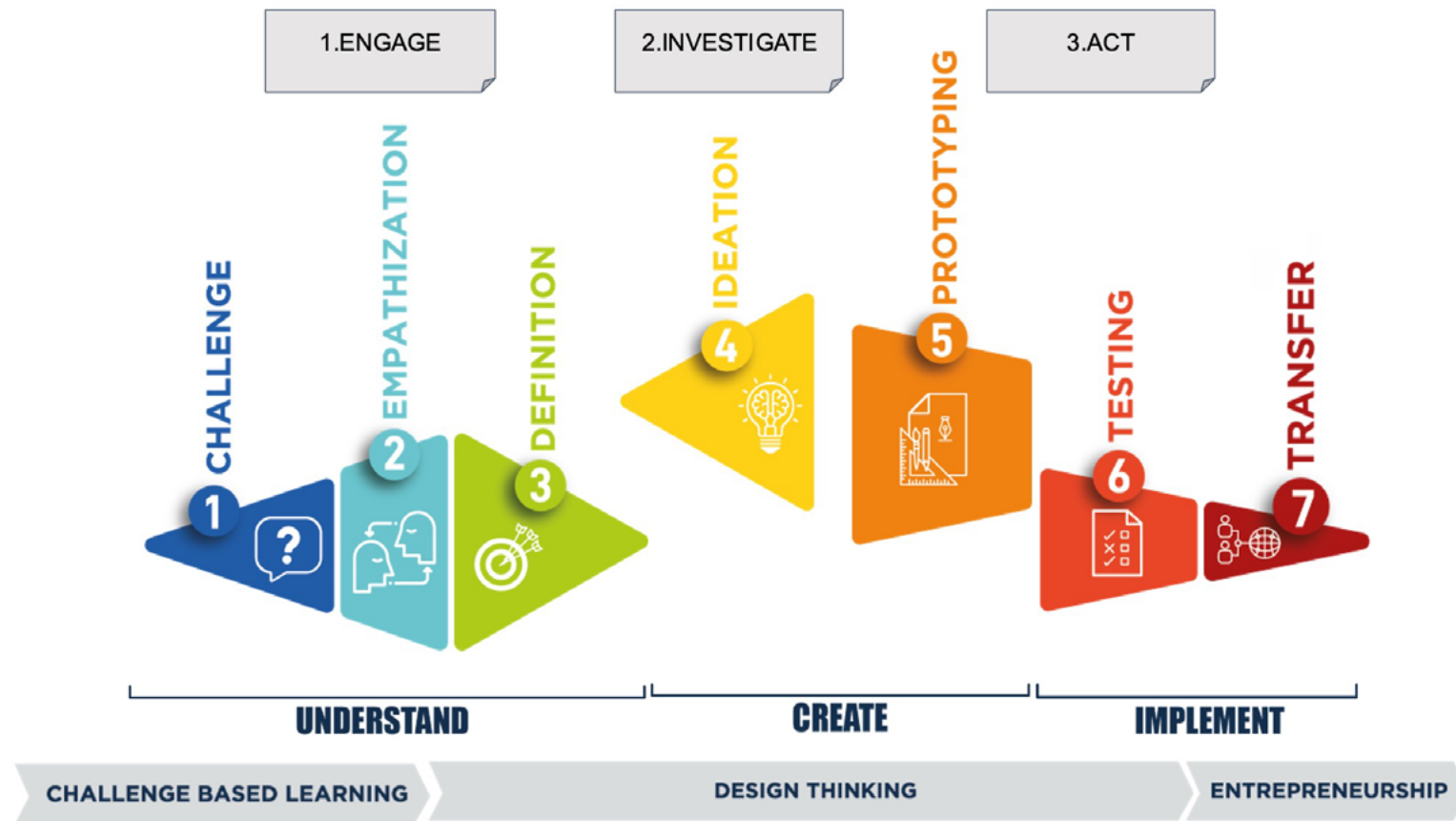
<b>Short title</b>	11	<b>Long title</b>	12
<b>Current situation</b> Definition of the current state, what it is like, what happens there, what characterises it in terms of the proposed challenge, etc.	1	<b>Unresolved problems</b> What are the obstacles of the current situation that could impede our vision for the future?	3
		<b>Participants</b> Agents and other people that participate in these learning groups and, therefore, on this canvas.	5
		<b>SDG</b> Which SDGs are related to this challenge?	6
<b>Future vision</b> How do we imagine the current situation in the near to mid-term future? These ideas must allow an alternative vision regarding the challenge / initial idea proposed.	2	<b>Challenge</b> Challenge synthesis. What are our goals? A more general definition of the strategic challenge.	4
		<b>Next steps</b> How do we move forward?	7
		<b>Solutions requirements</b> What should the proposed solutions include / avoid?	8
<b>Stakeholders involved</b> Agents, groups, organisations, etc. that should be involved in the challenge to find an appropriate solution.		<b>Expected impact</b> What are the contributions and impact that the challenge solution will bring?	9
			10

Methodological process:



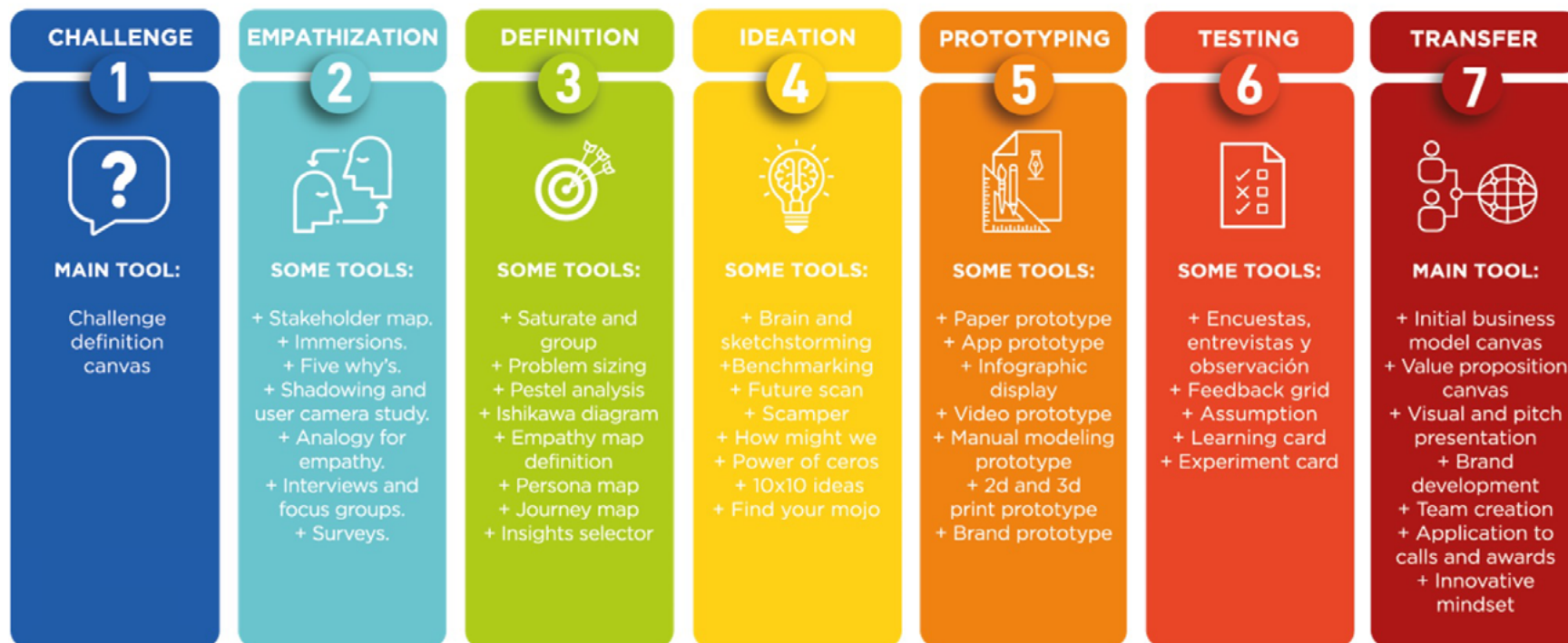
# Tools

*Design Thinking* is a very useful methodology for solving problems from a creative perspective. In this toolbox, you will find various resources that will support and guide you throughout the three phases of the CBL.





# Tools



# Tools

**Assessment** is a key part of Challenge-Based Learning (CBL) used to measure how well students have met the learning goals set at the start of the challenge. Unlike traditional learning models, CBL **encourages students to help define these goals in collaboration with teachers and classmates.**

CBL assessment goes beyond academic or technical skills to include personal growth and the development of social competencies. This involves evaluating skills such as critical thinking, problem-solving, collaboration, and communication in real and meaningful contexts.

Assessment in CBL can be both formal and informal, as well as formative (ongoing) and summative (final). It can be carried out by teachers, external partners or challenge providers, and also through self-assessment or classmate assessment.

# Text proposals for teaching guides

## Courses

Challenge-Based Learning (CBL) can be included in the course structure. **The assignment stems from a real-life challenge proposed by a collaborating organisation/institution** which requires team work, including the challenge instigator and other local expert agents who will propose possible solutions.

The challenge unfolds in **three phases**: Link/Engagement, Research/Prototyping and Implementation/Evaluation. Students, working in a teams, face a specific local problem and explore possible improvements, until they reach the point of proposing a solution, which ends up being implemented and evaluated.

More specific information that could be included in some sections of the guide:

### → Teaching methodology

The course includes an assignment using Challenge-Based Learning (CBL) methodology which stems from a real-life challenge identified by a collaborating organisation/institution which requires team work to propose possible solutions that unfold in three phases: Link/Engagement, Research/Prototyping and Implementation/Evaluation.

### → Training activities

Methodologies will be used to allow Challenge-Based Learning (CBL) in various activities such as: article reading, talks, document analysis, surveys, interviews, bibliographic searches, presentations, videos, prototyping, implementing proposals, assessment of process and progress, evaluation of proposals, etc...

### → Assessment

Continuous assessment will be used with evidence collected from each training activity in each of the phases, in a crosss-cutting manner, as a reflection of the learning process and progress. The course will recommend that CBL methodology is used for one of the assessment activities. The idea is to face real and complex problems identified by professionals to formulate an adequate definition and identify possible solutions. CBL is now a widely recognised approach that not only involves working with real case studies but also immerses students in environments where they can potentially launch their future professional careers.

# Text proposals for teaching guides

## Work Placement and Final Degree Project

Work placements and Final Bachelor's and Master's Degree projects can include Challenge-Based Learning (CBL), which **stems from a real-life challenge identified by a collaborating organisation/institution and requires work in a team including the challenge instigator and other local expert agents who will propose possible solutions.**

The challenge unfolds in **three phases:** Link/Engagement, Research/Prototyping and Implementation/Evaluation. Students working in teams face a specific local problem and explore possible improvements, until they reach the point of proposing a solution, which ends up being implemented and evaluated.

More specific phrases that could be included in some sections of the guide:

### → Teaching methodology

One of the methodologies that can be included in work placements and Final Bachelor's and Master's Degree projects is Challenge-Based Learning (CBL) which stems from a real-life challenge identified by a collaborating organisation/institution and requires team-work to propose possible solutions, which unfold in three phases: Link/Engagement, Research/Prototyping and Implementation/Evaluation.

### → Training activities

Methodologies will be used to allow Challenge-Based Learning (CBL) in various activities such as: article reading, talks, document analysis, surveys, interviews, bibliographic searches, presentations, videos, prototyping, implementing proposals, assessment of process and progress, evaluation of proposals, etc.

### → Assessment

Continuous assessment will be used with evidence collected from each training activity in each of the phases, in a cross-cutting manner, as a reflection of the learning process and progress.

# Text proposals for teaching guides

## Examples of guides that include CBL

### → English Studies, Teaching Methodology Course

“Course goals: This course includes the option of carrying out one of the assessment activities, using Challenge-Based Learning (CBL) methodology. The idea is to face real and complex problems identified by professionals in order to produce an adequate definition and identify possible solutions. Today, CBL is a widely recognised methodology that allows students to not only deal with real case scenarios, but to immerse themselves in environments in which they can potentially launch their future professional careers”.

“Methodology: Challenge-Based Learning methodology is used in the class, this assessment activity and the class preparation and presentation will be done in groups of 3 and it will be assessed as a group. These groups will have to work on a series of phases that will lead to the final presentation: discovery, research, proposals for improvement.

# Text proposals for teaching guides

## Examples of guides that include CBL

### → Advanced topics in Regional Studies and Planning

“Objectives: This course is designed with a practical focus and uses a Challenge-Based Learning (CBL) methodology. Students will engage with real-world, complex problems identified by different local stakeholders, aiming to diagnose issues effectively and propose potential solutions. CBL is now a widely recognised approach that not only involves working with real case studies but also immerses students in environments where they can potentially launch their future professional careers. It also offers a valuable opportunity to integrate and apply the knowledge and methods acquired in other Master’s degree courses. The central focus of the course is the completion of a project called Troncal, which is coordinated with two other subjects: Regional and Urban Planning, and City and Metropolitan Spaces.”

Troncal consists of a practical exercise involving the identification and analysis of the urban, social, and environmental characteristics of a specific region, with the goal of carrying out projects and proposals that address the challenges identified.

For the 2022-2023 academic year, the Troncal project is titled “Active Mobility in Metropolitan Areas: Analysis and Planning for an Integrated Bicycle Policy.” The study area will focus on a metropolitan hub, covering the municipal areas of Montcada i Reixac, Cerdanyola

del Vallès, Ripollet, Badia del Vallès, and Barberà del Vallès—all located within the first metropolitan ring of Barcelona.

The main challenge will involve identifying concrete issues raised by local stakeholders, then selecting, defining, and collaboratively working on potential solutions. These will be developed into concrete proposals and projects. Students will work in small groups, each concentrating on a specific thematic area. The results will be presented to local officials and other relevant societal stakeholders.

# Learn more

In this section you can find documents, videos and articles on how to create teams, differentiate between methodologies, learn about CBL, and the ECIU University, among others.

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# Teacher Hub

The **Teacher Hub** is a digital community that brings together educators from the 13 ECIU universities. It offers a space to share resources and, most importantly, to connect, interact, and collaborate with colleagues on challenge-based learning and micro-modules across the ECIU University network.

Joining the Teacher Hub gives you access to:

- Expert guidance on challenge-based teaching and learning.
- Practical advice and support for creating challenges and micro-modules within ECIU University.
- Invitations to events, training sessions, and workshops on Challenge-Based Learning (CBL).
- Opportunities to network and build connections with peers across Europe.
- A platform to share and exchange best practices with educators from all 13 ECIU universities.