Co-design for connected learning at scale: a cross-cultural review of guidance

Abstract

Purpose: Digital technologies can enable engagement online as well as in physical infrastructures like large lecture theatres. Avoiding a tech-first approach to curriculum design, this article reviews a key resource for the use of a pedagogy-first, co-design approach in a specific instance of developing curriculum for connected learning at scale.

Design/methodology/approach: This article summarises key guidance for applying a co-design approach to a large educational transformation project (connected learning at scale) and reflects on the application in the UK (a developed economy) and in Vietnam (one of the fastest growing economies).

Findings: The guidance is found to reflect similar co-development processes in the UK and Vietnam, but adds additional layers of infrastructure and support to enable rich co-design processes. These are seen as proportionate given the impact of large-scale curricula.

Originality: This is the first time a review has been conducted from the perspective of different countries.

Introduction

Educational technologies (EdTech) have become pervasive, and it is possible that the novelty of new EdTech can drive new developments (what might be referred to as an EdTech-first approach to pedagogical design) (Helmuth, 2000; Glover *et al.*, 2016). At the same time, educators have become accustomed to working in silos, designing their activities, developing their content and delivering their classes alone. Educators may well share their practice, after the (teaching) event, but the preparation phase has historically been a solo one. However, as student enrolments grow and cohort sizes increase, this solo approach is no longer viable. Mantai and Huber (2021) espouse a networked approach to teaching whereby educators work in a supported community to leverage the many skills required to deliver effective, experiential and high-quality student experiences.

When conducting large educational transformation projects, the stakeholders involved can be many and relationships between them complex (Wilson *et al.*, 2021). When setting up such an educational project there are a number of important factors that need to be considered and a series of steps that if followed can lead to success. Tensions can arise within teams in any scenario but particularly in co-design teams where often there are power imbalances between different roles (Vallis *et al.*, 2022). There will likely be academic and professional staff roles not to mention students, alumni and external partners such as workplace and industry experts. Each of the actors in the network brings their own expertise to the table. For many educators this is a very different way of thinking about the design of curriculum (Vallis and Beteto, 2023).

There are many instructional design models one can use to develop innovative curriculum such as ADDIE (Analysis, Design, Development, Implementation, Evaluation) and SAM (Successive Approximation Model). See for example Thaoge (2021) and Wolverton and Hollier (2022) for examples of how these models have been applied in practice. The choice of approach, no matter the model, will depend on the specific goals and context of the learning program, as well as the preferences and expertise of the

development team (Gibbs, 2013). Co-design is emerging as a new paradigm for effective outcomes in the design and development process (Huber and Jacka, 2022). Co-design has the 'user' or group with 'lived experience' at the centre of the decision-making process (Dollinger *et al.*, 2021; Roshelle *et al.*, 2006). In education that is usually the student but can also include other actors such as industry experts, alumni, media designers etc. (Huber and Jacka, 2022). In this technical guide we introduce the co-design approach taken in a specific application during a large strategic project called Connected Learning at Scale (CLaS) (see https://clasdesignpatterns.com/connected-learning-at-scale/). The aim of CLaS is to transform the teaching and learning experience in our large courses, with the key intention being to support, nurture and leverage connections between students, disciplines, industry and society.

Connected learning in our context involves moving away from didactic delivery of content to more interactive opportunities for students to connect with the information through discussion, debate and engagement (Bryant, 2023). It also leverages opportunities to connect outside of the classroom with practitioners in an active and applied way. Finally, it offers connections to local and global communities and the wider society through authentic assessments, feedback and feedforward (Bryant, 2022). Importantly, the use of digital or educational technologies are explicitly to support the wider pedagogical design, rather than to drive it (pedagogy-first rather than educational technology-first thinking). As such, the following guidance prioritises the processes involved in design, rather than explicitly naming educational technologies or applications; these will fall from the broader pedagogical design that is co-generated.

Summary of guidance

Our co-design approach to educational design and development in CLaS combines a 'design thinking' approach with elements of educational design research (McKenny and Reeves, 2018). Before we describe the approach, we will briefly introduce the co-design actors and their roles. It is important to clarify these roles at the start of a co-design project to manage expectations and build trust (Barbera *et al.*, 2017).

Actors in the co-design process: For all courses involved in the CLaS project there are a range of actors involved. An educational developer (ED) is assigned as the project lead. This role involves organising meetings and workshops, presenting pedagogical ideas for discussion, giving feedback on the teaching team's ideas and any resources produced, coordinating conversations with other members of the co-design team such as the learning design and media production teams, facilitating design or professional development (PD) workshops, facilitating the co-design and implementation of the evaluation plan and writing project status reports on a quarterly basis.

An educator who is usually the course coordinator, is assigned the academic lead (AL). This role involves attending weekly meetings with other members of the co-design team, taking part in planning workshops which we call CONNECT:IN involving teaching team, students, designers and alumni, developing storyboards for any media production required, filming media, providing content, giving feedback on online interactive presentations and media, discussing evaluation success criteria, and attending PD workshops as needed.

A learning designer (LD) (or instructional designer) is an integral part of the co-design team and responsibilities include attending meetings to discuss and facilitate conversations around digital design elements, designing, building and testing new resources and online content, ensuring online and in-person content and activities are aligned, sourcing new activities and resources, and trialling new learning technologies.

While these team members are in core roles, a variety of other stakeholders are involved at various stages. For example, media producers will coordinate filming, develop storyboards with the AL, ED and LD, conduct or oversee filming and editing, and attend feedback sessions. We involve students through the initial design thinking activities (CONNECT:IN workshops), feedback via focus groups and surveys, and also through student internships to help develop media and online learning artifacts. Another stakeholder group of great importance to us is our industry practitioners. We also try to involve them in the early stages and particularly around assessment design and sometimes in 'judging' pitches and presentations.

Finally, the senior project manager is pivotal in keeping all the different actors and processes connected and moving along across a range of smaller course projects. Providing an overarching contact point, ensuring timelines are adhered to and managing expectations and support through fortnightly project lead meetings.

Design stages: Our iterative approach to co-design of connected learning at scale involves five key phases that complete one cycle. In some projects, there may also be iterations within cycles for example repetitions of the designing and building phases before moving to implementation. In the CLaS project, one complete cycle takes approximately six months and for a 'deep touch' approach we spend three cycles with a subject or course. As mentioned earlier, EdTech is used to support educational processes rather than driving any of the stages (Helmuth, 2000; Glover *et al.,* 2016):

Explore/Ideate
This first phase begins with a crowdsourcing exercise called CONNECT:IN where we invite students who have completed the course at some time in the past few years, to reimagine how the course could be delivered. This is followed by an ideation workshop (as described above). The primary goal of the workshop is to identify 'dreams' and 'gripes' with the course and through these discussions and sharing of ideas, to build rapport between participants and to promote an environment conducive to creativity. We document these goals and challenges and will revisit in the final (evaluation) phase.

Plan/Design
During the next phase, the AL and members of their teaching team continue to workshop ideas with EDs and LDs, and act as co-designers in the process. This phase commonly involves one or more additional workshops to plan and design and to introduce possible technologies, tools and approaches. Before building and testing begins, other stake-holders, such as industry practitioners and students, may also be brought back into the process to provide input and feedback on planned developments and to allow further refinements. We also ensure online and in-person content and activities align. To conclude the scoping activities, we develop a set of milestones and a project timeline.

Build/Test
While the AL and teaching team may not be directly involved in building and testing the prototypes and resources themselves, they contribute discipline expertise and engage in feedback and review sessions with EDs and LDs during this phase. This is where iteration is at the fore and timely communication is crucial to the success of the project. Cracks can often surface in this stage of the co-design process if content is not provided or if expectations are not managed well.

Implement/Observe
The first stage of implementation commonly involves some level of professional development for the team who will be teaching the course. Professional development workshops may be co-facilitated by an ED in collaboration with members of the wider teaching team. This is important particularly in how the online (blended) aspects of the delivery work but also how we use the teaching spaces in a more active and collaborative way. Once teaching begins, this phase continues to require close

collaboration between ALs, EDs and LDs, to address any unexpected issues as they emerge and to track student engagement with the designed activities.

Reflect/Evaluate
While focus groups, interviews and surveys with educators and students are commonly run during and after the implementation phase, evaluation planning begins much earlier in the process. Existing data from the regular student feedback surveys is analysed in the early stages to establish key strengths and challenges from the student perspective. Data is used to assess the effectiveness of the resources and approaches in addressing our initial articulated problems and aspirations, and to make decisions about the next iteration of development.

Reflections on application

It is important to recognise that CLaS is conceived flexibly in terms of both *cohorts* (e.g. a whole group of students starting a business undergraduate degree programme – and then possibly all enrolled in a core unit or course within that programme) as well as individual *classes* (e.g. a 3 hour session or tutorial on a specific topic like sustainable marketing). As such, the approach and process described provides a flexible framework to design or redesign curricula which may appear to reflect the long-established processes for 'student as partner' or 'employer engagement' in the UK. Here, regulatory changes have promoted the marketisation of higher education, thereby increasingly emphasising the central role of student voice and employment relevance at the heart of education. This is reflected in the title of "the independent regulator of higher education" called the Office for Students (see https://www.officeforstudents.org.uk/).

These comparisons, however, may well be misplaced; the engagement of students and employers in the co-creation of curricula is still relatively rare and localised in programme teams in UK higher education. Indeed, a recent global event highlighted the need for a much closer connection to stakeholders in the creation and evaluation of higher education including in business schools which are often espoused to be closely connected to those they impact (see Wall, *et al.*, 2022). In contrast, the CLaS process above is described as a carefully managed process with multiple actors including academic leads, project managers, educational developers, learning designers, students, each with a specific set of expertise (or experience) and role. Each stage also embeds various strategies of engagement, purposively unlocking ideas and voice, before, during and beyond implementation. This seems like a proportionate approach given the richness and scale of the co-design operation, as well as the scale of impact on student experience (e.g. 1600 students per cohort in some cases).

In contrast to the UK's long-established higher education system, Vietnam's higher education system has been in rapid development to respond to the ongoing economic reform and growth which has maintained its position as one of the fastest growing economies. Here, The Ministry of Education and Training (MOET) is responsible for setting the general framework and guidelines for curriculum development across all levels of education, from primary to tertiary settings (see https://en.moet.gov.vn/). At the tertiary level, universities are encouraged to adopt an outcome-based approach to curriculum development, which involves defining the learning outcomes and competencies that students are expected to achieve upon completion of their studies. This approach has led to a greater emphasis on developing practical skills and real-world applications in addition to academic knowledge, and was strengthened by the Prime Minister's directions announced in 2017 to improve skills related to the fourth industrial revolution. Among the directions, STEM (Science, Technology, Engineering, and Mathematics) education is encouraged to be more applied from K12, promoting interdisciplinary learning through practice, research, and engineering design processes (Ho et al., 2020).

In addition to conforming to the MOET guidelines, universities also adopt common theories and standards to develop curricula, including for example AUN-QA (Asian University Network – Quality Assurance) and CDIO (Conceive Design Implement Operate) (Hoang *et al,* 2023). There are parallels between the CLaS process and the latter of these theories, the CDIO framework, which emphasises the integration of theory and practice in engineering education. Many universities have adopted the CDIO process in the development of their engineering programs with positive learning and employability outcomes (Dũng Trần T, 2022).

Unlike the CLaS process, the CDIO approach is based on four main stages: Conceive, Design, Implement, and Operate. These stages represent a holistic approach to engineering education that emphasizes the integration of theory and practice, and the development of a wide range of skills and competencies (Crawley *et al,* 2011):

- Conceive: This stage involves defining the educational program's goals and objectives, as well as identifying the needs and expectations of all stakeholders. This includes students, faculty, industry partners, and other relevant parties. The Conceive stage focuses on developing a clear understanding of the program's purpose and the desired outcomes for students.
- Design: In the Design stage, the educational program is developed in detail, based on the goals and objectives defined in the Conceive stage. This includes the development of curricula, course materials, and assessment strategies. The Design stage emphasizes the importance of integrating theory and practice, and the development of real-world skills.
- Implement: The Implement stage involves the actual delivery of the educational program. This includes the teaching and learning activities, as well as the assessment and evaluation of student performance. The Implement stage emphasises the importance of active and collaborative learning, and the use of real-world projects and case studies.
- Operate: The Operate stage focuses on the ongoing evaluation and improvement of the educational program. This includes gathering feedback from stakeholders and making adjustments to the program as needed. The Operate stage emphasizes the importance of continuous improvement and the development of a culture of learning.

The application of CDIO in Vietnam also differs to CLaS in that there are perhaps more central university administrative roles involved in curriculum development, for example, at the Hanoi University of Science and Technology, the following are involved:

- The Training Scientific Board, whose approval is necessary to ensure that the curriculum aligns with the policies of the Ministry of Education and Training (MOET) and the vision of the university (though this does reflect structures in New Zealand where curriculum is centrally organised by government).
- The Academic Lead (usually the Vice Dean of the training institute), who leads all meetings with stakeholders (students, industry, experts in the field) to determine program learning outcomes and ensure that all curriculum development aligns with the university's guidelines.
- Teachers, who are involved in ensuring that the content and assessments of every subject in the curriculum contribute to the program learning outcomes.

Other stakeholders will also be involved in the design and implementation of an educational program, including students, faculty, industry experts, and other relevant parties. The goal is to create a program that is tailored to the needs and expectations of all stakeholders and that prepares students for the real world by providing them with relevant and practical skills (Tùng & Ngọc, 2019). Co-designed curriculum

is often characterised by flexibility, continuous improvement, and a focus on real-world application, and aligns with the CDIO framework in these ways:

- Firstly, both concepts emphasise the involvement of stakeholders in the curriculum development process. The co-design curriculum involves collaboration between students, teachers, and industry professionals, while the CDIO approach involves input from industry, faculty, and students. Both approaches aim to create a curriculum that meets the needs of the industry and society.
- Secondly, both concepts prioritise hands-on learning experiences. The co-design curriculum focuses on project-based learning and practical applications, while the CDIO approach emphasizes experiential learning and real-world projects. Both approaches seek to produce graduates who are ready to apply their knowledge and skills in the workplace.
- Finally, both concepts promote a continuous improvement approach to curriculum development. The co-design curriculum involves ongoing feedback and evaluation from stakeholders to refine and improve the curriculum, while the CDIO approach emphasizes regular assessment and evaluation to ensure that the curriculum is meeting its goals.

Therefore, co-design can be effectively applied to bring benefits to educational institutions in Vietnam, particularly those applying international accreditation standards such as AUN-QA and CDIO, as they share similarities in emphasising stakeholder involvement, hands-on learning experiences, and continuous improvement. However, it is recognised that not all disciplinary areas would necessarily reflect such principles and so might be less familiar in implementing such pedagogical or curricula development processes.

At the same time, and in contrast to the UK, Vietnam has accelerated the development of technologies and approaches relevant to CLaS through the National Digital Transformation Operation (NDTO) (partly in a response to the covid 19 pandemic). The Prime Minister of Vietnam announced the NDTO in June 2020 (Vietnam Government Decision 749/QD-TTg 2020), with an ambition to develop distance learning platforms, apply digital technologies in management, teaching, and learning, digitalise textbooks, and supplement materials, develop learning resource sharing platforms in both online and offline forms, develop education technology, as well as the personalisation of education. Every education institution now has, or is developing, distance learning, allowing students to take up to one-fifth of coursework online. Here, digital technologies are applied to homework and assessment, expanding the opportunities for learning at scale.

The NDTO has also encouraged the development of Massive Open Online Courses (MOOCs) in digital transformation and digital culture, aiming to train thousands of experts in digital transformation through open training course for managers. As a result of the Covid-19 pandemic, many students in Vietnam had to study online. Therefore, MOOCs have become more accessible and are now used in K12 education as well as undergraduate and graduate programmes. More than half of higher education institutions applied online learning and many adopted a fully online mode during the pandemic (Maheshwari, 2021). Employees also benefited from this trend. As such, the NDTO and Covid-19 have accelerated opportunities for sharing and collaboration in teaching and learning, and the adoption of Learning Management Systems and Learning Content Management Systems. As such, the key developmental principles of CLaS more or less reflect some long-established principles in co-creation of pedagogy in the UK and Vietnam, such as the engagement of multiple stakeholders. The differences, however, include the variable inclusion of central officials in universities in Vietnam which is a necessity in legal frameworks of higher education. There also appears to be differences in the way that co-creation is facilitated, where CLaS seems to engage pedagogical tools to enable voice and visionary or revolutionary approaches to

pedagogy which go beyond simply involving employer voice which is now common in the UK and Vietnam.

CLaS offers an additional layer of design to deliver this in practice, and gives a strong call to action of the need to think about digital technologies in terms of human and curricula development processes rather than the technology as the driving force. In other words, it adopts a pedagogy-first rather than technology-first approach. This reasserts the need for methods which explicitly enable students and others with a stake in curriculum across cultural boundaries to express their voice. Such methods must include (1) preparation for that involvement to be confident enough to express voice in curriculum development processes, (2) participatory processes during the curriculum development process to enable divergent voices to be handled carefully, and (3) open processes after curriculum development to enable honest evaluation and feedback loops for improvement. Educational technologies can be an enabler in these processes, and our role is to orchestrate where and how to maximise its utilisation.

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