Challenge-Based Learning: Strategies for Sectoral Challenges

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Overview

1. What Challenge-Based Learning (CBL) is & why you might be interested

2. Some challenges that CBL presents
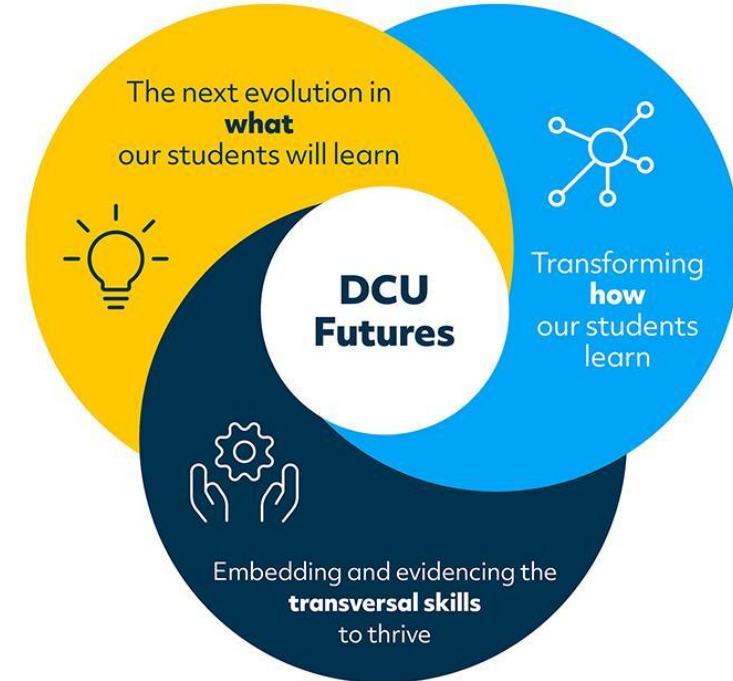
3. Where we might go next across the sector

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What is driving interest in CBL?

Challenge-Based Learning (CBL) is increasingly featuring in reports and literature intended to guide teachers and policy makers in educational innovation (Kukulska-Hulme *et al.*, 2023; Gallagher and Savage, 2022).

Industry representatives and public organisations say that Higher Education Institutions (HEIs) need to develop future-focused skills and competencies that will help students tackle the urgent societal issues of our time (Kotsiou *et al.*, 2022).

Strategic projects such as the European Consortium of Innovative Universities (ECIU) and DCU Futures share a common commitment to implementing CBL.

The next evolution in **what** our students will learn

Transforming **how** our students learn

DCU Futures

Embedding and evidencing the **transversal skills** to thrive

ECIU university

What is CBL?

Emphasises Technology, Questioning, & Sharing

Definition 1

"Challenge Based Learning is an engaging multidisciplinary approach to teaching and learning that encourages students to leverage the technology they use in their daily lives to solve real-world problems. Challenge Based Learning is collaborative and handson, asking students to work with peers, teachers, and experts in their communities and around the world to ask good questions, develop deeper subject area knowledge, accept and solve challenges, take action, and share their experience."

(Nichols and Cator, 2008, p.1)

Definition 2

"CBL is a cutting-edge alternative to traditional teacher-centered and summative assessment education. CBL integrates traditional learning modules with real-life challenges that require innovative solutions and can be applied to a variety of subjects…In this sense, CBL is usually characterized as an active and experiential learning approach (Gallagher & Savage, 2020) which follows a multidisciplinary approach that encourages students to leverage technology used in everyday life to solve real-world problems (Pornpongtechavanich, Eumbunnapong, & Piriyasurawong, 2021)."

(Vilalta-Perdomo *et al.*, 2022, p.2)

Emphasises educational innovation and variety of use

Emphasises sustainability & international context

Definition 3

"A challenge-based learning experience is a learning experience where the learning takes place through the identification, analysis and design of a solution to a sociotechnical problem. The learning experience is typically multidisciplinary, takes place in an international context and aims to find a collaboratively developed solution, which is environmentally, socially and economically sustainable."

(Malmqvist, Kohn Rådberg and Lundqvist, 2015, p.4)

Definition 4

"Challenge-Based Learning (CBL) is a process of collaborative engagement with peers, academics, and stakeholders to develop solutions to real-world social, technological, environmental and economic challenges of urgency and significance. CBL is a distinctively learner-driven pedagogy where learners, with the support of academics, define the dimensions of the challenge to be worked on. Throughout the process learners are given opportunities to acquire the necessary knowledge and skills to propose solutions for the challenge in question."

(DCU CBL Working Group, 2022)

Emphasises collaborative, learner-driven process that develops knowledge & skills

All put a focus on a collaborative, open-ended, and real-world learning experience
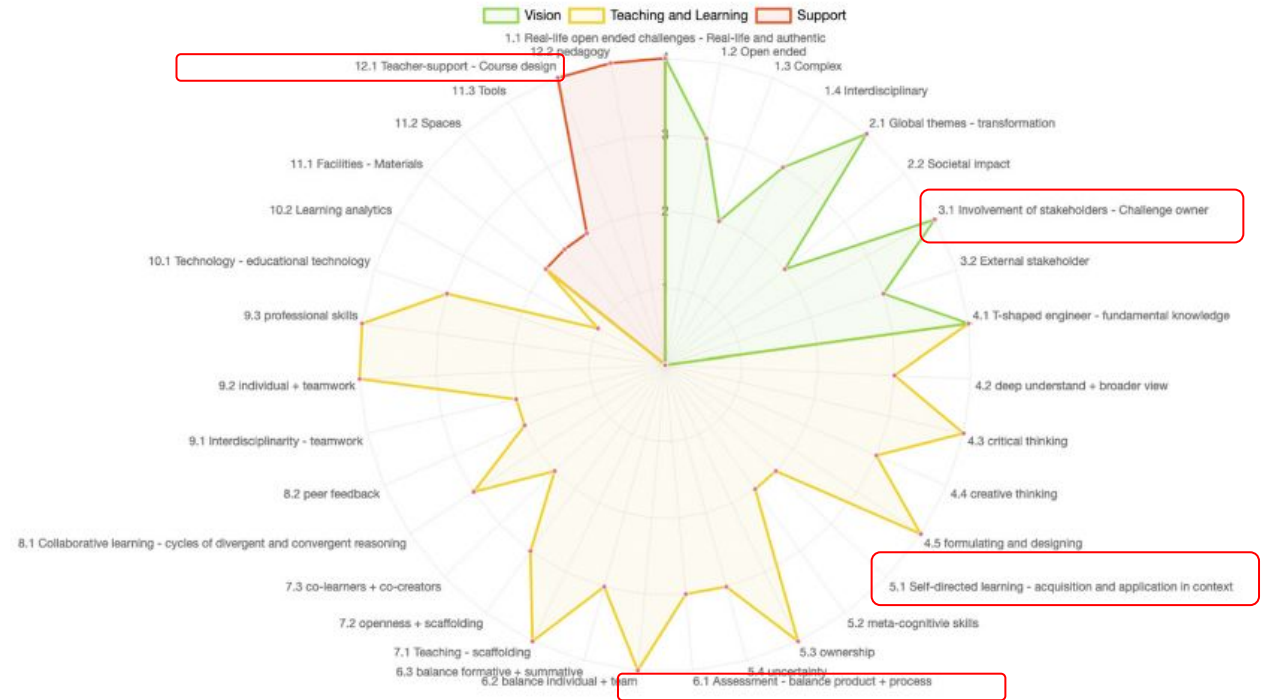
Where might challenges come from?

Govt agencies

The UN SDGs

Academic Institutions

Students' own interests

Discipline Needs

Industry Challenge Providers

Community Groups & NGOs

Research agencies

Common characteristics of CBL

Conceptual Framework of CBL Characteristics
(Gallagher and Savage, 2020, p.15)

CBL Compass Example (Van den Beemt, Van de Watering and Bots, 2022, p.12)

So can I use and adapt CBL for my context?

The Challenge within a Challenge!

Need for common understanding of CBL to support good practice & research

Need for flexibility & room for growth over time in different contexts

Photo by Aditya Wardhana on Unsplash

To ensure CBL is CBL we need

- More guidance related to design and implementation of CBL
- Recognition of the need to adapt CBL to different contexts
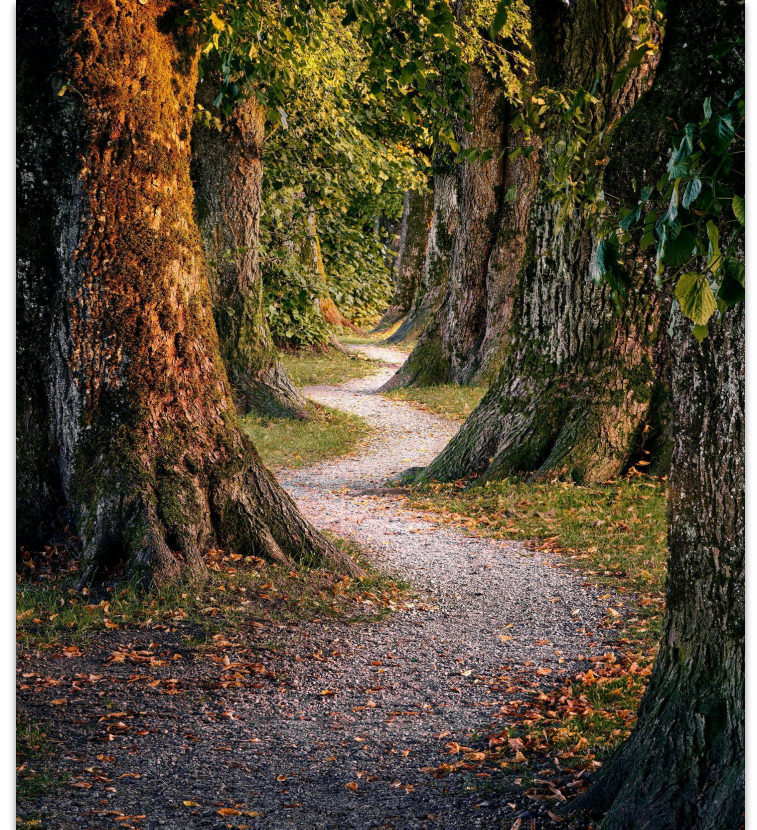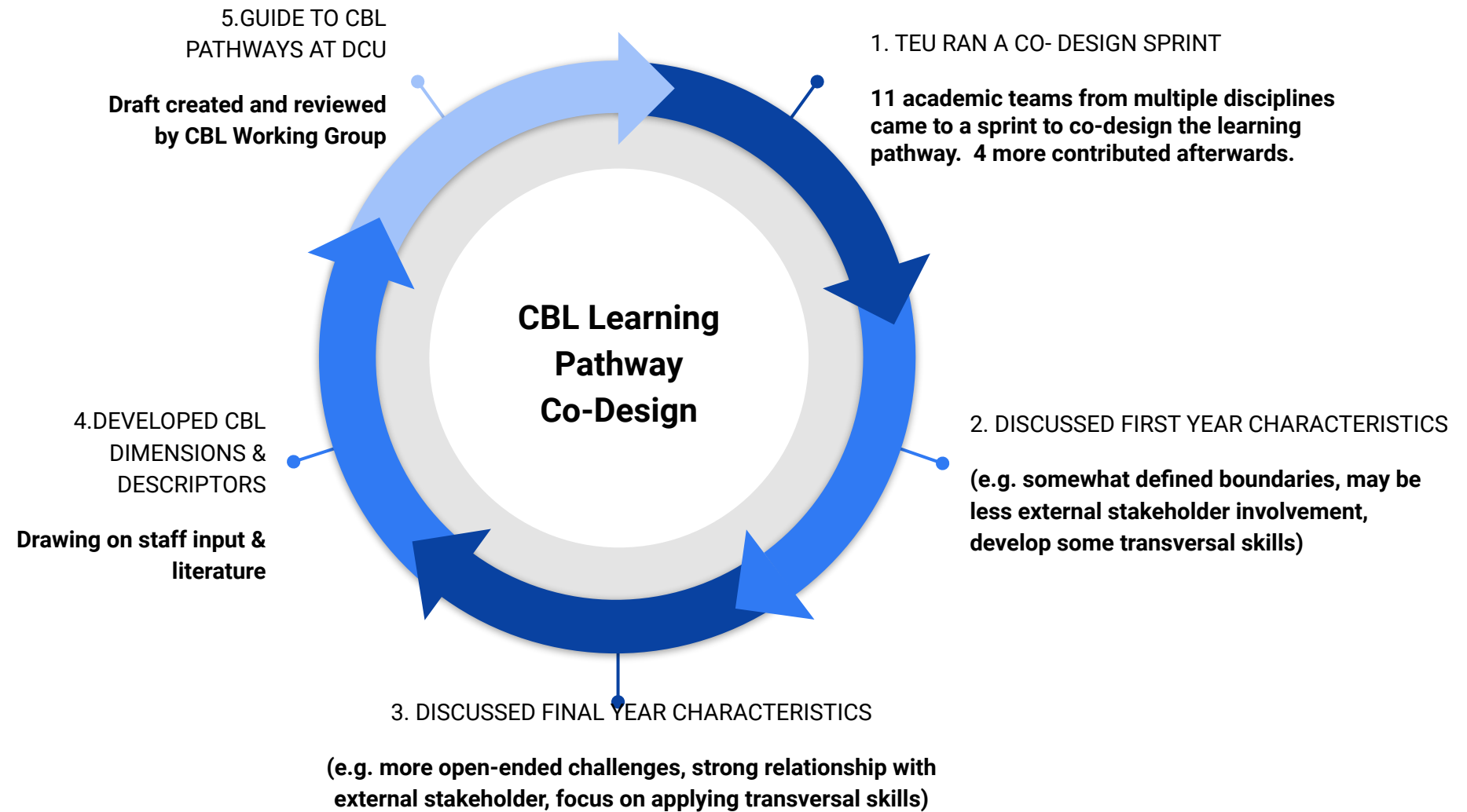- Learning pathways to guide CBL progression over time

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We have started a learning pathway co-design process at DCU

5. GUIDE TO CBL PATHWAYS AT DCU

Draft created and reviewed by CBL Working Group

1. TEU RAN A CO- DESIGN SPRINT

11 academic teams from multiple disciplines came to a sprint to co-design the learning pathway. 4 more contributed afterwards.

CBL Learning Pathway Co-Design

2. DISCUSSED FIRST YEAR CHARACTERISTICS

(e.g. somewhat defined boundaries, may be less external stakeholder involvement, develop some transversal skills)

4. DEVELOPED CBL DIMENSIONS & DESCRIPTORS

Drawing on staff input & literature

3. DISCUSSED FINAL YEAR CHARACTERISTICS

(e.g. more open-ended challenges, strong relationship with external stakeholder, focus on applying transversal skills)

But it's clear that the sector needs to work together if this approach is to succeed

Recommendations

"Ensure that the provision of further education and training and higher education is aligned with strategic skills needs and responds to changes in demand" 1.6, p.28

"Scale up existing good practices and promote a more inclusive, efficient and co-ordinated approach to stakeholder engagement in the co-design of education" 4.4, p.28

So it really needs to be collaborative, not lone ranger…

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…Are you up for the challenge?

Thanks for listening!

If you would like to discuss further, email: clare.gormley@dcu.ie

References

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What is the difference between CBL and PBL?

PBL	CBL
Students build knowledge through a predefined task or a pre-designed problem.	Students are exposed to relevant situations, real and open, that demand a solution for which there is not an existing, pre-made response.
In PBL, it can be an individual or a team task.	Students using CBL always work collaboratively. They work with educators, experts, mentors and peers on real-world problems. They work in teams to inform, tease out and define the challenge to be addressed. In CBL there could be a challenge provider/setter but there could also be a situation where the team identifies the stakeholders.
Problems may be real or fictionalised.	Challenges are always rooted in the real world and require a working solution/prototype or recommendation(s) to an open problem.
Solutions to PBL problems may or may not be implemented or evaluated.	CBL requires students to create a solution/prototype or recommendations leading to concrete action. This will involve consideration of implementation and evaluation elements.
The focus is more on the learning process than the product in PBL. In the process, PBL always uses existing knowledge.	In CBL the focus is learning through and with the process and through development of solution/prototype. CBL should always create new knowledge. It is the challenge itself that triggers the generation of this new knowledge and identifies the necessary tools or resources.
PBL may use a PBL-oriented framework.	CBL should be nuanced or informed by a CBL framework

Adapted from differentiators listed in Membrillo-Hernández et al. (2019).

What is a typical cycle of CBL?

https://www.eciu.org/for-learners/about#cycle