**Please cite the Published Version**

Moriarty, Sarah, Spruce, Jon and Mathai, Samson (2023) Critical pedagogies for collaborative innovation. In: 25th International Conference on Engineering and Product Design Education, 07 September 2023 - 08 September 2023, Elisava, Barcelona School of Design and Engineering, Spain.

**Additional Information:** This is an Open Access conference paper presented at 25th International Conference on Engineering and Product Design Education

# CRITICAL PEDAGOGIES FOR COLLABORATIVE INNOVATION

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## ABSTRACT

As designers of all disciplines are increasingly expected to engage in complex problems, involving social, cultural, technological, and economic issues that reach beyond their own known boundaries, so our students' educational experiences must evolve to better equip them for these challenges. Over recent years our department has embodied this ambition through an integrated delivery of cross-course projects via the Collaborative On-line International Learning (COIL) programme, aiming to support shared learning experiences across diverse cultures. Specifically, this study reports on the delivery of a COIL project between UK and Indian institutions, to foster practices of more inclusive and responsible innovation, engaging students in cultural exchanges beyond their existing lived experiences. Referencing design for sustainability and design for circularity as boundary models, the students worked in mixed teams to explore a design challenge from different cultural standpoints. To evaluate the project's success as a deep learning experience and to measure the extent of the impact upon core design values, the authors recorded student responses to prompt questions regarding (a) their awareness of global issues (b) the students' sense of collective agency within their extended community (c) their confidence in applying methods that extend beyond existing reference points (d) their understanding of complex problems and the connectedness of decision making to broader issues. Results from student feedback and student work were analysed to identify any defined changes in students core design values resulting from their engagement in the projects. The results of this study would be of interest to design academics and practitioners working across global partnerships.

*Keywords: Remote collaboration, sustainability, global design, critical pedagogy*

## 1 INTRODUCTION

The imperative for circular design solutions are clear. Driven by necessity to confront the climate emergency, responding to shifting consumer preferences, and the tightening of manufacturing and emissions regulations. Designers of all disciplines, but perhaps those involved in the design of products, are most acutely positioned to inform and influence client decision making around sustainable choices, with as much as "80% of a products environmental footprint being predetermined at the design phase" [1]. However, these are complex problems, involving social, cultural, technological, and economic issues that reach beyond established practices and challenge the predominate linear value chains. The application of circular thinking has never been more important to leverage positive change.

Within the UK, there has been much discussion surrounding the role of design in supporting shifts towards sustainable economy. Slipstreaming the 2021 COP26 (United Nations Climate Change Conference) the UK Design Council, an independent chartered charity, championed design's response in hosting the Design for Planet Festival in November 2021, aiming to support the UK's design industry to commit to a sustainable, climate-first future. Most recently, design practitioners themselves have initiated a national campaign 'Design Declares' offering designers across the design communication, product and service sectors the chance to build a unified voice in the climate emergency, supporting practitioners through a tool kit of actions to deliver change. It is therefore clear that our students' educational experiences must evolve to better equip them for the challenges of a changing design industry. Generating a meaningful response to such global issues will require a diversity of knowledge and skills, with individuals enabled to harness the contribution of distinct disciplinary expertise. Within this Collaborative On-line International Learning (COIL) study, we have begun to explore how to equip

students to become designers in a climate-first future, supporting shared on-line learning experiences across diverse cultures to foster practices of more inclusive and responsible innovation by trying to define the tools they will need and how they can use them. Two terms were introduced to the students and used throughout the project, Design for Sustainability and Design for Circularity (circular economy). "Design for sustainability is an approach that puts the well-being of people and the sustainability of the environment first [2]. "Designing for a circular economy has 3 core aims: To eliminate waste and pollution, to circulate products and materials (at their highest value) and to regenerate nature" [3].

## 2    PROJECT METHODOLOGY

Manchester School of Art, Product Design (MSOA-PD) and MIT Institute of Design (MIT-ID) established an institutional partnership in 2022, supported through the Collaborative On-line International Learning (COIL) programme. In this study, delivered through February - March 2023, MSOA-PD and MIT-ID tutors worked collaboratively to design a project exploring international creative practice, engaging students in cultural exchange along with exploring connectedness, responsibilities and agency as designers via the design of packaging solutions for the Indian and UK markets.

*Table 1. COIL partnership 2023 project details*

| University | Manchester School of Art | MIT Institute of Design |
|---|---|---|
| Country, City | United Kingdom, Manchester | India, Pune |
| Programme | Product Design | Product Design |
| Course Title | UNIT X | Packaging Design |
| Learning Outcomes (LO) | LO1: Generate a body of work in response to a given brief, environment, or situation. LO2: Demonstrate the development of personal practice. LO3: Present outcomes and articulate ideas to a peer audience. LO4: Identify skills and attributes for effective collaboration. | LO1: Have an understanding of the Packaging Design Process applied to design opportunities. LO2: Assess and apply all the skills used in a consolidated format. LO3: Ability to come up with a packaging solution fulfilling all the criteria. |
| Level | Year 1 | Year 2 |
| Duration | 63 Hours / 1.5 days per week | 150 Hours |
| No. students | 20 | 24 |

Students were placed in mixed groups from both institutions, meeting weekly via MS Teams, with synchronous and asynchronous collaboration being supported via the Miro on-line platform to enable the sharing of visual work. Throughout the project's delivery, students were asked to reflect upon a series of prompt questions devised by tutors and provided on a weekly worksheet. The questions asked students to reflect upon (a) the students' awareness of global issues (b) the students' sense of collective agency within their extended community (c) their confidence in applying methods that extend beyond existing reference points (d) their understanding of complex problems and the connectedness of decision making to broader issues. Following the project's delivery, all worksheets were gathered and analysed to identify common characteristic themes in responses and the extent to which the cross-cultural engagement and emersion into sustainable design had impacted students' core design practice.

## 3    PROJECT PLANNING AND DELIVERY

Using the Learning Outcomes as a framework, a curriculum of weekly project outputs required students to follow the UK Design Council's 'Double Diamond model' [4] consisting of four phases: Discover, Define, Develop and Deliver, a model currently used by both MSOA-PD and MIT-ID undergraduate courses. The design brief introduced the students to the packaging categories of Fast-Moving Consumer Goods (FMCG). These products are familiar to both sets of students, purchased regularly (food, drink, self-care, household care, healthcare) and provided a good contextual platform for 'icebreaker' team activities and ongoing discussions about daily routines, cultural similarities and differences.

The project brief required students to re-think an example of packaging considering the needs of the Generation Z (Gen Z) target market, described as being "hyper-aware of how their consumption affects the world around them, obsessed with ethics, sustainability, and inclusivity, they demand that brands focus on these values in genuine ways" [5]. Gen Z provided the trend rationale to focus on sustainability, and broadly matching the demographic of our COIL students (18-24 years old) provided a valid opportunity for our students to discuss how they engage with design for sustainability as consumers.

The on-line collaborative whiteboard platform Miro was utilised as a tool to support collaborative practice in the project. The Miro board presented a uniform set of columns that were used as presentation spaces to share design boards at the weekly review meeting and these boards became the portfolio for submission at the end of the project. A second Miro board was built (Research and Planning) and contained trend forecasting report links about the brief's chosen demographic and teaching and learning materials used within each programme, including tools to support planet-first designing. In response to the brief, which stated that "the world is currently in the grip of a packaging waste crisis, 90% packaging is single-use and can only be recycled once" [6], each programme delivered teaching about models for climate-first design. The UN Global Sustainability Goals and Design for Circularity (Circular Economy) were introduced using the online Ellen MacArthur Foundation resources [7]. A new model for Design for Circularity, see Figure 1, was also shared with students, developed by Manchester Metropolitan University Sustainability Team. This circularity framework, developed by MSOA-PD team, visually communicates the hierarchy of circular design strategies and formed a guiding set of criteria for students to consider within the design process.
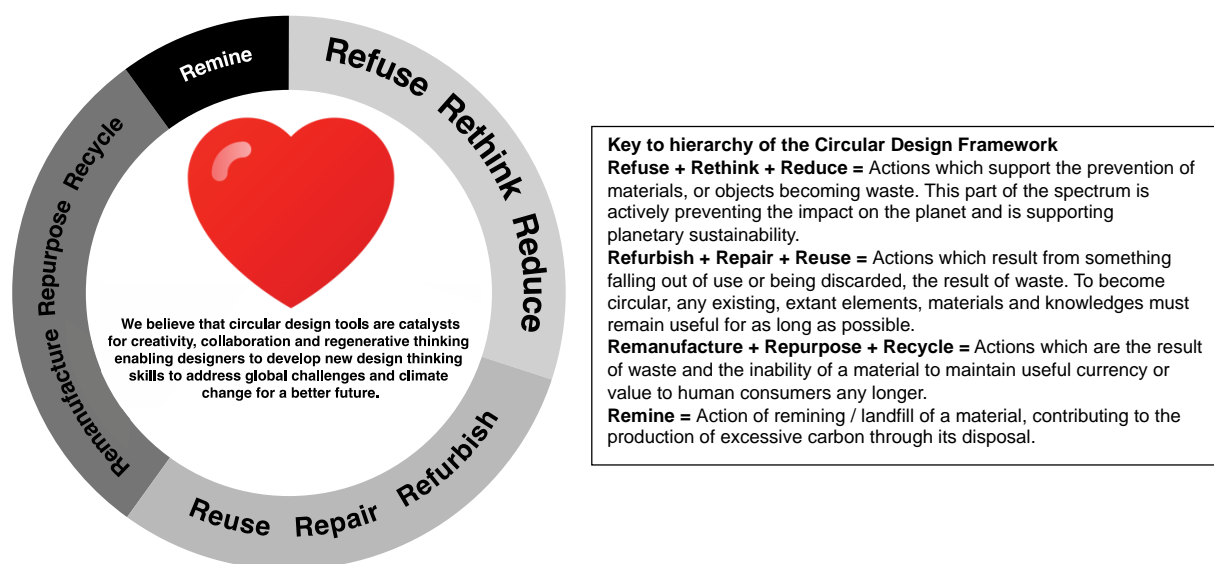


*Figure 1. Circularity framework*

The project was supported by packaging industry experts Huhtamaki, an international packaging company who manufacture across the globe to develop sustainable, innovative packaging for global brands including McDonalds, Prêt-a-Manger and Costa and have manufacturing sites in both the UK and India. Huhtamaki provided knowledge into the global packaging industry, offering valuable insights into future visions and participated in the critique of student design work alongside tutors.

## 4 THE RESULTS

*Question 1) Student awareness of global issues:*
At the start of the project, both sets of students were asked to upload onto Miro a 'Hero' (good) and 'Villain' (bad) example of packaging to discuss as an 'icebreaker' activity. The task revealed that 'bad', or 'villain' packaging included examples of excessive packaging, the use of single use plastics in food packaging and non-recyclable packaging in laminated plastics toothpaste packaging. Both sets of students identified similar reasons for categorising the packaging as 'bad' even if the brands or products selected were culturally different.

Further information was gathered on Miro from the students about awareness of climate issues, some shared that they had "negative feelings" about them, but all listed several ways to tackle the issues too: "be more aware of recyclable materials" and "stakeholders: businesses and designers being more accountable."

### Question 2) Students' sense of collective agency within their extended community:

Weekly student meetings created a positive momentum and focus, enabling more ownership of organisation, more time to share ideas further explore the cultural exchanges being made. Student feedback revealed that "consistent feedback was really beneficial" and "designs evolved using collaboration feedback." Feedback taken at the end of the Unit highlighted that the student teams "enjoyed the experience of working together" and "although our cultures are different, as designers we work in a very similar way."

The project provided a platform for discussion about the climate emergency, building a sense of collective agency through a shared examination of the evidence of the damage that packaging waste is causing globally. As packaging is also bought and used by the students every day, collective discussions took place in meetings where students could share ideas about alternative, enhanced user journeys that could be imagined within their own shared experiences of buying and using packaging.

### Question 3) Confidence in applying methods that extend beyond existing reference points:

Design for sustainability is taught within the MIT-ID curriculum as a formal lecture by a tutor knowledgeable in sustainable materials. Within this project, MIT-ID students focused primarily on packaging innovation, the 'unboxing', improving the interactions between user and packaging, with sustainable material selection as a supporting consideration.

At MSOA-PD, design for sustainability is not formally delivered through lectures, instead it is responded to within each brief which involves tutors building their knowledge through networking with MMU colleagues with relevant expertise to support projects. In this project, a new piece of research was developed into a visual framework (figure 1) to support student learning and application of sustainable practice in their designing. MSOA-PD students were introduced to the circularity visual framework through the existing 'user and product journey' tool which students use to map out a customer or product journey during its use. Using Rs from the circularity wheel 'hierarchy' as a creative catalyst, the user journey was disrupted or enhanced: *rethinking* the user relationship with packaging, *refusing* packaging or *reducing* materials for example. Expanding the user and product journey to visually map the packaging back to the brand or manufacturer provided scope for design routes exploring responsibility and accountability (*refurbishing* or *refilling* packaging for example).

Tutors discussed the approaches to teaching sustainable design throughout the project. Within MIT-ID, knowledge about sustainable materials applied to a design project demonstrates that sustainability has been considered. We discussed however that the selection of 'correct' sustainable materials is complex; material sourcing, its carbon footprint or if the material is 'emerging' but not yet mainstream for example. It is interesting to note that all of the students shared concerns with not knowing enough about sustainable materials, but unless the designer creates the system in which the packaging is used by the customer, to guide, be incentivised, driven to 'dispose' of it in the correctly designed way, the material loses its value (however sustainable the material choice), and the take / make / waste linear cycle continues despite the sustainable material choice at manufacture.

The design project submissions were analysed and revealed that MSOA-PD students all considered and applied a range of circular design principles, in particular Refuse, Rethink and Reduce which on the hierarchy of the Circular Design Wheel are "actions that support the prevention of materials, or objects becoming waste, actively preventing the impact on the planet and supporting planet sustainability" (figure 1). 5 out of 6 MIT-ID teams designed packaging which could be recycled, the penultimate step before Remine (landfill) described as "actions which are as a result of waste and the inability of a material to maintain useful currency or value to human consumers any longer" (figure 1) with the remaining team focusing on refilling the packaging after use.

### Question 4) Their understanding of complex problems and the connectedness of decision making to broader issues:

MSOA-PD students shared that "MIT-ID did want to work in a more sustainable way, but the function of the product was prioritised" and it was noted by MIT-ID students that MSOA-PD ideas were "more liberal with experience prioritised." This feedback evidences the different approaches and priorities within the curriculums. This feedback also captures the importance of universities sharing practice through projects like COIL, working together to develop the tools to use in understanding complex

problems. As reflected in MIT-ID's mission and vision: "MIT-ID aspires to nurture a *design education ecosystem* to develop future ready professionals with planet centric perspective using cutting edge technology and to promote the craft of design for a better life on planet earth" [8].

## 5  CONCLUSIONS

This project engaged students in using design as a creative tool to respond to a global issue. Working collaboratively with international partners (as peers) attempted to heighten their sense of collective agency and build responses to issues through design driven approaches that look beyond localised frames of reference.

Results from the project and analysis of student feedback revealed that:

(1) Using circularity as a set of design prompts to enhance existing design research methods can potentially lead to a wider scope of ideas for sustainable design. This was particularly highlighted by the use of the circularity framework, by providing students with a visual hierarchy that indexed sustainable strategies enabled a clearer evaluation of desirable versus less desirable choices to be discussed and understood.

(2) Students have developed an awareness of sustainability beyond a focus on material choice within a sustainable design decision making process. Understanding human behaviour, designing in and retaining material value with systems that support sustainable decision making throughout a product's lifecycle are also critical considerations that previously lacked recognition.

(3) Project results and student feedback suggests that the use of journey mapping as a collaborative design method to create a shared boundary object can equip students to explore and challenge the complex journeys of packaging *including* sustainable material choices and the complex set of decisions that customers make. By mapping these journeys and visualising the relationships between the brand, packaging and user, multiple circular design interventions can be made, generating meaningful alternatives in this way proved useful in expanding both sets of students' confidence to apply design ideas beyond their own local reference points.

In summary, the project's combined use of consumer centred journey mapping and visual framework for circular strategies has been successful in supporting a greater understanding of systemic thinking, and the considerations for decision making. Students more clearly recognise the need to look beyond material choice and user functionality. In responding to a design issue collaboratively and across cultural boundaries many of the students appear to have gained a greater holistic sense of their own responsibilities and agency as designers within a global context. We believe that establishing these benchmarks early in design education is significant in fostering a sense of collective agency amongst students to inform a positive sustainable future for design practice. As our students become the next generation of graduates their role in ensuring accountability of business, government and guiding better consumer decisions that embrace sustainability is imperative.

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