

# Collaborative Online International Learning for Design Education: A framework for Studio-Based Learning

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## Abstract

The ability to think beyond disciplinary and geographical boundaries is essential for future designers to approach complex challenges and make a meaningful impact. Traditionally, these skills are developed in a studio environment where students can participate in mobility programmes and connect with peers from other disciplines; however, the COVID-19 pandemic has limited these opportunities due to social distance requirements. This article presents a framework for collaborative online international learning (COIL) for studio-based courses as an alternative for educators who want to foster interdisciplinary and intercultural learning in online and hybrid environments. The framework emerged from the development and delivery of a COIL initiative for an experience design studio course offered at an Australian University, in partnership with consumer behaviour and intercultural communication courses at a Brazilian University. The collaboration involved peer-to-peer online interactions between 43 undergraduate students enrolled in the three courses. Despite the renewed popularity of implementing COIL in higher education to overcome pandemic barriers, there is little documentation of applying the method in design disciplines and less evidence on how it corresponds to studio pedagogy. This type of computer-mediated collaboration offers an accessible and more inclusive alternative to mobility programmes and can continue to expand the opportunities for students to experience the world during and after the pandemic. The article focuses on the perspective of design education, reflecting on the benefits and challenges of online international collaboration, and provides new insights into the adaptations required to integrate the COIL and studio models.

## Introduction

The studio model is a traditional learning and teaching method in creative disciplines and a signature pedagogy in design education (Crowther 2013), providing context for students to develop a range of skills to pursue their desired professional careers. In architecture and design disciplines, for example, studios are typically a physical space where students meet to work on a problem-based project that encourages experimentation, reflection, creativity, critical thinking and collaboration (Chamorro-Koc and Kurimasuriyar 2020). As design practice evolves and becomes more responsive to contemporary sociocultural and environmental concerns, there is an increasing need for studio courses to offer

opportunities for students to expand their knowledge beyond traditional design skills and develop twenty-first-century capabilities. This includes competencies such as interdisciplinarity and character qualities such as social and intercultural awareness, which are required to approach complex problems and enter the workforce (Wright and Wrigley 2019). One of the ways to incorporate this type of knowledge into design education is to expand the scope of studio projects to encourage students to explore ideas outside disciplinary silos and to have a thorough understanding of the culture and needs of people (Meyer and Norman 2020). This can be achieved by devising project briefs that allow interactions with peers from other countries and disciplines, community groups, industry partners or leading experts, drawing more extensively on collaboration and social engagement.

In the past two years, opportunities for social engagement and physical collaboration have been limited due to the social distancing requirements of the COVID-19 pandemic. As a consequence, the adoption of online learning and teaching in higher education rapidly accelerated to overcome barriers and new strategies had to be created in an attempt to replicate the valuable attributes of the studio model in an online environment. Although internetbased design studios have existed since the growth of the internet as a tool for communication (Broadfoot and Bennett 2003), new forms of online engagement that reflect more recent technological advancements are required, and virtual strategies for design education have to be reconsidered to prepare students for contemporary challenges. In the broader realm of higher education, initiatives such as collaborative online international learning (COIL) have gained renewed popularity during the pandemic (Ingram et al. 2021) for offering intercultural and interdisciplinary learning opportunities at home through the internet (Dorner 2018; Rubin et al. 2019; Gray et al. 2021). Although COIL is a well-established model recognized for its benefits in enabling virtual cultural and disciplinary exchanges, there is limited evidence of the adoption of this approach in design education, particularly in studio-based courses. This article aims to contribute to this gap in the literature by sharing the development and implementation of a COIL initiative that connected

undergraduate students in Australia and Brazil, focusing on the design studio side of the partnership as an attempt to replicate the benefits of the studio model in an online environment.

The reflections and learnings from the COIL experience resulted in a framework for online international collaborations for studio-based education. The following section reviews the relevant literature on COIL and its connection to design studios. The article then provides an overview of the COIL initiative followed by a discussion of adaptations and strategies to facilitate online international collaboration.

## **Literature Review**

### *COIL and Online Teaching and Learning*

COIL, in its essence, is a form of virtual exchange that encourages students from different international universities to engage beyond disciplinary boundaries and gain intercultural awareness (Dorner 2018; Rubin et al. 2019; Gray et al. 2021). This type of online engagement requires pedagogical collaboration between different international institutions and the participation of local educators who develop shared objectives with an emphasis on peer learning. Once this initial agreement is in place, educators develop a structure in which activities can occur throughout the semester or for a few weeks, and classes can be delivered entirely online, or in a hybrid format where face-to-face sessions occur on campus and international collaborative student work takes place online (Rubin et al. 2019). The curriculum of each institution may or may not be similar, and summative assessment may or may not be included as part of the COIL. This approach requires extensive preparation to overcome common operational challenges, such as different academic calendars, teaching styles and time zones. Despite its limitations, COIL is a more inclusive and accessible means of enriching students' intercultural

appreciation and interdisciplinary awareness, as it only requires access to a computer or smartphone with access to the internet.

Before international travel was limited by COVID-19 pandemic restrictions, student mobility programmes were a widely adopted strategy to foster intercultural and interdisciplinary learning as part of the curriculum of design studios (Ang 2018). However, participating in this type of international engagement was not an option for many students despite the lack of travel restrictions. For instance, Brazilian higher education students have identified that financial status, language fluency and mental state are vital factors hindering their participation in international experiences (do Amaral et al. 2022). Similarly, Australian university students stated that they can face financial barriers and have concerns about personal and professional commitments and security (Jones et al. 2016). In both cases, the potential for increased employability and personal growth are some of the key motivators for students to seek opportunities to participate in international experiences (Forsey et al. 2012; Jones et al. 2016; do Amaral et al. 2022). Taking into account the barriers of mobility programmes identified in previous research, the adoption of digital tools has an equalizing effect and provides a more accessible form of knowledge transfer (de la Garza and Maher 2022). Additionally, given the reciprocal nature of this type of partnership, students have access to other cultures and teaching models and, in turn, question and appreciate different views and influences on design practice (Paatela-Nieminen 2012; Suteu and Pillan 2013). Thus, the COIL model can be a beneficial approach to online teaching and learning in studio courses.

### *COIL and Design Studio*

The COIL model aligns with studio pedagogy, as both are based on experimental and collaborative learning. In a traditional design studio, students spend a few hours a week in a physical space with their peers, applying their knowledge and skills to projects and receiving formative feedback from lecturers and tutors. This method of teaching has not significantly changed from its historical origins

in architecture education, where educators tutor small groups or individual students to develop professional skills (Schön 1987; Broadfoot and Bennett 2003; Williams et al. 2010). Similarly, the COIL model actively supports peer-to-peer interactions, collaborations and critical thinking skills (Vahed 2022). Although both educational models are grounded in collaboration and development of professional skills, limited examples of COIL applied to studio-based design education are available in the literature.

One of the few examples of an online design studio that focuses on reproducing experiential studio-based learning involving cross-cultural and interdisciplinary collaboration is the Global Design Studio. Three design educators based in Australia, Canada and Germany created a model for experiential learning in online design education in response to pandemic restrictions. They used digital tools to shift their studio classes online to facilitate collaboration between students, lecturers and local industry partners. The lecturers adopted strategies such as collaborative briefing, real-world approach, sharing of resources between educators and peer work to achieve similar learning outcomes as traditional face-to-face studios in a virtual environment (Desai et al. 2021).

Table 1 provides an overview of some of the most prevalent attributes and learning outcomes associated with the design studio and the COIL model found in the academic literature. While there is no consensus on a specific definition for each of these approaches, the content of the table was extracted from a review of relevant sources that offer discussions, examples and analyses of the fundamental characteristics of the two educational strategies.

Table 1 – Most prevalent attributes and learning outcomes of the design studio and the COIL model.

<b>Model</b>	<b>Traditional design studio</b>	<b>COIL</b>
<b>Attributes</b>	Face-to-face Local interactions (geographic proximity) Synchronous learning and teaching Peer-to-peer learning	Online or hybrid International interactions (geographic distance) Synchronous and asynchronous learning and teaching

	Collaboration Project work	Peer-to-peer learning Collaboration
<b>General learning outcomes</b>	Co-creation of knowledge Creative problem-solving Critical thinking Interdisciplinary collaboration Reflective practice	Co-creation of knowledge Problem-solving Critical thinking Intercultural collaboration Cultural awareness
<b>References</b>	Mewburn (2012), Crowther (2013), Bandera et al. (2020), Chamorro-Koc and Kurimasuriyar (2020) and Wrigley and Mosely (2022)	Hautala and Schmidt (2019), Rubin et al. (2019), Gray et al. (2021), Herrera-Pavo (2021), Liu and Shirley (2021) and Vahed (2022)

The table shows synergies between the attributes and learning outcomes of both models in a way that makes the integration of COIL and the design studio mutually beneficial. When combined, they can enhance learning outcomes and offer opportunities for students to develop skills such as interdisciplinary and intercultural collaboration. Although students can be supported to develop these skills through multiple learning and teaching strategies, as mentioned before, the COIL model can provide a more inclusive and accessible form of international engagement for them to have the opportunity to work with people with whom they would not otherwise have a chance to collaborate. Additionally, online collaborations between students and educators can also be a form of challenge to the classical hierarchies of the traditional studio model, which can be a space of imbalanced power relations that favours the voice of the expert tutors (Webster 2007). Therefore, there is an opportunity to develop a deeper understanding of how COIL can be implemented in online and hybrid studios to benefit the evolution of this approach in the design studio pedagogy during and after the pandemic.

## **The COIL Initiative**

### *Overview of the collaboration*

The motivation to initiate a COIL collaboration emerged from the connection of lecturers in Australia and Brazil with a shared interest in cross-cultural and interdisciplinary education. The COIL initiative

was established and implemented in the second half of 2021, with the aim of promoting peer-to-peer international interactions during a time when classes in both countries were mostly offered online due to COVID-19 social distance requirements. The initiative involved 43 higher education students from the two countries enrolled in three courses, experience design (Australia), consumer behaviour and intercultural communication (Brazil). Students in each course formed groups of two and three members and were then paired with a group from the other institution to correspond during the COIL. The initiative consisted of eight pairs of groups working on separate projects aligned with the learning outcomes of their specific courses and interacting with each other at strategic moments. COIL activities were not formally evaluated, and instead the knowledge and skills developed through the engagement process contributed to enriching and informing the projects for each course.

### *Overview of courses*

The experience design course at the Australian institution is typically delivered in a design studio format to enable students to develop practice by responding to contemporary design challenges in an innovative and exploratory way. In this course, students learn to (1) research and discuss contemporary theories and practices in experience design, (2) collect, analyse and information to generate insights that have an impact on design decisions, (3) apply appropriate collaboration tools and techniques in a design project and (4) enhance cultural sensitivity and interdisciplinary awareness. During the 12-week studio course, students work on a project in response to a design challenge set out in the first weeks of the semester.

The design challenge stipulated for the studio project when the COIL initiative took place was around the theme 'Future of Work'. Students were encouraged to design a digital experience to help young people achieve their career goals. During the course, the students conducted research and identified a unique issue within the broader topic of the design challenge they wanted to address in their projects.

To scaffold learning and guide project development, the course was structured around a design process inspired by divergent and convergent thinking of the Design Council's innovation framework (Design Council 2019). The process consisted of six phases: (1) introduction of the design challenge, (2) exploration of the challenge context, (3) identification of opportunities for micro-design interventions in a macro-system, (4) development, (5) testing and iteration and (6) delivery. The course began with an introduction to the challenge theme and research methods for students to explore the context of the challenge in depth. Each group used analysis tools to define a unique problem to focus on and then prototyped, tested and iterated potential design solutions during the development phase. Finally, the project ended with a final presentation in which the students demonstrated the digital experience they created. The design educator provided formative feedback and support throughout the project. The course had six contact hours a week divided into two 3-hour studio sessions. A typical session included synchronous collaborations between the lecturer and students through video calls on Microsoft Teams, using a number of other digital platforms to engage in studio activities. These are presented in more detail in the discussion section.

At the Brazilian institution, two courses participated in the COIL initiative: consumer behaviour and intercultural communication. They are both hybrid courses, with 30 per cent face-to-face and 70 per cent online classes delivered through a combination of theoretical approaches and practical activities. Specifically, in the consumer behaviour course, students learn to (1) research contemporary theories on marketing and consuming, (2) apply the theories of the consumer journey to real market situations, (3) debate and compare different communication strategies that interfere with consumer behaviour and (4) understand the role of culture in different decisionmaking processes. In the intercultural communication course, the learning outcomes are to (1) understand what intercultural communication is, as well as its benefits and applications, both in personal and professional lives, (2) perceive how cultural identities and values, which are socially constructed, may affect communication by framing patterns, stereotypes and prejudice, (3) compare how communication styles differ across cultures and



may disrupt effective communication or cause conflicts, (4) explain and handle cultural misunderstandings and conflicts in a way relevant to each specific culture and (5) apply anthropological models to perform cross-cultural analyses of foreign cultures. These 18-week long courses were selected for the COIL initiative as they are part of the international programme of the university. This programme is designed to promote cultural exchange and sensitivity between international and domestic students, and it is aligned with the institutional internationalization policy. As part of the COIL initiative, students in the consumer behaviour course worked on projects exploring the role of culture in decision-making processes. They interviewed students from both their local and Australian institutions to compare consumer behaviour towards the purchasing decision process of essential products, such as toilet paper and soap, for instance. In the intercultural communication course, students applied theoretical models to perform cross-cultural analyses, and they also employed interviews to compare communication styles in the workplace, focusing on verbal and non-verbal communication.

The structure of both courses consisted of (1) introduction of the theme, (2) production of an interview script considering the theories studied throughout the course, (3) data collection through interviews and (4) presentation of data to the group comparing data collected from international students at the Australian institution and Brazilian students at the local institution.

### *The COIL Approach*

At both universities, the COIL initiative occurred in parallel to course activities. Before the semester started, educators met online multiple times to decide the scope of the COIL, align different academic calendars and re-examine the core purpose of each one of the courses to identify opportunities for disciplinary overlaps and exchange. Aspects such as online collaboration platforms and engagement

strategies were also discussed to ensure that technology was used as an enabler of student learning experiences and a tool to overcome communication barriers such as different time zones.

The first contact between the students occurred through a series of asynchronous introductions mentioning the course they were studying and sharing some of their interests. The lecturers then organized groups within their courses and paired their student groups with a correspondent group from the other institution. In preparation for a synchronous international meeting, students in Australia started working on their studio projects. They prepared initial design concepts to present to students in Brazil, while students in Brazil prepared a series of interview questions to ask their peers in Australia. Students were encouraged to independently arrange a time to meet outside of class that suited their work, academic and personal commitments. After the synchronous session, the students reflected on their experiences in class and received guidance to apply what they learnt in this exchange to their academic work.

## **Discussion**

After the planning and implementing the COIL initiative, the involved educators reflected on the experience and developed a framework for integration of the COIL and studio models. The framework, shown in Figure 1, provides an overview of steps and adaptation strategies for integrating the two approaches into an online studio or hybrid environment.

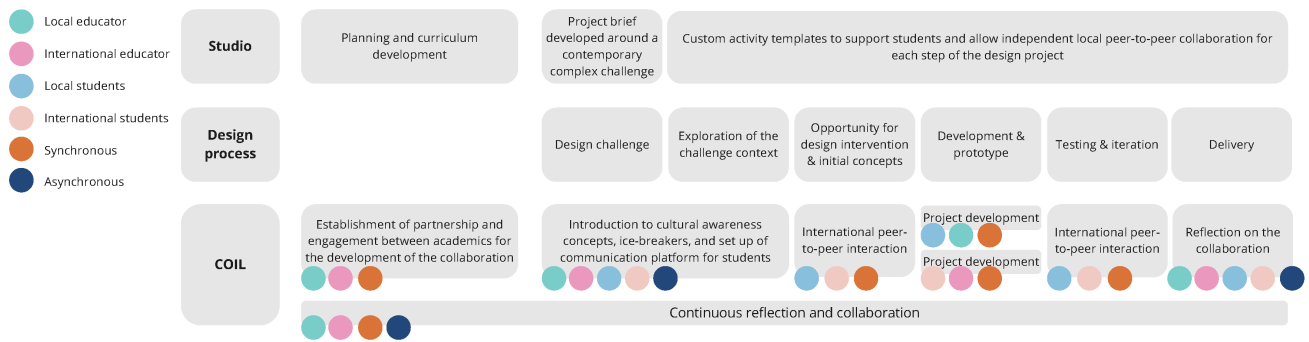


Figure 1: COIL framework for studio-based learning and teaching.

The model is structured around a six-step design process: (1) design challenge, (2) exploration of the challenge, (3) opportunity for design intervention, (4) development and prototype, (5) testing and iteration and (6) delivery. This process represents common phases used to scaffold design learning and project progression. The studio and COIL activities are positioned in parallel to the design process, providing a visual representation of how the models correlate. The studio section highlights practical actions of teaching and learning, and the COIL section shows the strategic activities involved in international online collaboration. The framework also contains circles indicating possible moments of participation of educators and students and the activities that can occur in a synchronous or asynchronous format.

Although the framework does not provide a comprehensive list of communication strategies, digital platforms and peer-to-peer interaction models, it displays a general structure to guide educators in applying COIL in studiobased courses. Educators must consider their preferences, the context and the learning outcomes of their courses to adapt the framework and decide on the most appropriate teaching and learning techniques to use. However, the barriers and enablers faced throughout the COIL initiative presented in this article may provide insight to guide these decisions.

Some of the challenges in collaboration involved time zones, different academic calendars and collaborative dynamics, including the availability and participation of students. Some of the aspects

that contributed to a positive experience included constant communication between educators, structured interactions for students, preparation of students prior to synchronous interactions, student attitudes and openness and the development of peer-to-peer activities. The most relevant adaptations and implementation strategies involved:

*Introduction to cultural awareness concepts:* to ensure that students benefited from the opportunity for intercultural learning, they were introduced to the topics of cross-cultural design and internationalization in preparation for the COIL activities. The objective was to communicate to students the relevance of participating in international experiences and how collaboration with people from different cultural backgrounds could benefit their projects. This resulted in project outcomes that reflected consideration of the role that culture and context play in the way people experience the world around them. During class discussions and project presentations, students were able to demonstrate cultural sensitivity in their decision-making process, for example, by discussing how different cultures influence image interpretation, social behaviour and human interactions without assigning merit to a specific way of knowing, but demonstrating appreciation for the particularities of diverse cultures.

*Project brief developed around a contemporary and complex challenge:* the design challenge for the studio project brief was selected to create opportunities for students to explore a complex global challenge with potential for impactful outcomes. The project theme was inspired by changes in employment and labour markets around the world in response to technological advancements, globalization and other megatrends (OECD 2022). These developments present opportunities to look at systemic problems and propose smaller local creative solutions to support those who will soon join the workforce, recent graduates and other young people. The COIL collaboration allowed students to have conversations with peers from a different part of the world to reflect on how the issue affects people living in different regions. This type of multifaceted problem challenged students to expand

their thinking beyond disciplinary and geographical boundaries to understand the needs of others and develop a better understanding of a different context.

*Reflective and continuous collaboration between lecturers:* throughout the semester, the lecturers maintained synchronous and asynchronous contact to update each other on the progress of their courses and to ensure that students' needs were being met. This resulted in timely and responsive adaptations to COIL collaboration and peer-to-peer activities.

*Custom activity templates for peer-to-peer collaboration:* peer connections is one of the core attributes of design studios and of the most integral components of replicating the studio experience in an online environment. Peer-to-peer collaboration was enabled by using custom activity templates for each stage of the project. These templates contained self-explanatory instructions that allowed students to progress in their project independently and to critically consider how to incorporate relevant theories, concepts and methods into their practice.

*Shared collaborative virtual board to replicate studio environment:* a shared collaborative virtual board was created on Miro, with sections divided by activities and selected areas for students to develop their work. The dynamic of using this virtual board consisted of students and the lecturer joining a Microsoft Teams call and opening the Miro board at the same time to talk and interact while working on a specific activity. While the students had designated areas to work on the board, using one board for the entire cohort gave all the studio participants a bird's-eye view of the collective workspace. This type of strategy replicated the physical space of the studio, traditionally used to present drawings, demos and models, among other artefacts.

*Selection of appropriate communication platform:* for this specific collaboration the Discord platform was used for synchronous and asynchronous communication between students outside of the studio. This platform has text, voice and video features and users can communicate in private chats or communities called servers. A server in Discord was set up as a central place for communication, which enabled students to introduce themselves (as an ice breaker) and organize

suitable meeting times according to their time zones and other commitments. The platform created a sense of familiarity between the students and gave them the freedom to establish their own ways of collaborating independently from the guidance of the lecturers. This opened up the hierarchy of the studio dynamic and enabled the opportunity to develop professional practice.

## **Conclusions**

To respond to the increasing need to develop skills to tackle contemporary challenges and adapt to the accelerating adoption of online delivery in design education due to the COVID-19 pandemic, this article shared an attempt to combine the well-established COIL model with traditional studio pedagogy to maintain and improve the learning outcomes of both strategies in a virtual environment. This experience resulted in a COIL framework for studio-based learning and teaching (Figure 1). The article shares the unique experience of an international partnership between students and lecturers in Brazil and Australia and provides insight into the use of COIL in design studios. It also contributes to the development of emerging literature surrounding the topics of interdisciplinarity and cross-cultural learning in online and hybrid studio pedagogy.

Although this article provides insight into integrating the COIL and studio models from the perspective of design education, the proposed framework can be transferable to other disciplines that seek to apply the studio model to foster intercultural and interdisciplinary learning in online and hybrid education. Further investigation is required to test the framework, as it resulted from a first-time COIL initiative and to validate its application in different disciplines beyond the design field. The framework is expected to continue to evolve through future implementations, collaborations and insight from other educators.

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