

Expanding Studio Boundaries: Navigating Tensions in Multidisciplinary Collaboration within and beyond the Higher Education Design Studio

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Abstract

In this article the authors set out and critically reflect upon an innovative pedagogical approach to delivering studio-based learning – drawing on the ‘Collaborative Futures’ project. Collaborative Futures is a live project premised on a futures-focused design brief written with an external partner. In previous iterations of the project, partners have included Hitachi and the Royal Bank of Scotland. Each year this project brings together a team of students in their final year on the Masters European Design programme to collaborate with a group of early career design graduates. Between 2019 and 2020, the Collaborative Futures project worked with Glasgow City Council’s Centre for Civic Innovation to explore and prototype citizen-centred scenarios surrounding data experiences set in the context of Glasgow 2030. Throughout the project the student-graduate team engaged in multidisciplinary collaboration within and beyond the boundaries of the higher education studio context, working with civic, academic and design professionals, public and third sector organisations, and members of the public. The authors reflect on the design process; theoretically unpack the cross-cultural, studio-based collaboration that took place; and discuss the complex challenges that emerged and the meditating role design artefacts played. The insights presented in the article have value for design educators seeking new approaches to designing and delivering studio-based design learning that fosters creative, multidisciplinary communities of practice and collaborative capacity-building for design students in a professional setting.

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Keywords

studio-based pedagogy, professional practice, multidisciplinary collaboration, futures-focused design, community of practice, citizen-centred engagement

Introduction

Participatory and social design practices are increasingly playing a key role in addressing complex global societal challenges through context-led, collaborative and co-creative approaches with organisations, communities and individuals, which can lead to innovative, person-centred outcomes and solutions. It is now common within contemporary undergraduate and postgraduate design education for co-design, speculative and futures-focused approaches to be embedded into curricula to support critical exploration; problem-framing challenges; experiential insight-gathering; reflective, relational and interpersonal skills such as empathy and reflexivity; identifying and co-defining design opportunities; and (co)designing meaningful and impactful outcomes that lead to preferable futures (Moreira 2018; Lee *et al.* 2019; Rowe 2020). Underpinning these approaches is the role of collaboration, a key transferable skill for entering the design industry. Research exists surrounding collaboration with non-designers in community-based co-design processes (see, for example, Sanders & Westerlund 2011; Cruickshank *et al.* 2013; Knowles & Spence 2016; Bailey *et al.* 2018; Smith 2018) as well as the ways in which design pedagogy can support this (Dixon & Murphy 2016; Rocha & Ferreira 2019). However, what remains under-researched are strategies and teaching models that prepare design students for collaborating with professional partners in community-based co-design processes (Souleles *et al.* 2017). The authors explore this specific aspect in more detail and present an innovative pedagogical model that supports the development of the design student's agency in response to the challenges and tensions in cross-cultural, multidisciplinary collaboration in an industry setting.

At the Glasgow School of Art (GSA), engaging in multidisciplinary collaboration within and beyond the higher education studio context is a key component in developing students' professional practice across the design programmes. More specifically, on the Masters of European Design programme (MEDes), final year students undertake 'Collaborative Futures', a four-month studio-based project delivered in partnership with an external organisation, and undertaken in a team with early career design graduates. Currently in its sixth iteration, the pedagogical model applied in Collaborative Futures has been implemented in a range of contexts. This includes a student-graduate collaboration with the design division of Hitachi (2015) and with the Royal Bank of Scotland (2016–19). The most recent iteration, which will be drawn on as a case study in this article, took place between October 2019 and January 2020 and was in collaboration with, for the first time, a public sector industry partner. In this case, the project explored and prototyped citizen-centred scenarios surrounding data experiences set in the context of Glasgow 2030. As with previous iterations, this institution–industry project partnership is based on a reciprocal exchange of knowledge and practice. The industry partner provides the student-graduate team with expert knowledge of a context and access to resources, people and places to undertake their research. The institution provides the partner with design and research directions and outputs to take forward in their work beyond the project, as well as the opportunity for them to

learn new future-focused design skills, techniques and ways of thinking from their collaborative interactions with the student-graduate team.

Reflecting on the case study as a learning experience, layers of dependent and inter-dependent collaboration were revealed as the students found themselves often navigating creative and relational tensions across the teams. The authors contribute to the field of design pedagogy by theoretically unpacking cross-cultural, studio-based collaboration – in this case, the internal collaboration between a team of product design students and graduates, and the collaboration with an external, public sector industry partner with a range of stakeholders and project participants – and discuss the complex challenges that emerged, and the meditating role design artefacts played. Building on the work of Ross (2018), the insights presented in the article have value for design educators seeking new approaches to designing and delivering studio-based learning that fosters creative, multidisciplinary communities of practice and collaborative capacity-building for students' professional development. In the following sections, the authors review the current landscape of studio-based design pedagogy and future-focused practices and theoretically position their approach by drawing on Lave & Wenger's 'Community of Practice' framework (Lave & Wenger 1991, Wenger 1998). The authors then present the Collaborative Futures 2019–20 case study and, through discussion, critically reflect on the key insights that emerged and the implications these have for the pedagogical model.

Studio-based design pedagogy

At GSA, pedagogy is centred on the principles of social and collaborative learning in the shared and immersive environment of the studio (Lynas et al. 2013), which scaffolds a culture of exploration, experimentation and prototyping (Bull 2015). Within this, as learners become more fluent in their design practice, they are engaging in a tacit sense-making and reflective dialogue between themselves and the making and problem-solving process, and with their peers (Schön 1985; Zehner et al. 2009; Budge et al. 2013; Shreeve 2015). Drawing on the key tenets of studio-based pedagogy, the model presented in this article supports final year design students to respond to a brief co-authored by the academic lead and the industry partner, and undertake a live project; a process which seeks to build upon the students' skills in the development of their professional practice and capacity-building by mirroring an authentic industry studio experience (Ross 2018; Gray et al. 2020). This aligns with Drew (2015, 108), who describes this process of learning as 'one of apprenticeship to the practice, by engaging with the real-world practice and understanding the process through narration, collaboration and social construction'.

During each annual iteration of Collaborative Futures, students exchange in a context-led, research-driven and futures-focused process that is emergent and explorative in nature. Against this backdrop, students are also required to engage in and manage multidisciplinary collaboration across the internal and external teams, situated within and beyond the institutional studio environment. Within these collaborative relationships, the students navigate, and at times negotiate, a range of different working practices, perspectives, values and priorities. These dynamic elements underpinning the curriculum's intended learning outcomes (ILOs) are embedded within a three-phase project delivery model, which scaffolds the

future-focused design process in parallel to fostering new communities of practice (CoP) (Lave & Wenger 1991; Wenger 1998). CoP is a cornerstone concept in studio-based pedagogy (Drew 2015; Tovey 2015; Winters et al. 2020), and, in this case, the authors draw on the CoP framework to theoretically unpack the social dimensions of learning as a process of collective knowledge-building that took place beyond the boundaries of the studio learning context. Whilst bringing together diverse groups of people, a community predicated on the project context is formed, which is brokered (Wenger 1998, 105) by the students' future-focused design practice described in more detail below. The authors will return to CoP theory following the case study to discuss in more detail how the students engaged in collaboration – as an internal CoP with the graduates, academic lead and research fellow; and as a wider CoP with the external industry partner.

Futures-focused design practice

Collaborative Futures is positioned in the field of design innovation, which is underpinned by the ethos of social design (Bannon & Ehn 2012; Manzini 2015) and participatory design (Björgvinsson et al. 2010; Binder et al. 2011; Simonsen & Robertson 2013; Frauenberger et al. 2015); and draws on co-design and speculative design approaches. Fundamental within design innovation is recognising users and potential users of design and other stakeholders as experts of their own indigenous knowledge and 'experience domain' (Sleeswijk Visser 2009, 5), and their repositioning in the design process as equal collaborative partners with the designer (Sanders et al. 2010).

More specifically, the learning in this project points to speculative (Dunne 2008; Dunne & Raby 2013), transition (Irwin 2015; Foth 2018) and design futures approaches (Yelavich & Adams 2015; Morrison & Chisin 2017). As characterised by Dunne & Raby (2013, 3–6), speculative approaches are used to explore alternative near and distant futures so to better understand and critically reflect upon the present. The design practice is used to provoke and open up dialogue and debate and explore alternative representations, perspectives and ways of living through, for example, design fictions and speculative narratives (Bleecker 2009), and the creation of critical knowledge artefacts (Johannessen et al. 2019).

In response to global sustainability and societal challenges (for example the UN Sustainability Development Goals 2030 (United Nations 2020)), there is the increasing need to co-design person-centred, innovative solutions to problems that can be characterised as uncertain, complex and ill-defined (Rittel & Webber 1973; Buchanan 1992), co-creating preferable futures for a world in a constant state of flux (Angheloiu et al. 2017). As such, future-focused approaches are gaining traction across undergraduate and postgraduate design education across the world (Galloway & Caudwell 2018). Evidence of this traction can be seen by the breadth of international membership institutions, organisations and hubs in the Design Factory Global Network (2020), in the global Futures Design community, its local Chapters and associated conference, Primer, and through examples of speculative and critical design education programmes delivered by, for example, University College, London; Royal College of Art, London; and the Copenhagen Institute of Interaction Design.

Professional practice

Within studio-based design education, developing professional practice is a crucial attribute in preparing and equipping students for life after graduating (Moalosi

et al. 2018), informing the experiential nature (Kolb 2014) of this final year project. A central aspect of Collaborative Futures is the role of collaboration and, unique to this project, the role of the academic lead and embedded research fellow in facilitating this learning. Drawing on her own insights and experience of working in industry, the academic lead purposely designed the pedagogical model to mirror an industry setting (see Ross 2018). As opposed to the traditional teacher–student dynamic, in this instance the academic lead and research fellow fostered partnership working with the students, who were treated as professional practitioners in a hierarchy more akin to industry as opposed to education. The academic lead adopted the role of the studio leader and, in parallel to researching the learning process, the research fellow supported the student-graduate team in the area design research, ethics, methods, analysis and evaluation.

Building on this, another key component is the students' collaboration with the external multidisciplinary team in an organisational setting – in this case the public sector. Taking place in their final year of study, this live project provides the students with an authentic experience of professional design studio culture where they gain an insight into the challenges and tensions that can arise. In addition, this project greatly benefits the employed early career design graduates by providing a paid bridging opportunity to apply their practice in action but still within the safety of an educational setting, as well as enabling them to establish new professional networks. Since it began in 2014, participating students and graduates have reported achieving successful employment based on the portfolio of work produced within the project, and, in many cases, have harnessed the approaches learned to directly inspire and inform their own independent design practices and work as design professionals.

The pedagogical model

As described earlier, the pedagogical model underpinning Collaborative Futures takes place over three distinct phases: 1. Discover and Define, 2. Develop and 3. Deliver. Whilst every iteration of the project is led by the context, within each phase are a series of guiding design and research-based activities which orientate the students in the process (see Figure 1). Typical of a future-focused approach, and as will be evidenced in the following case study, the project is not a linear process. Within each phase, as their insight-gathering shifts across the margins of the past, present day and future as well as between evidence and speculation, and divergent and convergent thinking, the team's engagement in each activity becomes cyclical in nature.

Discover and define

The aim of Phase 1 is to scope the context through combining quantitative and qualitative research methods – conducting desk research in parallel to ethnographic engagement with the context and interviews with expert stakeholders – translating key insights into themes. The key deliverables here included organising the findings into a visual data bank that could be shared and contributed to by the industry partner, as well as drafting the emerging themes pertaining to the brief into a set of Research Cards. The use of Research Cards as an approach has been developed as a key component in this phase of the pedagogical model over the last six years. Converting research themes, which at the early stages of the project can

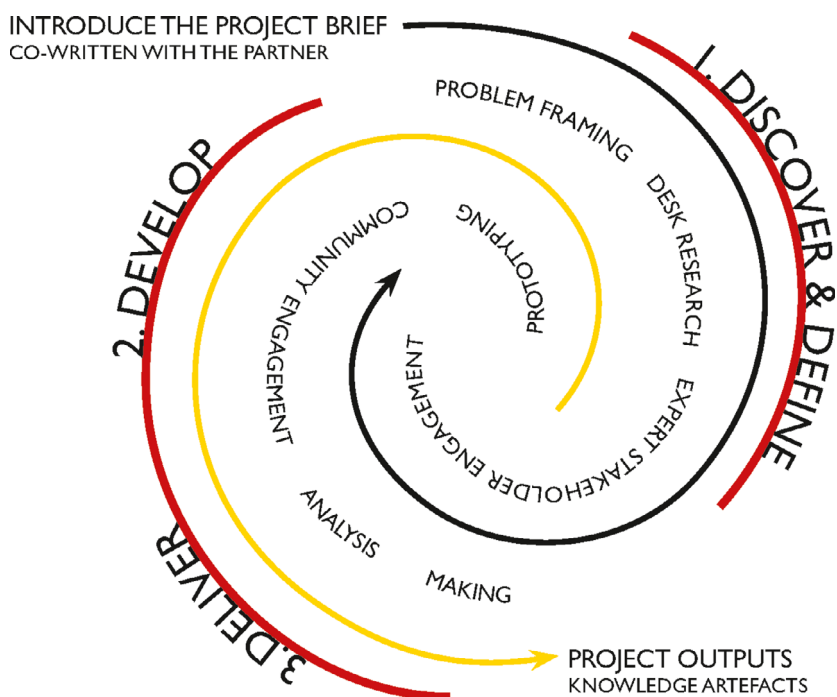


Figure 1

Collaborative Futures project phases. Diagram (2020). Source: Authors.

feel quite conceptual and abstract, into physically designed artefacts provides the students with analytical lens through which to view, sort and interrogate subsequent data. Previous examples include sets of Research Cards aligned to the dimensions of the Social, Technological, Economical, Educational, Political, Legal and Ecological. The Research Cards are subsequently further refined over the course of the project, used as an analytical tool in Phase 2, and presented at the end to the project partners as a design outcome in its own right.

Develop

The aim of Phase 2 is to translate the research themes into a family of knowledge artefacts and refine these through conducting primary research. In-line with speculative design approaches, this includes prototyping a physical future-focused world, a suite of future citizens who would populate neighbourhoods or territories within this world, and a set a scenarios forecasting narratives that characterise the citizens' behaviours, interactions and perspectives. These knowledge artefacts are used as speculative tools in the design of creative engagement workshops for present-day citizens and stakeholders to further explore and co-define the research and design directions. At key points during this phase, expert input is provided by external stakeholders to support the student-graduate team to synthesis and evaluate their research.

Deliver

In the final phase of the project, the student-graduate team deliver the workshop series, the recruitment for which is supported by the project partner. Following

these workshops, the team undertake formal analysis to generate insights to inform the final, fully realised, suite of knowledge artefacts – designed to industry standard. Other key project deliverables included producing a set of design recommendations and indicative design directions for the project partner; a range of materials setting out the project design process and the student-graduates' evaluation and reflections of this; a professional presentation that communicates a coherent project portfolio for a range of audiences (to executives, to project partners and stakeholders, and to the internal team); and a digital archive.

Case Study: Collaborative Futures 2019–20

The insights and reflections presented in this case study were collected by the embedded research fellow through observations, student-graduate feedback, reflective project blogs (with contributions from the students, graduates and industry partner team) and from an evaluation group interview with the student-graduate team.

The 2019–20 iteration of Collaborative Futures centred on critically imagining future scenarios surrounding citizens' data experience in Glasgow 2030. With a focus on people and place, the aim was to explore and evaluate emerging frameworks for open innovation so to inform and support the public sector industry partner's own strategic aim to be recognised as a well-governed city that listens and responds to its citizens. As described earlier, for the industry partner, this was their first time engaging in a Collaborative Futures project, which opened up the possibility for the academic partner to gain a fresh perspective on the established project model.

The project launched in September 2019 with an induction session to introduce and unpack the brief with the industry partner team (a multidisciplinary group made up of managers, researchers, a service designer, story-teller and graphic designer) and with the internal GSA team (two MEDes students, two graduates, the academic lead, and research fellow). As the objectives of the brief were to explore and prototype what a well-governed city might look like in 2030 pertaining to the role of data, and how the industry partner could support greater citizen-centric decision-making, a panel of expert stakeholders were invited to speak to the group on the key community challenges in Glasgow. This included a community engagement officer, a corporate service reform manager, a digital officer, a cancer-care expert and a city development planner: key project stakeholders who were consulted throughout the project. Focusing on person-centred approaches and dynamic collaboration, the stakeholders speculated on the role of communities in the future when considering shifts in population profiles and demographics in shared public spaces and in re-imaging services, insights that informed the team's next steps.

Following the launch day, the student-graduate team immersed themselves in a period of desk research in the studio as well as engaging in site visits to observe community council meetings and interviewed a range of expert stakeholders. Over the course of Phase 1, this research was iteratively layered upon as the student-graduate team worked in a process of collective sensemaking. This included moving between insights, interview transcripts and photographs that were physically tangible (see Figure 2), to digitally translating these into a shared online data bank using the application Mural. Here an intuitive process of thematic analysis and



Figure 2
Collected insights, interview transcripts and photographs (2020). Source: Authors.

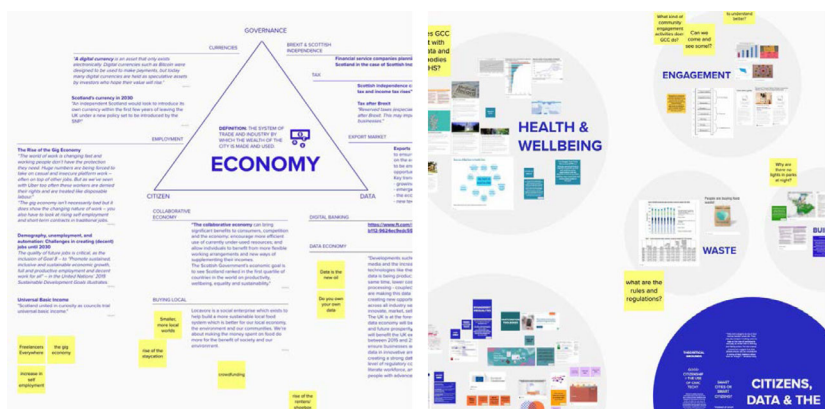


Figure 3
Examples of the digital knowledge landscapes (2020). Source: Authors.

mapping took place and led to the construction of what the student-graduate team referred to as 'knowledge landscapes' (see Figure 3). The landscapes were shared with and contributed to by the industry partner team, which became a virtual platform for exchanging ideas and knowledge remotely between the teams. However, when reflecting on the efficacy of this distributed way of collaborating, the student-graduate team highlighted the challenges of managing the digital working space, with the need to often sift through and filter out content so to demarcate key lines of inquiry.

During Phase 2, the student-graduate team synthesised their research and, as they described, 're-physicalised' the knowledge landscapes. One form this took was the first iteration of the Research Cards (see Figure 4). The cards were used in subsequent workshops with the industry partner team as a baseline to measure emerging insights against and to reach a consensus on key themes pertaining to the brief: data, governance and citizenship. Building on these collective insights, the student-graduate team designed a series of artefacts embodying the research.



Figure 4

Research cards and co-designing the worlds (2020). Source: Authors.

This included a tangible world with four landscapes, each containing a range of prototyped objects that critically personified sub-themes pertaining to each landscape. These artefacts were used to facilitate a co-design workshop with both teams, which became a touchstone moment in the project (see Figure 4). Reflecting on this workshop in particular, the student-graduate team recalled how the artefacts themselves, in their unfinished form, were able to scaffold discussions and a coalescence of ideas across the teams. Up until this point, the student-graduates had observed how the highly explorative and emergent nature of the project and studio-based working seemed to jar with the other teams' working practices; reflecting on the need to align expectations around 'embracing ambiguity', as described by the student-graduates in the group evaluation interview. In particular, the student-graduate team later reflected on the context-led and emergent nature of the project, and the ways in which their design practice can be harnessed to support collaborators who may not be as comfortable or confident working in this way.

The start of Phase 3 centred on collecting primary research through the design and delivery of three workshops where the student-graduate team engaged with groups of citizens and expert stakeholders. The aim of the workshops was to explore with participants these future framings of Glasgow, with activities framed around, as described by the student-graduates, 'collective envisioning'. The knowledge artefacts developed in the previous phase were translated into a suite of workshop engagement tools. This included artefacts to enable participants to be metaphorically transported to these future landscapes, where they could explore and reflect upon their values, fears and desires for the future of citizenship, modes of governance and data experiences, as well as explore their own ideas of preferable futures (see Figure 5).

Returning the studio in the Phase 3, the student-graduate team spent time analysing insights from the workshops, which included the desire for transparent decision-making; the need for citizen access to data that is more inclusive and ethical; empowering citizens to decide how their data is collected and represented; and complementary ways of using data for story-telling. In consultation with the industry partner team, these insights were distilled these down into three core themes: understanding data through citizens' experiences, data inequalities, and



Figure 5
Workshop engagement tools (2020). Source: Authors.



Figure 6
Future landscapes and citizens (2020). Source: Authors.

value exchange. These themes were used as propositions in the final iterations of the design deliverables: three landscapes known as *Choicetown*, *Localtown* and *Efficiency* (see Figure 6), a suite of citizens who engage in a series of scenarios; and a range of artefacts used to communicate potential future narratives of Glasgow 2030.

Summary

The Collaborative Futures case study evidences the emergent nature of a live collaborative project, and highlights challenges faced by the student-graduate team in terms employing future-focused and speculative design with an industry partner team. In the next section the authors discuss their insights surrounding collaboration and the role the design artefacts played drawing on CoP theory, and set out the implications and value this has as a pedagogical model for delivering design education.

Discussion

In this section the authors discuss their key insights pertaining to the challenges and tensions of collaboration in this project as a learning experience for the

students in the development of their professional practice and creative capacity-building. Based on the student-graduates' own recommendations, the authors reflect on the implications and value these insights have for the pedagogical model for delivering future-focused, citizen-centred design education.

Building a community of practice

Reflecting on the experiential and relational nature of collaboration, various forms and degrees of collaboration took place in this project – between the student-graduate team, between the student-graduate and industry partner, and between the student-graduate team and the participants. Establishing a culture of social learning within the studio-based context is a fundamental aspect of the project. However, and as evidenced in the case study, challenges emerged in sustaining this across the two teams.

Based on their shared educational experiences at GSA over several years of study, the students and graduates have each developed a repertoire and instinct for handling the emergent, and often ambiguous, nature of an inductive project such as Collaborative Futures. Whilst this project's approach and ambition held a level of familiarity to the student-graduate team members, this intuitive and shared understanding, at times, assumed a similar level of connection with the partner team, taking for granted that this was the partner's first time in engaging with this project. Whilst at moments the project's methods and approaches were met with a degree of uncertainty by the partner team, a shared understanding of what the two teams were working towards emerged and strengthened through collaborative working. Furthermore, the internal working structures of the two teams seemed to differ; whilst the industry partner appeared more traditional in terms of defining roles and responsibilities, the student-graduates' was less hierarchical, enabling members to test out roles, rotate positions and work more freely together. It seemed that the project had brought together two diverse CoPs whose practices often remained independent as opposed to inter-dependant of one another. Over time, however, a shared project language became known and equally used by both teams as the key deliverables began to materialise. This exchange of knowledge and adoption of language aligns with CoP theory in how boundaries of discrete communities can begin to cross and permeate each other through a process of brokering (Wenger 1998, 105).

As proposed by the student-graduate team in their Design Recommendations, designing in mechanisms at the beginning of the project to articulate and demonstrate to the industry partner ways of embracing ambiguity, and the value this can have, could have more effectively fostered and mobilised a wider CoP earlier on in the project process. As a learning opportunity, the student-graduates recognised the potential benefits of designing a cross-team ice-breaker session at the start of the project as a way to align the practices of the two CoPs from the offset. Here individual working practices, perspectives, values, priorities and anxieties could be raised and externalised; and, based on these, a project trajectory could be negotiated and mapped out together so to also more effectively align expectations.

Knowledge artefacts

The phases of collaborative activity were supported by the futures-focused design practice and the resultant knowledge artefacts created by the student-graduate team. Reflecting on the role of practice, the student-graduates described the different ways the industry partner team were supported to be engaged with this.

Earlier in the project, when presented with designed artefacts, the partner team seemed to adopt the role of reviewers, advising the student-graduate team on the direction of their data gathering, analysis and synthesis, however, later on in the project, the student-graduate team intentionally designed subsequent artefacts in an unfinished state, which they found stimulated and enabled more effective team-to-team collaborative interactions. Here, through the fidelity of the artefacts and the stage at which they were shared, the partner team was invited to creatively contribute to the co-creation and co-production of the half-finished artefacts: becoming visual embodiments of both the student-graduates' research and the partners' expert knowledge of the context. This was particularly evident in Phase 2 of the project, demonstrating the student-graduate team's learning in action through their ability to mediate the cross-team collaboration more successfully through a thinking-through-making approach, which in turn became an effective process to broker and bridge the two CoPs.

When considering the application of the artefacts as engagement tools with citizens and expert stakeholders, the student-graduate team reflected on the participants' readiness to engage in speculative imagining and ideation. In some cases, the envisioned landscapes, whilst based on collected evidence, were experienced as too far removed from reality for the participants to relate to or see as plausible. Or, conversely, in some cases participants found the landscapes to be too close to reality and struggled to look beyond the present day. Reflecting on the role of the engagement tools as conduits to support the participants to suspend their disbelief, the student-graduates described the need for the tools to be more performative, sensory and 'visceral', so to provide participants with an immersive and empathic experience that enables them to transcend their assumptions, perceptions and boundaries of the present day.

Conclusion

Returning to the pedagogical model as set out earlier, key learnings from the 2019–20 iteration of Collaborative Futures can have value for design educators seeking new approaches to designing and delivering studio-based design learning that fosters creative, multidisciplinary communities of practice and collaborative capacity-building for students in a professional setting.

As part of their professional development, a key learning for the students and graduates was ensuring that the value of the future-focused design practice is communicable to non-design audiences and collaborators, and developing the confidence in their own agency to do this. This is particularly the case when their own design decisions felt, at times, tacit and intuitive in nature as they shifted between and across the boundaries of evidence, speculation and foresight. Furthermore, the students described the need to adopt reflexivity in acknowledging their own assumptions of the collaborators' willingness and readiness to engage in a design process that may feel unfamiliar to them, as well as being able to recognise, understand and mediate the collaborators' reactions and responses relative to the speculative nature of the practice, which they appeared to have experienced as complex and ambiguous.

As an experience that seeks to emulate an authentic professional studio culture, a key learning for the students to take forward in their professional practice, which typically comes at the end of the project with hindsight (evidenced in this case

study), are insights into ways of setting up the conditions for successful collaboration (Ross 2018). This experience of working as a design team with an industry partner challenges the students and graduates to focus and utilise their design practice not only as an experiential and material practice but also, and perhaps most fundamentally, as a relational practice in a project centred on heightening their understanding and sensibility of cross-cultural and multi-disciplinary collaboration.

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