



# 2030 CURRICULUM DESIGN PRINCIPLES

## UNSOLVED PROBLEMS AND CHALLENGES AS CENTRAL TO LEARNING

### CURRICULUM 2030

The USW 2030 Curriculum is one that presents challenge-based learning opportunities, connected to authentic unsolved problems/challenges beyond the classroom.

Learners have the opportunity to look critically and creatively at real-world, often ill-defined problems/challenges through of a range of different lenses and seek solutions from their own and other disciplines to meet the demands of industry, the community and the UN Sustainable Development Goals.

Authentic challenge-based learning will be scaffolded across all levels, eg, through work placements, live briefs, practice-based projects, simulated environments focussing on real-world local regional, national and global challenges.

### ASSESSMENT 2030

Assessment to support this Curriculum Design Principle will be embedded in a challenge-based learning environment, which will predominantly be authentic, with opportunities for sharing outcomes with the wider community beyond the institution. Challenge in assessment helps to develop self-regulated learners, entailing a focus on 'Assessment As Learning' (Yan and Boud, 2021) and emphasises process over product (Taras, 2008).

Work-placement assessment tasks, employer-orchestrated live briefs, community engagement projects and practice-based projects can all provide opportunities for students to engage in real-world problem solving and problem prevention to create new solutions to local, regional, national and international challenges. Challenge-based competitions and hackathons that assess project presentation, applicability, innovation, and likelihood of impact are also characteristic of challenge-based approaches to assessment.



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### THE USW CONTEXT

A key aspect of USW's 2030 Strategy is the goal of Maximising Graduate Success. We seek to achieve this by embedding an industry-led curriculum that includes real-world work experience and is co-created with industry partners to address complex and often ill-defined local and global problems or challenges.

We will embed problem and challenge-based learning to support development of the USW Graduate Attributes of innovation and enterprise, leadership, project management, digital literacy, commercial awareness and communication.

### WHAT IS CHALLENGE-BASED LEARNING?

Challenge-based Learning (CBL) is increasingly embraced in HE. It is an active, multidisciplinary and collaborative learning methodology, enabling innovation and creativity in response to challenge (Santos et al, 2020). It is a learner-driven method. Learners take ownership of their challenge, define the problems they want to work on and acquire the necessary knowledge and skills to solve the challenge (ECIU, 2024). CBL fosters student transversal competencies, knowledge of sociotechnical problems, and collaboration with industry and community actors (Gallagher and Savage, 2023). It connects to entrepreneurial learning, self-regulated learning, organisational double-loop learning, and authentic learning (Leijon et al, 2022).

### WHAT DOES THE LITERATURE SAY?

Gallagher and Savage (2023) cite benefits of CBL as enhancing industry networking, improving technical and problem solving skills, fidelity to real-world environment, training in multidisciplinary teamwork, and a deeper understanding of knowledge. Improved research and innovation partnerships, teaching ability, and commercial products were also cited however issues included high levels of uncertainty, stifled flexibility with industry partners, educator resistance and additional time needed.

Santos et al (2020) also stress how students may feel 'lost' in CBL, thus assessment must be seen as a process to guide and support students' learning. Apple (2010) advocate for continuous evaluation that emphasises: 1) content knowledge and understanding, 2) mastery of real-world skills, and 3) the process of Challenge-based Learning itself.

# HOW TO DO CHALLENGE-BASED LEARNING? — A REFLECTIVE CHECKLIST

The checklist below has been designed for course and module leaders to self-evaluate their practices. It may be used to inform Quality Assurance (Re)Validation, Continuous Monitoring and Assessment Dialogue processes whilst reflecting on CBL in your curriculum. This checklist incorporates the Apple approach to CBL; one that entails three stages of Engage-Investigate-Act.

CHALLENGE-BASED LEARNING	NOT EMBEDDED	PARTIALLY EMBEDDED	FULLY EMBEDDED
The course overall scaffolds and links disciplinary knowledge with opportunities for learners to engage critically and creatively with real-world scenarios (local, regional, national, and global).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Opportunities are provided within the course for learners to develop intercultural competence and engage with the UN Sustainable Development Goals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>CBL in action</b>			
Learners are supported to 'Engage', move from an abstract 'Big Idea' to a concrete and actionable Challenge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Learners are able to develop the ability to question and identify the knowledge and skills needed to address the issue presented, including problem/issue prevention.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Learners are able to self-identify challenges to address 'big ideas' and able to exert agency in both process of learning and responses generated.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Learners are supported to 'Investigate' the challenge, generating guiding questions, and synthesising research findings.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Learners are supported to 'Act'; to establish evidence-based responses, implemented in an authentic setting, and evaluated based on results.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Learners are required to document, reflect and share their CBL experiences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Authentic and challenge-based Assessment</b>			
External stakeholders co-create and implement live briefs that address grand or local challenges	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Modes, topics and/or methods of assessment embed elements of choice to address wide-ranging local problems or grand challenges.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Assessments on the module/course enable students to share research findings to a wide audience beyond the immediate classroom context to inculcate change.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## REFERENCES AND FURTHER READING

Apple, 2010. "Challenge Based Learning: A Classroom Guide," Apple Inc, pp. 1–40.

ECIU, 2024. *Challenge-based Education*. Available at: <https://eciu.p.lodz.pl/en/challenges-life/challenge-based-education>. Accessed 6/5/24.

Gallagher, S.E. and Savage, T., 2023. *Challenge-based Learning in Higher Education: an Exploratory Literature Review*. *Teaching in Higher Education*, 28(6), pp.1135-1157.

Leijon, M., Gudmundsson, P., Staaf, P. and Christersson, C., 2022. *Challenge Based Learning in Higher Education – a Systematic Literature Review*. *Innovations in Education and Teaching International*, 59(5), pp.609-618.

Santos, S.S., Claro, M.C. and Alsina, S.M., 2020. *The Assessment of Challenge-based Learning (CBL) Activities Using Competency-based Rubrics*. *INTED2020 Proceedings*, pp.5903-5909.

## WHERE CAN YOU GET SUPPORT?

CELT offer their Challenge Based Learning Toolkit to support colleagues in enhancing their practice.



Centre for the Enhancement  
of Learning and Teaching  
**Canolfan i Wella**  
**Dysgu ac Addysgu**

## CHALLENGE TOOLKIT

One Page On

How to Guides

Development Workshop

Videos

Quick Guides

Case Studies

Detailed Handbook

Scholarship Project

For more information visit: [www.southwales.ac.uk/celt](http://www.southwales.ac.uk/celt)  
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CELT-USWCUR-194-1.01-E

*Mae ddogfen hon ar gael yn Gymraeg. This document is available in Welsh*



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