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Author/s:

Tregloan, K;Thompson, J

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Buckle Up! ... BEL+T group learnings from a (very fast) move online

Kate Tregloan & James Thompson
University of Melbourne

ABSTRACT

This article describes the support provided by the BEL+T (Built Environments Learning + Teaching) group at the University of Melbourne, to facilitate the 'move online' of learning that was prompted by COVID-19. The article outlines how this support related to pedagogical, technical and cultural challenges in the Faculty of Architecture Building and Planning. The DIA framework, its DIAGram and related resources developed by BEL+T informed changes to the delivery of relevant content, support for effective interaction with and between students, and online assessment approaches. This article identifies the elements of the framework in terms of architectural learning as we contemplate a return to campus, hybrid/dual delivery modes and new challenges.

KEYWORDS

online education, learning design, delivery, interaction, assessment, student belonging

Introduction / Context

The Built Environments Learning + Teaching (BEL+T) group, within the Faculty of Architecture, Building and Planning (ABP) at the University of Melbourne, is an academic group focussed on the sustained improvement of education for built environment disciplines. Established in mid-2018, the group applies creative problem-solving and design-led approaches, evidence-based research methodologies, and project-focused consultancy to improve teaching quality and student engagement. The BEL+T website offers a key space for sharing resources and emerging approaches. BEL+T draws from its members' diverse skillsets as designers and researchers to engage with ABP as the location, inspiration and beneficiary of focussed built environments learning and teaching research.

While BEL+T already had a broad remit to support engagement with blended learning, the developing COVID-19 crisis prompted a fast move to wholly online learning in February/March 2020. This brought significant challenges, also exacerbated by the introduction of the Canvas platform in 2020, a new institution-wide Learning Management System (LMS) to support content delivery for subjects. The one hundred and fifty years of built environment education on the historic campus of the University of Melbourne has primarily been hands-on and face-to-face. While enjoying access to contemporary making technologies and new studio spaces, few ABP staff had experience with teaching online or with asynchronous approaches. As a result, the unceremonious and sudden reconfiguration of learning and teaching was disorienting for academics and teaching staff.

During 2020, BEL+T's challenges included identifying ways to understand, communicate and support new needs and practices. This article will describe the responding development, testing and delivery of the relational DIA (Delivery, Interaction and Assessment) framework and its spatialised illustration as a DIAgram. It will also outline how this work has informed and addressed pedagogical, technical and cultural challenges in our Faculty. Our DIA model functions as a 'learning design system' in that it provides educators with 'tools to describe and capture a structured flow of content and collaborative activities that can create rich learning experiences for students' as well as 'a framework for describing the learning objectives that drive any given set of activities'.¹ In sharing the context surrounding the development of this learning design system, 'the teaching and learning process becomes explicit, and hence can be shared, adapted, and improved'.² Before 2020, architectural education and design studio pedagogies have had limited engagement with online or blended education approaches.³ The DIA model offers a mechanism to explore the elements of these pedagogies and opportunities for their further development.

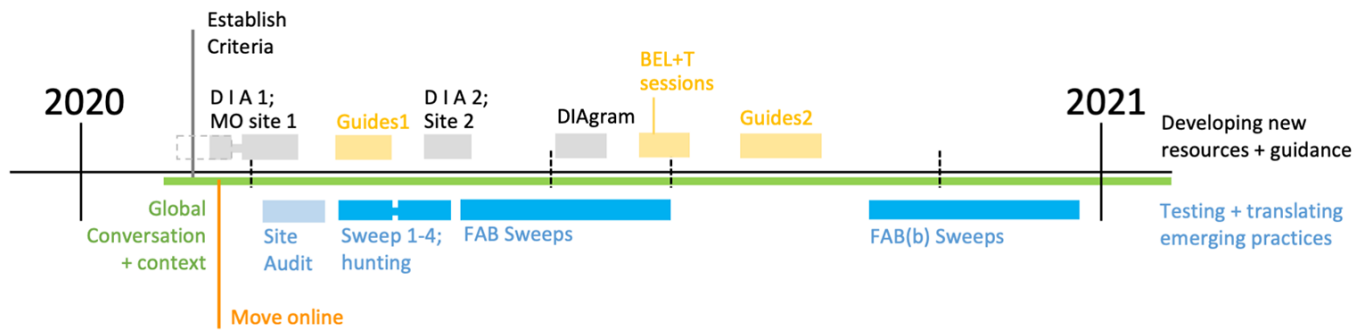


Figure 1: Timeline of BEL+T's 2020 Activities (Kate Tregloan, 2020).

Moving online: Responding to challenges at speed and developing the DIA

The DIA framework and its DIAgram were the key focus of BEL+T's work to identify and communicate Faculty needs for the 2020 move online. Strategies for teachers to make the initial shift and to refine their approach tested the framework in application. These strategies developed over the same period as the framework, iteratively informing the framework design whilst addressing challenges facing students and staff. This overlapping sequence of efforts is represented in Fig. 1.

Fig. 1 also indicates the emergence of a global conversation on the impact of COVID-19 for university teaching (shown in green). Initial reports of the virus, and its potential to impact higher education, started to emerge at the end of January 2020,⁴ with some suggesting that the economic impact would be minimal.⁵ Over subsequent days, however, concerns increased about international students becoming stranded by closing national borders,⁶ and by 4 February our group was considering how teachers might deliver content and connect with travel-restricted students online. Informed by research on various aspects of design and/or distance education, we expanded our website content to identify appropriate teaching and learning activities and online platforms for our students' learning. Global, discipline-specific discourse via online webinars and local higher education discussions and guidance also informed this work, while design expertise within the group allowed for quick analysis and response.

A webpage shared links to University advice by 7 February, and criteria for online teaching were established by 17 February. The approved criteria were included by BEL+T on a Steps for Moving Online webpage as early guidance.⁷ The criteria called for tailoring student learning experiences for each subject, with specific mention of Delivery, Interaction and Assessment (DIA) activities. A first DIA model (DIA1 in Fig. 1) identified these activities in terms of teaching modes (studio, workshop, lecture/tutorial), alongside tools for synchronous or asynchronous approaches. Our DIAgram (see Fig. 4) emerged from the iterative design and testing process indicated in Fig. 1 as a *parti* or 'spatialization of a selective abstraction'.⁸ It was also informed by our ongoing engagement with the elements, influences, aims and mechanisms of built

environment education. Professional development and support drew on this conceptualisation, delivering BEL+T Sessions and additional guides as shown. An audit of over one hundred and thirty live subject sites within the new Canvas learning management platform applied the criteria as a rubric and ranked sites according to their support needs. This identified a group of forty subjects for direct support from BEL+T members and a Tiger team – inspired by NASA's rapid-response model for Apollo missions – via four one-week 'sweeps' or focussed activity sprints. Simultaneously, a quality-focussed Hunting with Tigers project used the same criteria, in addition to LMS student engagement data (such as time on site), to identify exemplar subjects and emerging practices in these early weeks. Guides for online design crit sessions and use of digital tools were developed and disseminated, and colleagues' innovative approaches were celebrated and shared.

As action-tested strategies emerged for the disciplines in our Faculty, subject consultations and ongoing engagement in global conversations helped to refine the DIA framework into a second iteration (DIA2 in Fig. 1). In DIA2, the DIAGram's triad developed into an interrelated framework rather than independent parts. A revised website formalised these understandings, underpinning the work of the subsequent project Five And Beyond (FAB), performing sweeps of over one hundred and thirty additional subject sites. Technical expertise and skills refined through this process were then applied to FAB(b), which involved sweeps of an additional one hundred and forty subject sites in preparation for a second semester online. The use of the DIA through two iterations to review over 300 sites highlighted key pedagogical and technical challenges of the move online. The following sections will describe these, as well as their influence on the developing DIA framework.

C h a l l e n g e # 1 (P e d a g o g i c a l)

Replicating face-to-face practices using virtual platforms initially appeared to many teachers as the problem. Considering synchronous and asynchronous possibilities, then describing these in relation to delivery, interaction and assessment strategies, offered a new perspective. The first DIA model focussed on these independently for different modes of teaching. The aim was to provide a 'learning design system'⁹ that could quickly encourage the 'reflection and reframing'¹⁰ needed for subject redesign, while offering relevant approaches and tools. This meant emphasising the opportunities and challenges associated with synchronous and asynchronous modes, and the benefits of achieving a balance between the two.¹¹

Establishment of online teaching criteria helped define a brief for teaching online and a rubric for the early audit of Canvas subject sites. The criteria were informed by established BEL+T 'great teaching' descriptors,¹² drawing in turn on Universities Australia's Australian Awards for University Teaching criteria and review of ABP student surveys.¹³ Criteria fell into three categories:

DIA Hunting questions	Practices identified
<i>How are learning objects (i.e., references, presentations, resources, links) being Delivered?</i>	<ul style="list-style-type: none"> o resources to support student preparation for learning o easily navigable tabs to locate content o short and focussed instructional videos o packaged readings and examples accompanying on-line lectures
<i>How is Interaction supported or integrated in the student learning experience?</i>	<ul style="list-style-type: none"> o discussion boards for asynchronous tutorial and feedback sessions o a requirement for student posts to access further content o casual interaction sessions for online coffee chats
<i>How is Assessment of learning and provision of feedback undertaken?</i>	<ul style="list-style-type: none"> o extremely clear project briefs and rubrics for marking o clarity around changes to original projects resulting from the move online

Table 1:
DIA Hunting with Tigers
questions and identified
practices.

- The site presence is well-designed (ideally following a suitable ABP template).
 - o A first-time student visitor will find key subject information and ways to seek staff advice.
 - o Expected time/s for responses to student queries is clear and delivered upon.
 - o Elements of the online environment are structured, cohesive and organised.
 - o Expectations of student engagement, and submissions, are consistent and clear.

- The pedagogy, content and activity are tailored for the subject’s intended learning outcomes (ILOs).
 - o *Delivery, Interaction* and *Assessment* approaches are suitable for the teaching mode.
 - o Content is current, of good quality and sufficient quantity, and relevant to ILOs.
 - o Online interactions are focused on relevant learning experiences.
 - o Assessment design is aligned with the ILOs and suitable for the online environment.

- Support is provided for students facing particular challenges.
 - o Canvas accessibility score is considered.
 - o Links for wellbeing support and special consideration are provided.
 - o Links to Faculty and University information are current and relevant.

Translation of the criteria to a rubric also introduced some overarching concerns ultimately incorporated into the DIAgram, including support for *learning engagement* and promotion of student *belonging* within a cohort. As noted, the criteria and initial DIA model also formed the basis for the parallel

LMS site review exercise, Hunting with Tigers, seeking valuable practices to share (Table 1).

The site audit and hunting exercises, informed by further consultations and engagement, expanded guidance for the revised DIA model (DIA2). The BEL+T website drew on these to present learning aims, tactics, tools, things to consider and examples organised under Delivery, Interaction and Assessment.¹⁴ Guidance videos for staff recording presentations or demonstrations suggested updates to traditional practices, as well as pros and cons of technological alternatives. Technical challenges could limit use of a virtual whiteboard, while the use of Zoom breakout spaces could support parallel peer-to-peer discussions. Emerging etiquette of online interaction was observed, and cultural expectations were challenged. Developing multiple, lower-stakes elements over summative high-stakes assessments was encouraged, while the challenges of online design crits were highlighted and workflow options developed.

C h a l l e n g e # 2 (T e c h n i c a l)

As above, the move online in the context of the global pandemic coincided with the introduction of Canvas as the new LMS for the University of Melbourne, making challenges more acute and the learning curve for teachers very steep. On a positive note, it also delivered very focussed engagement with Canvas and its capacity.

Technical expertise within our faculty was invaluable, and we were fortunate to engage casual staff from the Faculty's Makerspace workshop program, closed due to COVID-19 restrictions. BEL+T's own Tiger team members applied their technical expertise to the coding and development of Canvas subject sites, and the development and revision of guides for independent uplift work by teaching staff.

BEL+T members used the ABP Online Criteria to guide discussions with subject coordinators for sweeps of Canvas subject sites, and the Tigers used base templates developed in December 2019 by BEL+T in anticipation of the LMS migration. These had been designed as an optional, minimum-impact addition to standard sites, and tested with some exemplar subjects. In the wholesale move online, these templates became invaluable, providing a focus for discussion with the first group of uplift subjects identified through the audit process.

Over three hundred ABP subject sites were revised during 2020, and the Tigers refined and expanded LMS templates to include minimum, studio, weekly and themed versions (Fig. 2). Demonstration sites and guides for teachers supported more independent use. Instruction guides for virtual site visits, online collaboration tools and virtual collaboration spaces addressed specific challenges.¹⁵

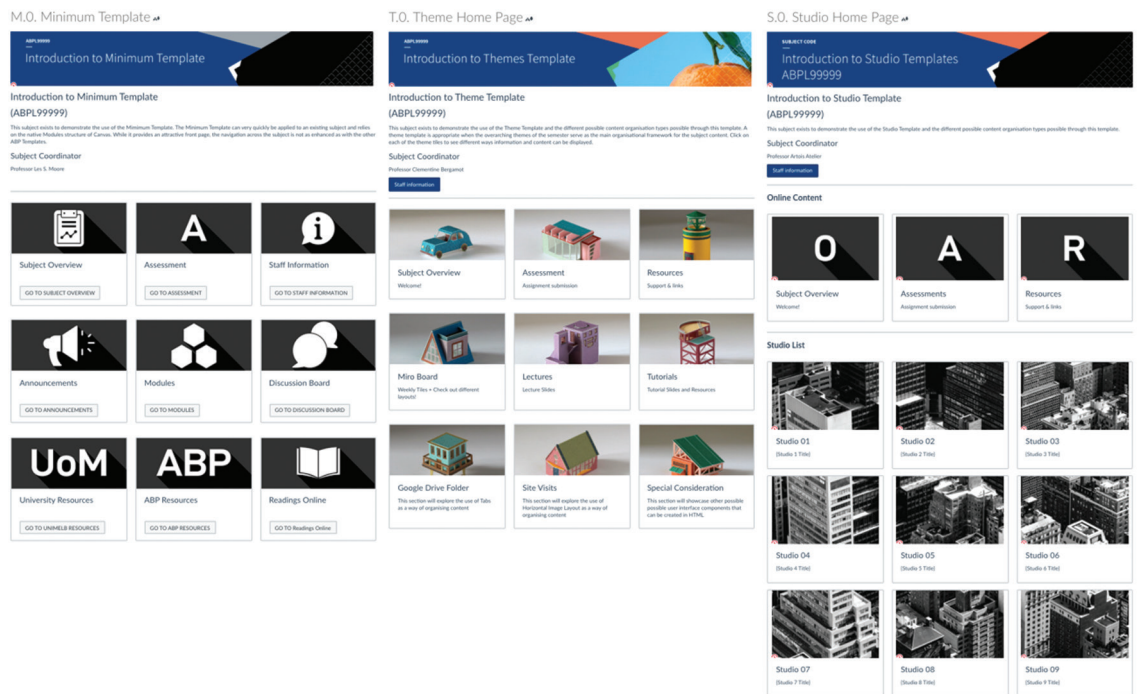


Figure 2: Examples of BEL+T Canvas templates; left to right: minimum, themed, studio (BEL+T, 2020).

The DIA framework and its DIAGram

As set out above, the DIA framework and related DIAGram were developed iteratively through interrelated BEL+T activities and in response to pedagogical and technical challenges at speed; however, the model was also informed by literature focussed on each of its three constitutive elements. The DIA relates three of teaching’s primary tasks: Delivery of subject content; supporting Interaction between students, their peers and staff; and effective Assessment for learning. Our development of this framework has been informed chiefly by Oliver’s tripartite model for online learning design, which incorporates ‘learning resources’, ‘learning activities’ and ‘learner supports’.¹⁶ The DIAGram parti presents a cyclical workflow model of synchronous and asynchronous activities for online learning surrounding foundational aims for learning experiences: learning engagement and belonging, all supported by good coordination.

These foundational aims guided our daily discussions by reminding us and others that ‘what we are designing is not a product: it is the experience of that product and how that engages learning’.¹⁷ The first of these, students’ engagement with learning experiences, *learning engagement*,¹⁸ and the intellectual and/or emotional forms this may take,¹⁹ is a key prerequisite for academic achievement. This remains true in online environments, where cognitive presence has been linked to academic performance.²⁰ A close relationship between learning engagement, retention and motivation has highlighted the latter as an ‘essential element to engage learners and thereby enhance students’ learning experiences’.²¹ In design activities, the intersection between project development and intrinsic motivation is described as ‘flow’,²² significantly linking both aim and process for design learning. In professional

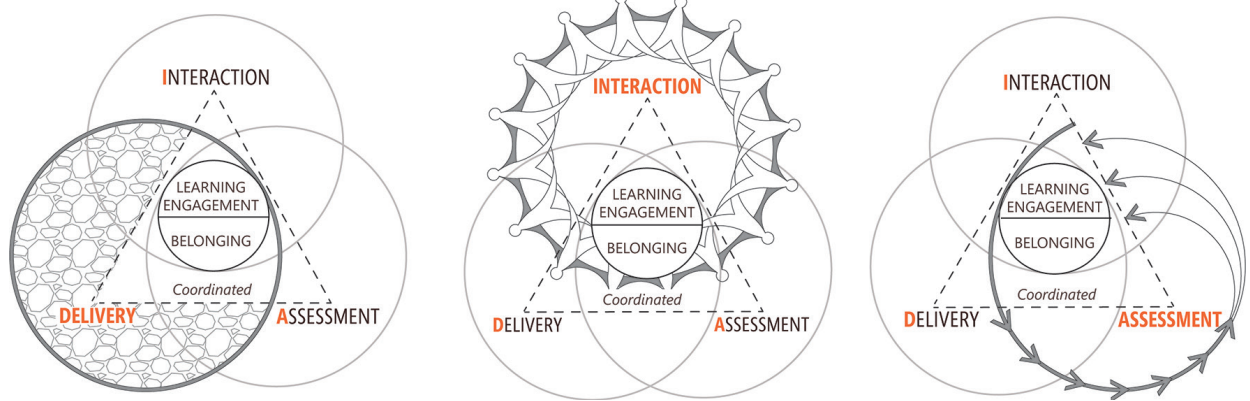


Figure 3:
BEL+T DIAGram v1.0:
Three Parts (Kate Tregloan,
Philippa Soccio and James
Thompson, 2020) <<https://doi.org/10.26188/14445288>>

training such as in architectural education, personal and emotional investment has substantial overlap with an individual's learning,²³ providing motivation for necessary engagement with the uncertainty of design.

As the significance of social connectedness is increasingly recognised, academic roles are expanding to accommodate pastoral care through its relationship to learning and the student experience.²⁴ The second foundational aim, belonging, refers to the attachment, reciprocity and mutual support that students feel towards various scales of community—their peers, teachers, institution, profession, etc. As a key contributor to a student's overall wellbeing and ability to learn, a sense of belonging and social integration has been shown to be vital to a successful educational experience.²⁵ Belonging is also a particular dimension of the student experience in professional disciplines such as architecture, supporting the development of occupational identities.²⁶ This helps explain why notions of 'studio culture' are considered inseparable from architectural design pedagogy: '[S]tudio culture is meant to engender a sense of belonging among students – a feeling that they are not alone in their struggles – and between students and tutors'.²⁷ Further, 'students use the studio as a vehicle for developing a sense of belonging to the architectural community'.²⁸

We note that *learning engagement* and *belonging* should be understood as relational concepts, in the spirit of John Dewey and feminist philosophies.²⁹ As such, engagement should not be conceived in service of a sense of belonging any more than we should strive to foster a sense of belonging merely to achieve learning engagement.

The framework and DIAGram identified the DIA triad of challenges for online teaching, each with their own quality (Fig. 3). The final integrated DIAGram is presented in Fig. 4. *Delivery* refers to sharing learning objects to support student learning and is represented in the DIAGram as a container of independent items. These objects might include: recorded video presentations; practical demonstrations or virtual site visits; curated readings and references. Subject information is similarly delivered but considered within the discussion of *coordination* below.

Whilst the skilful curation and sharing of learning objects remains a key task for teaching online and was an early concern for those newly alone behind a computer screen, the DIAGram presents *delivery* in concert with other elements for learning. Changed consideration of lectures, from spatial and (incidentally) social events focussed on content delivery to sets of video recordings within a larger suite of learning objects, also brought challenges. These shifts challenged the primacy of a conventional teacher-centred perspective on materials, calling for a refocussing on the design of student-focussed learning experiences.³⁰ Linking delivered content and interactive online activity to an updated assessment scheme underscored student engagement for more effective and active learning,³¹ and the DIAGram underpinned related planning discussions and new roles for teachers.

Interaction identifies crucial opportunities for students to connect with one another and/or their teachers. The DIAGram represents this element as a connected circle of stylised figures. We distinguish *learning engagement* – our focus element that can involve students interacting with learning objects and activities as well as other people – from *interaction* as a human-to-human exchange of ideas, including through co-production of artefacts. Reasons for focussing on student-to-teacher and student-to-student interaction relate to both *learning engagement* and *belonging*. As Frey and others note, the notion of ‘learner-learner interaction’ in online education is largely based on the constructivist philosophy in which ‘learners collaborate to construct knowledge based on their experiences’.³² Architectural learning in particular is heavily dependent on enculturation into professional, industry-specific and student communities and their discourses, behaviours and structures.³³ It has been suggested that design studio offers both ‘the primary space where students explore their creative skills that are so prized by the profession’ and ‘the kiln where future...designers are moulded’.³⁴ The teacher’s role in these processes must take into account the development of a learning culture, and includes setting the tone and clarifying roles even more overtly in an online space.³⁵

The related elements of the DIA framework encourage teachers to couple interaction opportunities with content delivery in ways that directly inform or support assessment tasks. The BEL+T ‘Interaction’ webpage specified panel and group discussions; student presentations; desk crits and feedback sessions; collaborative projects; and inter-group sessions.³⁶ Suggestions of tactics and tools to encourage interaction were paired with content delivery examples and things to consider, and vice versa on the ‘Delivery’ page of the BEL+T website.³⁷

The third element of the DIA triad, assessment, was also influenced by institutional requirements amidst rapidly changing practices. This introduced great complexity, particularly as the shift online in Australia occurred mid-semester. *Assessment* decisions across ‘policy, design and judgement’³⁸ called for clear and frequent updates relating institutional changes, tool availability

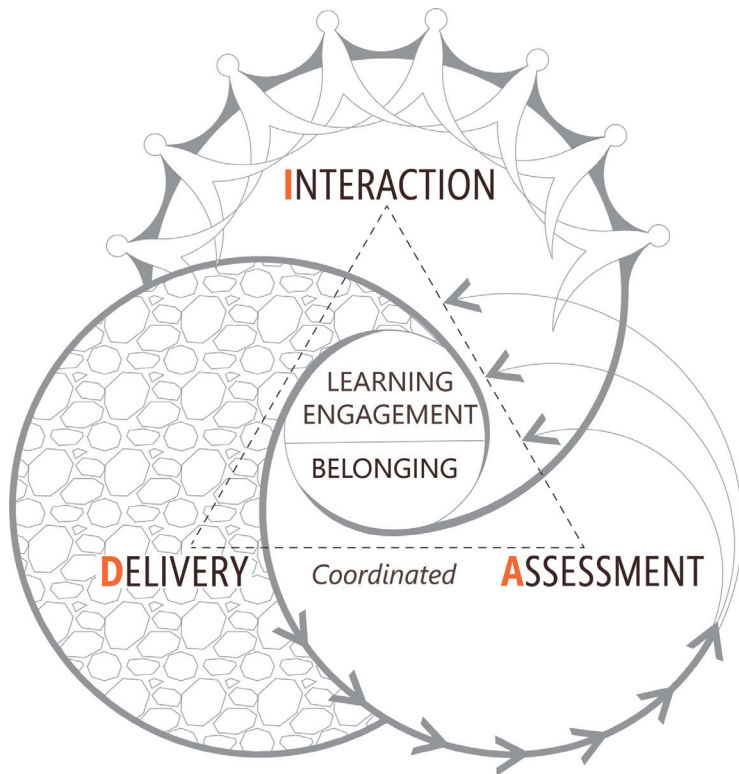


Figure 4:
 BEL+T DIAGram v1.0
 complete (Kate Tregloan,
 Philippa Soccio and James
 Thompson, 2020) <[https://doi.
 org/10.26188/14445288](https://doi.org/10.26188/14445288)>

and use, and disciplinary values and cultures. The 'Assessment' page of the BEL+T website focussed on assessment design, online feedback and academic integrity concerns, alongside examples and guidance for particular assessment formats.³⁹ Encouraging regular, low-stakes assessment aimed to minimise student stresses and technology demands in an unfamiliar learning environment. Multiple paths in the DIAGram indicate aligned assessment elements in students' learning experiences.

Online assessment practices are especially challenging in design disciplines. The aims of the final design crit event are complex: evaluation of the quality of a design proposal; demonstration of some elements of professional performance and collaborative creativity;⁴⁰ and opportunity for students to develop independent evaluative frameworks.⁴¹ BEL+T's 'Coordinating Online Design Reviews' flowchart suggested synchronous and asynchronous activities and tools.⁴² It offered panel members the capacity to review submissions in advance, and to critically evaluate them against students' claims in public discussions and private chats, and informed processes that staff are now keen to continue.

In the assembled DIAGram the elements overlap, influence and inform each other, mirroring the development from DIA1 to DIA2 (Fig. 4). These intersections also changed expectations across the online week: rather than relocating anticipated timetabled sessions online, a more sophisticated student-focused 'workflow' model used the language of construction and repeated cycles. Content was delivered asynchronously, expanded through students' interactions with teachers and one another, and aligned to assessment activities.

The final element of the DIAGram, *coordination*, refers to the behind-the-scenes work to integrate these meaningful learning experiences for students. Effective organisation has been identified by both students and teachers as an essential foundation for valuable and meaningful learning experiences,⁴³ and in reducing student attrition.⁴⁴ As instructors discovered in 2020, 'good organization and structure are essential for launching and maintaining a student friendly and navigable online course'.⁴⁵ Our own review of student evaluations in 2019 found high levels of satisfaction in subjects with strong organisational foundations, which we unpacked for a set of 'Tactics for Coordination'.⁴⁶ The tactics highlight the aligned activities and assessments, consistent lines of clear communication and explicit logistical preparation. The translation of these tactics online has been explored through a parallel research project, identifying the value of these often-overlooked skills for teaching online.⁴⁷

The DIA framework outlined above, and the (re)design and delivery of Canvas sites, would not of themselves impact learning without practice development for teachers. Response to that cultural challenge is outlined in the following section.

Challenge #3 (Cultural)

Supporting staff through the design of each LMS site engaged with pedagogical and technical challenges, assisted by the resources developed in collaboration with the Tiger team. Shared templates on community Canvas sites allowed teachers to test and experience different working examples. Other BEL+T guides outlined the ongoing maintenance and refinement of general content and identified particular technical challenges. We also learned much from the innovations and efforts of ABP teachers and shared these crowdsourced solutions and guidance.

ABP also employs a large number of sessional teaching staff each semester, and this cohort needed practice support. Many are practitioners who bring rich industry experience but no formal teacher-training and very limited experience of learning or teaching online. Two online workshops, ABP Teaching Fundamentals (for first-time teachers) and ABP Teaching Online (for all staff), linked to a Canvas community site. The workshops modelled online teaching practices, granting sessional staff a similar experience to their students. Short videos, a reading and activities using virtual whiteboards and discussion boards were delivered before the workshop as a flipped approach. While introducing key ideas for participants, this approach also demonstrated a balance with synchronous sessions, and examples of participants who may not engage as planned.

Participants used a range of tools during the live session. In ABP Teaching Fundamentals online polls explored teaching mindsets; strategies for building rapport with students were shared on a Padlet board; and a

Mural board was used to brainstorm learning activities. The ABP Teaching Online workshop introduced scaffolded teaching approaches and used the tools in combination. The Padlet board of strategies for building rapport was embedded into Miro, for example, and participants used virtual Post-it notes to suggest considerations for an online environment. Smaller online breakout discussions focussed on the DIAgram as a focus to curate learning experiences, and participants were introduced to DIA guidance and resources. Participants responded very positively to these opportunities, and incorporation of these approaches in teaching will be reviewed in coming semesters.

Conclusion

A senior medical education colleague recently commented that we had approached the BEL+T Moving Online program 'like architects'. This was true, and not surprising, given the mix and faculty home of our group. We applied a skillset developed through formal design training, and project management approaches learned from architectural practice, to respond to pedagogical, technical and cultural challenges at speed. Activities included: learning from precedent; mapping emergent contexts; developing and testing models through multiple iterations; using abstract representations for communication; equipping teams for coordinated delivery; and production of guidance.

As global colleagues engage with similar challenges, we recommend a reflective and clear-eyed review of skillsets and resources to hand and focussed creative engagement with opportunities emerging from unpredictable circumstances. The approach should aim to build a strong positive team under fire, leveraging the strengths of each member through collaborative practices.

There may be specific aspects of the development and operationalisation of the learning design system described here that limit translation to other institutions or disciplines, chiefly those of scale and funding. Nevertheless, we propose that the DIA framework and its DIAgram provide a clear and flexible conceptualisation, and a valuable focus on foundational learning aims. We hope it offers a useful perspective to those who review teaching approaches, as well as support for new and developing practices. We trust the narrative of the framework design and its delivery is relevant to a range of pedagogical, technical and cultural concerns arising from moves to online teaching elsewhere. We offer this work for consideration, application and development by others, and look forward to hearing of the outcomes and further work in this space. As BEL+T prepares for new (hopefully slower) challenges, including 'dual delivery' teaching approaches for a cohort combining both online-only and blended modes, we will continue to draw on and test our DIAgram and to extend the practices developed during 2020.

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