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# Tangled in tensions: a practice architectures study of embodied approaches in transdisciplinary higher education

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## ABSTRACT

As universities strive to prepare students for increasingly complex global challenges, embodied teaching and learning approaches demonstrate significant value in transdisciplinary higher education yet, understanding of how these practices are enacted and sustained within universities is limited. Through an action research case study with eight educators, this inquiry examined how institutional arrangements enable and constrain embodied approaches within a transdisciplinary higher education setting. Analysis using the Theory of Practice Architectures revealed complex interactions between the arrangements, highlighting five tensions educators must navigate: (1) contested notions of 'proper learning', (2) personal and embodied histories, (3) access to learning communities, (4) experimentation within institutional constraints, and (5) disciplinary values and transdisciplinary integration. These findings extend practice architectures theory through its application in transdisciplinary higher education and the relational mapping of arrangements, revealing how social informal learning and embodied histories help educators navigate and transform institutional tensions.

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Embodied approaches; embodied learning; transdisciplinary higher education; higher education practice; theory of practice architectures

## 1. Introduction

The integration of mind and body in learning processes is gaining increased attention in higher education (Hegna and Ørbæk 2021). Embodied teaching and learning approaches (hereafter 'embodied approaches') intentionally engage the body as a site of knowledge and learning, moving beyond purely cognitive understanding to engage with multiple ways of knowing (Hegna and Ørbæk 2021; Shapiro and Stolz 2019). Encompassing educator's pedagogical strategies and student's learning experiences, embodied approaches emphasise sensory, physical and experiential engagement (Nathan 2021). For example, an educator facilitates a lesson on photosynthesis by inviting learners to role-playing different components (i.e. sunlight, plant roots and leaves, molecules etc.), physically acting out the process to deepen insight. Such approaches challenging mind-body dualism and expand educational possibilities beyond conventional cognitivist models (Fugate, Macrine, and Cipriano 2019).

While embodied approaches have demonstrated significant value in improving learning outcomes (Fugate, Macrine, and Cipriano 2019; Nathan 2021) across various contexts from the arts (Forgasz 2015) to STEM (Fugate, Macrine, and Cipriano 2019), understanding of how institutional conditions shape these practices remains limited. Research in the field of embodied approaches remains fragmented (Hegna and Ørbæk 2021), typically addressing individual barriers to implementation (Nguyen and Larson 2015) or pedagogical effectiveness (Abrahamson and Lindgren 2014), rather than examining how broader institutional arrangements enable and constrain practice. This

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gap is particularly significant in transdisciplinary higher education (TDHE) where embodied approaches play an important role in supporting teaching and learning beyond disciplines and in the context of complex challenges (McGregor 2017).

The Theory of Practice Architectures (TPA) (Kemmis et al. 2014b; Kemmis 2023; Kemmis and Grootenboer 2008; Mahon, Francisco, and Kemmis 2017) offers a valuable framework for understanding how specific arrangements (cultural-discursive, material-economic, and social-political) interact to enable or constrain these practices within TDHE where educators must navigate multiple institutional boundaries, competing practice traditions, and established academic structures (Klein 2014). TPA has provided valuable insights into educational practices and recent studies have begun exploring multi-, inter – and trans-disciplinary environments (Goldshaft, Sjølie, and Johnsen 2024; Sjølie and Østern 2021). However, TPA's application to understanding embodied approaches in TDHE settings remains unexplored (Mahon, Francisco, and Kemmis 2017).

This study addresses this gap by understanding how embodied approaches can be better enacted and sustained in TDHE by examining the practice architectures that shape these approaches within a specific institutional context. By addressing this aim, the study contributes insights for institutions seeking to support embodied approaches in TDHE, particularly regarding professional learning needs and strategies for navigating institutional constraints. The paper begins by presenting the background and theoretical context, followed by the research design and case study, before presenting findings that reveal the complex interplay of arrangements and tensions that emerge from these conditions.

## 2. Background and context

### 2.1. Embodied approaches in transdisciplinary higher education

TDHE is oriented around addressing complex, real-world challenges that cannot be tackled from a single disciplinary lens. It connects higher education with broader society to engage government, industry, individuals and communities in the teaching and learning process. Students 'learn to co-create, co-disseminate and co-use transdisciplinary knowledge, which emerges from the iterative interactions between disciplines and the rest of the world' (McGregor 2017, 3). Embodied approaches play an important role in supporting knowledge integration, learning beyond disciplinary bounds and complex problem-solving (Allen et al. 2023; Henriksen, Good, and Mishra 2015; McGregor 2017, 2022; Mishra, Koehler, and Henriksen 2011).

Across disciplines, embodied approaches enhance learning outcomes and engagement (Nathan 2021; Rodríguez-Jiménez and García-Merino 2017; Shi, Irwin, and Du 2023) by supporting learners develop deep understanding through experiential engagement and by expanding ways of knowing (Abrahamson and Lindgren 2014; Lipson Lawrence 2012). As TDHE involves diverse stakeholder collaboration and perspective-taking (Klein 2004), embodied approaches create environments where lived experiences are valued and personal biases are challenged (Delafield-Butt and Adie 2016; Forgasz and McDonough 2017), ultimately enhancing students' integrative thinking and collaborative capacities (Henriksen, Good, and Mishra 2015; McGregor 2017).

Significantly, scholars highlight the boundary-spanning potential of embodiment as an approach of and for inter – and trans-disciplinary curriculum (Henriksen, Good, and Mishra 2015; McGregor 2017; Nguyen and Larson 2015). Allen et al. (2023) identify successful examples of how embodied approaches are enacted in TDHE including 'Kitchen-based Learning' at the University of Vermont (O'Neil 2016) where environmental science students engage with sustainability through sensory-rich cooking experiences, and 'Actor Constellation' (Pohl 2020), where participants physically map and role-play stakeholder perspectives to bridge thought styles and surface assumptions to address complex challenge.

Despite their value, enacting and sustaining embodied approaches within higher education settings, including TDHE, faces significant challenges, including discomfort or resistance from students and faculty, the need for appropriate materials and resources, and limited training and exposure for educators (Nguyen and Larson 2015; Shapiro and Stolz 2019; Wagner and Shahjahan

2015). While individual barriers such as confidence, time and resource constraints might appear straightforward (Fugate, Macrine, and Cipriano 2019; Lipson Lawrence 2012), they're deeply embedded within broader institutional structures and cultures. This study examines how these institutional conditions both enable and constrain practice with the aim of supporting meaningful implementation in TDHE.

## 2.2. Theory of practice architectures

Contemporary embodied approaches are grounded in diverse theoretical traditions that challenge mind–body dualism (Macrine and Fugate 2022), including phenomenological approaches emphasising the lived body (Merleau-Ponty 1962) and more recently, 4E cognition perspectives that recognise cognition not only as embodied but also embedded, enactive, and extended beyond individual minds (Newen, de Bruin, and Gallagher 2018). These perspective position learning as an activity involving the whole person, emerging through dynamic interactions between bodies, where multiple ways of knowing – somatic, sensory, affective, tacit – integrate with more analytical approaches (Nathan 2021).

The Theory of Practice Architectures (TPA) (Kemmis et al. 2014a, 2014b; Kemmis 2023; Kemmis and Grootenboer 2008; Mahon, Francisco, and Kemmis 2017) provides a powerful framework for examining how institutional arrangements shape practices in TDHE settings. TPA conceptualises practices as socially established activities shaped in three interrelated dimensions – the semantic, the material, and the social – occupied, respectively, by three kinds of arrangements – cultural-discursive, material-economic, and social-political (Kemmis et al. 2014b). These dimensions interact to create what Kemmis et al. (2014b) call 'practice architectures' – the specific conditions that enable or constrain practice in particular sites. Previous applications of TPA, from childhood education (Salamon et al. 2016) to higher education (Kemmis and Mutton 2012), demonstrate its value for understanding how practices are enacted, sustained or transformed.

While physical experiences are often overlooked in practice research (Edwards-Groves 2018; Mahon, Francisco, and Kemmis 2017), TPA recognises practitioners as 'embodied beings' who engage culturally, materially, socially through the medium of the body (Kemmis 2019, 54). Practice is understood as emerging through relational and embodied encounters between practitioners 'as interlocutors in language, as embodied beings in activity and work, and as social beings in relationships of power and solidarity' (Kemmis 2019, 85). Applying TPA not only accounts for the physical experiences of practice but also the emotional, sensory and intersubjective aspects of practice as an embodied encounter (Kemmis 2019; Kemmis and Hopwood 2022).

This study aimed to understand how embodied approaches can be better enacted and sustained in TDHE by examining these practices architectures, guided by three research questions:

- (1) What cultural-discursive, material-economic and social-political arrangements enable and constrain embodied approaches in TDHE?
- (2) How do these arrangements interact to create conditions that make embodied approaches possible?
- (3) What implications do these arrangements have for supporting and sustaining embodied approaches in TDHE?

This understanding is crucial for identifying pathways for transformation and improvement (Edwards-Groves 2018; Mahon, Francisco, and Kemmis 2017), particularly in TDHE where educators negotiate multiple institutional boundaries and competing practice traditions.

## 3. Research design

This study employed a qualitative case study approach situated within a broader action research project examining TDHE practice. While the broader project focused on practice transformation

over time, this paper presents findings from a specific phase that examined how practice architectures shape the enactment of embodied approaches. The case study enabled deep understanding of practice in context (Yin 2017), while action research supported systematic inquiry into educator experience and practice transformation (Sáez Bondía and Cortés Gracia 2022). This methodology aligns with TPA's site-based educational development approach, where practice responds to local needs and circumstances (Kemmis et al. 2014b). This study was approved by the University of Technology Sydney (UTS) Human Research Ethics Committee (ETH23-8242).

### 3.1 Case study: transdisciplinary school

Transdisciplinary School (TD) at the University of Technology Sydney (UTS) provided a valuable 'unique case' (Yin 2017) for examining how practice architectures shape embodied approaches in TDHE. As a pan-university school, working collaboratively across faculties, TD exemplifies the institutional complexities of enacting embodied approaches within established university structures. Established in 2016 after the successful launch of the universities' first transdisciplinary undergraduate degree – the Bachelor of Creative Intelligence and Innovation (BCII) in 2014, TD has evolved to offer diverse educational programs.

The complex arrangements educators navigate is exemplified in the BCII which brings together students from seven faculties to engage in a four-year double-degree. Students develop deep disciplinary expertise through their 'core degree' in a field of choice (i.e. science, communications, engineering) while developing transdisciplinary breadth via BCII subjects. Cohorts of 200–350 students are taught by a collaborative teaching teams of six to 10 staff who facilitate transdisciplinary, problem-based learning in collaboration with industry partners, including community, government and not-for-profit organisations.

TD practitioners employ active, collaborative, and experiential learning approaches to support 'multidisciplinary teams, working on complex real-world challenges ... and experimentation with various concepts including creative methods, futures thinking, complexity, leadership and entrepreneurship, whilst cultivating reflexivity and ongoing sensemaking of students' emerging professional expertise' (Kligyte et al. 2023, 6). TD practitioners have a strong commitment to evaluating and examining practice through changing conditions (Baumber et al. 2021, 2024; Kligyte et al. 2022, 2023), making it an ideal site for investigating practice architectures.

### 3.2 Participants and data collection

Eight educators from TD participated in the study, representing diverse roles (six full-time, two casual staff), teaching experience (7–25+ years) and disciplinary backgrounds (science, education, the arts, anthropology, urban planning, literature, implementation and complexity science). Participants were positioned as co-researchers in line with action research principles, engaging in both data generation and preliminary analysis.

Data collection took place over a six-month period where participants took part in six collaborative workshops to examine practice, while documenting practice and emerging insights via *learning summaries* and *exploration activities*. The workshops were designed and led by the author to support self-critical and systematic practice inquiry (Kemmis et al. 2014b) while ensuring educators could contribute their unique perspectives and experience as 'insider practitioners of the practice of teaching and the practice of researching' (p.180). Framing the workshops was the recognition that embodied approaches offered a valuable teaching and learning approach within TDHE (Allen et al. 2023; Forthcoming)

Each workshop supported practice inquiry and collective analysis, with educators engaging in collaborative discussion and interpretation, visual mapping of relevant arrangements and analysis of emergent findings. As illustrated by Figure 1, emphasis was placed on moving beyond purely written or spoken forms of examination and reflection to support embodied reflective practice

(Leigh and Bailey 2013). In this example, participants collaboratively explored the tensions they experienced by using their bodies to construct a tableau (frozen image) (Schneider, Crumpler, and Rogers 2006), that embodied and visually depicted these tensions.

Participants completed individual *learning summaries* at the end of each workshop, documenting embodied experiences and insights. These were complimented by *workshop summaries*, produced by the lead author and member-checked by participants, that documented each workshop's design, activities, artefacts and insights via written and visual formats. Between workshop, participants completed *exploration activities* that supported reflection and documentation of emerging practice. These activities generated a diverse range of data that revealed practitioners' understanding of the practice architectures within TDHE.

### 3.3 Data analysis

The analysis process aligned with both action research principles of collaborative inquiry and TPA's framework for understanding practice architectures, occurring across three sequential but iterative phases. Reflexive thematic analysis (Braun and Clarke 2019, 2021) supported iterative coding and theme identification through the TPA framework via:

1. *Data familiarisation* through multiple close readings of exploration activity responses, workshop and learning summaries
2. *Initial code generation* to systematically identify meaningful data in relation to TPA e.g. identifying relevant cultural-discursive, material-economic and social-political arrangements
3. *Theme construction* through reflexive clustering, mapping and defining of themes
4. *Theme review* against codes and raw data, involving further close readings of the data to deepen insights
5. *Theme refinement* in relation to practice architecture dimensions and research questions

To honour the focus of the inquiry, an embodied awareness was brought to analysis by intentionally paying attention to our embodied responses to the data i.e. not just what the data said, but how we felt in response to it (MacLure 2010; Srivastava and Hopwood 2009).

The first phase of analysis was conducted by the lead author with participant input during workshops. Through close reading of the exploration exercises, workshop and learning summaries,



**Figure 1.** Practitioners creating a frozen image of the tensions experienced in practice.

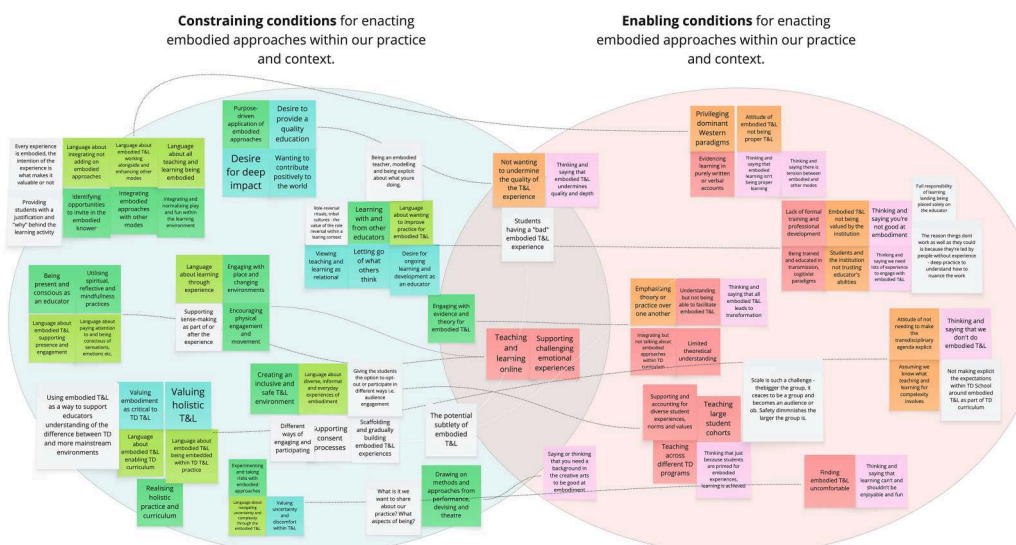


The second phase examined how identified arrangements enabled and constrained practice. Arrangements were mapped by the lead author (Figure 2) and shared with participants who critically examined and expanded analysis by sharing specific insights and practice. These contributions helped ensure analysis reflected the reality and complexity of practice within their context. The final phase, led by the lead author, examined the complex interactions between arrangements that create conditions of possibility. This analysis resulted in a refined relational map (Figure 3) that visualises how enabling and constraining arrangements interact to create the conditions for practice while revealing tensions. This approach extends typical TPA visualisations to better capture the dynamic relationships between arrangements.

Interpretative rigour was maintained through regular participant checking, collaborative refinement of findings, documentation of analytical decisions, and theoretical engagement. This was particularly important given the lead researcher's role within TD and the recognition that TPA requires researchers to make 'informed inferences about what supports the practices' and the kind of arrangements that make them possible (Kemmis et al. 2014b, 225). The combination of collaborative workshop analysis, systematic RTA with an embodied awareness and deliberate engagement with literature supported practical insights into how different kinds of arrangements shape possibilities for practice and theoretical contributions to understanding practice architectures in TDHE.

### Analysis of the analysis and constraints overview

1. *Journal of the American Medical Association*, 1997; 278: 1039-1044.

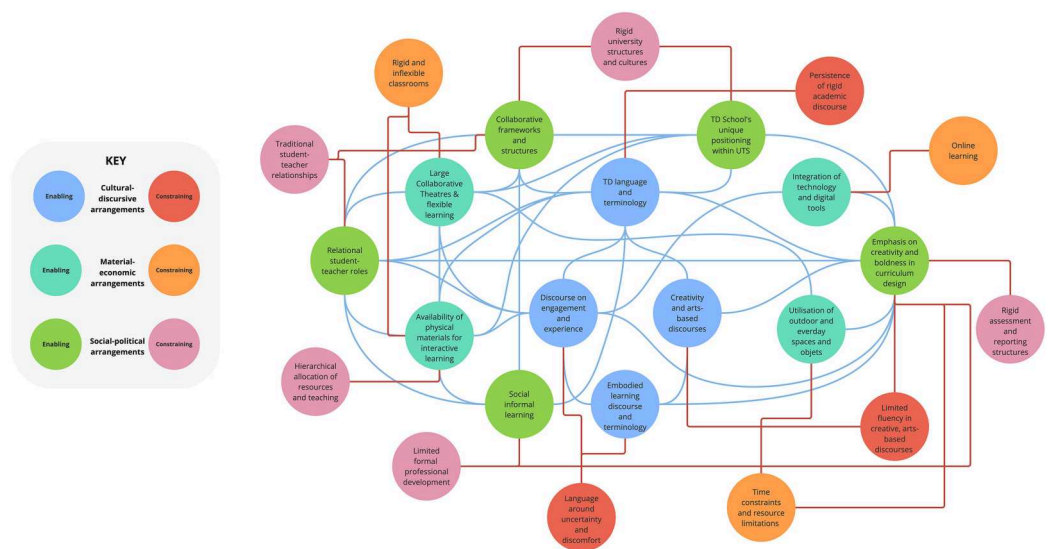


**Table 1.** Key enabling and constraining arrangements.

Arrangements	Key enabling arrangements	Key constraining arrangements
Cultural-discursive	<ul style="list-style-type: none"><li>• Transdisciplinary language and terminology</li><li>• Creativity and arts-based discourse</li><li>• Embodied learning discourse and terminology</li><li>• Discourse on engagement and experience</li></ul>	<ul style="list-style-type: none"><li>• Rigid academic discourse</li><li>• Limited fluency in creative, arts-based discourses</li></ul>
Material-economic	<ul style="list-style-type: none"><li>• Large collaborative theatres and flexible learning environments</li><li>• Availability of physical materials for interactive learning</li><li>• Utilisation of outdoor and everyday spaces and objects</li></ul>	<ul style="list-style-type: none"><li>• Language around uncertainty and discomfort</li><li>• Rigid and inflexible classrooms</li><li>• Time constraints and resource limitations</li><li>• Online learning</li></ul>
Social-political	<ul style="list-style-type: none"><li>• Integration of technology and digital tools</li><li>• The school's unique university position</li><li>• Emphasis on creativity and boldness in curriculum design</li><li>• Collaborative frameworks and structures</li><li>• Social informal learning</li><li>• Relational student-teacher roles</li></ul>	<ul style="list-style-type: none"><li>• Rigid university structures and cultures</li><li>• Hierarchical student-teacher relationships</li><li>• Hierarchical allocation of resources and teaching roles</li><li>• Limited formal professional development opportunities</li><li>• Rigid assessment and reporting structures</li></ul>

the conditions necessary for enacting and sustaining them. In TPA enablement is not purely positive, and constraints are not purely negative (Kemmis, Wilkinson, and Edwards-Groves 2016). Rather, they are ‘obverse sides of the same coin’ that together function simultaneously as ‘channelling’ forces for practice (p.243). Further, practices and arrangements don’t exist in isolation – they shape and are shaped by one another (Kemmis et al. 2014b; Mahon, Francisco, and Kemmis 2017). While the following section presents findings through discussion of each arrangement to ensure clarity, observations made, and evidence provided in each dimension inevitably relate to and inform others.

To support a more relational understanding, we present an accompanying map (Figure 3) illustrating how the enabling and constraining arrangements overlap and inform one another, creating channelling forces. This illustration diverges from the way TPA findings are typically visualised (Kemmis et al. 2014a) to illustrates how these arrangements interact to create conditions through which practice is made possible.



**Figure 3.** Relational mapping of arrangements at TD.



#### 4.1 Cultural-discursive arrangements

Cultural-discursive arrangements at TD are characterised by specialist language that shapes how embodied approaches are described, justified, and enacted (Mahon, Francisco, and Kemmis 2017). Educators use terms such as ‘experimental’, ‘intersubjective experiences’, ‘emotions’ and ‘embodied pedagogy’ to articulate and legitimise embodied approaches in the classroom. Drawing from arts-based and creative discourse, this specialist language enables practice by moving beyond dualistic and cognition-focused language to emphasise learning that transcends disciplinary boundaries through embodied, social and relational experiences. As Nguyen and Larson (2015) describe – socially based education contexts like TD push ‘beyond conventional boundaries imposed through normative academic discourses’ (p.336).

However, this specialist language simultaneously constrains practice due to confusion around what is meant when discussing embodiment. As one educator reflected, ‘I’m still stuck on how we actually defined embodiment, like what we mean by that? What are we saying?’. Further, embodied discourse exists within broader institutional narratives focused on measurable learning outcomes and established expectations of what constitutes learning. Educators frequently used terms like ‘institutional expectations’, ‘justifying learning’, and ‘risk’ when discussing their practice within these broader structures, highlighting the complex positioning of embodied learning within traditional academic frameworks and discourses.

#### 4.2 Material-economic arrangements

Material-economic arrangements at TD that shape what, when and how embodied approaches are enacted (Mahon, Francisco, and Kemmis 2017) include flexible teaching space, everyday objects, creative technology integration, and specialist teaching materials. Flexible spaces both enable and constrain practice. For instance, educators modify teaching spaces by rearranging furniture and moving outdoors in a coordinated effort to engage the embodied student and support embodied action (Kemmis and Hopwood 2022). As one educator noted, environment and materials are useful for inviting in the embodied knower whereby ‘you don’t have to tell people to get embodied, you just connect them back with their body and let the rest work itself out’. Yet, many educators felt they didn’t have the resources to make the most of this flexibility, questioning ‘do people have resourcing? [...] is their time given for this?’.

The ability to enact embodied approaches is further constrained by the physical infrastructure of teaching spaces. As one participant described, many classrooms have ‘rows of desks, teacher/lecturer at the front, individual work to listen, make notes, do practice exercises, write exams’, dictating more static modes of engagement. These space constraints are particularly challenging when working with TD’s large cohorts (100–300+ students), making it difficult to ‘facilitate [embodied] activities that cater to large cohorts in learning spaces with minimal room to move around’. While TD provides specialist teaching resources and flexible environments that supported embodied engagement, educators need the confidence, time and resources to utilise these effectively.

#### 4.3 Social-political arrangements

Social-political arrangements shape how people relate to one another (Mahon, Francisco, and Kemmis 2017). At TD these arrangements are characterised by collaborative teaching structures, peer feedback, and cultures of creative experimentation that both enable and constrain practice. For instance, collaborative structures enable knowledge-sharing across disciplines while often requiring more time for the negotiation of different perspectives and practices related to embodiment. These arrangements were particularly enabling for educators from disciplinary backgrounds that don’t explicitly focus on embodiment through informal mentorship and modelling. As one educator with a background of science reflected:

Within my first year in [TD], I had built an entire activity for first year students alongside colleagues built on embodied pedagogy (the Perspective Relay). It has now become part of my regular practice as an educator, and I would never go back to not including it in my classroom.

This experience reflect what Delafield-Butt and Adie (2016) identify as the fundamentally social nature of embodied approaches, where learning is co-created through embodied interaction and intersubjective experiences.

The social-political arrangements at TD were also found to support professional learning through practice whereby collaborative structures and informal learning opportunities create environments conducive to embodied experimentation and enactment. However, the ‘freedom to experiment’ that educators described is challenged by broader academic governance, rigid assessment strategies, and dominant cultures that privilege disembodied and transmission-based approaches. These constraints are particularly evident in educators’ reflections on their exposure and training in embodied approaches:

[I’ve had] no experience of embodiment as an educator at university despite teaching now for 10 years ... I tell my students about the embodied ways of experiencing uncertainty and emergence, but I don’t have any experience or skill in teaching it or integrating it into learning.

While TD’s position as a pan-university school creates unique opportunities for experimentation and flexibility, educators must navigate this within broader university governance structures and cultures that can limit the enactment and sustainability of embodied approaches.

Together, these arrangements create the conditions for practice whereby it’s not one arrangement that makes practice possible but rather the complex interplay within and across dimensions. For instance, when educators use specialist language around ‘experiential’ and ‘embodied pedagogy’ (Section 4.1), this directly supports their physical rearrangement of learning spaces (Section 4.2) by providing a framework to explain and justify these actions to students. By examining the relationships between arrangements (Figure 3), a ‘sufficiently compelling and sufficiently rich understanding’ of how these practices are made possible was reached (Kemmis et al. 2014a, 227), contributing new insights into how practice architectures shape possibilities for enacting and sustaining these practices in TDHE contexts.

Examining the conditions for practice revealed key tensions that emerge from the interconnected arrangements, shaping possibilities for practice. As Mahon, Francisco, and Kemmis (2017, 17) assert, ‘sites of practice are sites of contestation, contradiction, tension, and struggle’. The following section analyses and discusses findings through the lens of tensions, connecting with literature to contextualise insights and identify implications for TDHE practice (RQ3).

## 5. Key tensions

Building on the identification and mapping of relevant arrangements, this section presents a discussion of the conditions for practice, specifically the key tensions that emerge from examining these enabling and constraining arrangements relationally. These are: (1) contested notions of ‘proper learning’, (2) personal and embodied histories, (3) access to learning communities, (4) experimentation within institutional constraints and (5) disciplinary values and transdisciplinary integration.

### 5.1. Contested notions of ‘proper learning’

One of the greatest challenges for practice lies in what one educator described as ‘tensions between experiential/embodied learning’ and ‘informational/intellectual learning’. This tension manifests across arrangements as competing discourses around ‘proper learning’ (4.1), interacting with access to flexible teaching spaces (4.2) and evaluation frameworks that privilege analytical cognition over embodied forms of assessment (4.3). Rantatalo and Lindberg (2018) refer to this tension as a liminal state or ‘in-between-ness’ that presents both challenges and possibilities.

There is often a disconnect between institution's declared commitments to learner-centred approaches and enacted practice that reinforces what Tagg (2003) calls the 'instructional paradigm'. While many universities advocate for student-centred learning, rigid assessment structures, tight scheduling and inflexible learning spaces make it challenging for educators to justify and enact embodied approaches. As Wagner and Shahjahan (2015, 247) argue, 'embodied learning generally does not fit neatly within these tightly constrained frameworks'. The tension between the aspirations for embodied approaches and what is made possible within existing structures reflects deeper philosophical tensions around the nature and purpose of higher education (Kezar and Rhoads 2001).

These challenges underscore the need for universities to adapt rigid structures and practices to support more holistic and authentic learning experiences (Barnett 2018; Mamatha 2021), including transdisciplinary and embodied approaches. While these structural constraints aren't unique to TDHE, they create particular challenges for embodied approaches that require flexible spaces and alternative forms of assessment that value multiple ways of knowing. These tensions underpin the following four, creating mutually reinforcing barriers to practice that manifest at institutional levels while also deeply effecting educator's experiences and capacities to enact embodied approaches. These individual experiences are significantly shaped by practitioner's personal histories with embodiment.

## 5.2. *Personal and embodied histories*

A significant tension emerged in how practitioners' personal histories with embodiment shaped their capacity to enact and sustain embodied practice. Educator's prior experiences with embodiment significantly influenced their ability to negotiate tensions within the practice architectures, creating complex and sometimes contradictory conditions for practice that manifest across all three dimensions. As one educator reflected:

I have always thought of myself as not being particularly good with my embodied skills ... I was always pretty useless in team sports and ball games, and not good at dancing. [...] These aspects didn't come naturally to me, but equally, I don't think I've ever been quite prepared to put in the work to practice them.

This reflection illustrates how historical traces and negative experiences with embodiment can create perceptions of constraints due to what Bandura (1977, 1986) terms lowered self-efficacy beliefs ('not being particularly good') that limit educators' ability to envision or realise themselves as capable of embodied practices. In contrast, positive embodied histories, particularly through educators' engagement with arts-based communities and practices, emerged as a powerful enabling condition in developing sophisticated understanding and practice. One educator with 25 years of drama experience stated:

I studied physical theatre, dance and movement of various genres, cultures and forms ... I also learnt a series of cultural action techniques which were all embodied learning. Physical workshops that were discursive and creative. This coupled with a deep dive in theory and practice of Augusto Boal's theatre of the oppressed. I have never not taught with embodied processes.

The significance of these histories speaks to the personal dimensions of embodied approaches, where educator's own embodied experiences fundamentally shape their capacity to enact them (McDonough et al. 2016; McMahon and Huntly 2013)

The tensions created by educator's histories manifest across arrangements, affecting educator's abilities to engage in specialist discourse (4.1), physically occupy and creatively adapt teaching spaces (4.2) and create tensions between personal comfort zones and expectations about engaging with and enacting creativity and experimentation (4.3). These personal histories and capacities don't exist in isolation but are shaped by access to learning opportunities and communities. TD must create practice architectures that help educators reconstruct their relationships (4.3) and discourses (4.1) about embodiment through targeted professional learning and safe spaces for experimentation. As discussed in the following section, the tension between personal and embodied histories is particularly evident in how different educators can access professional learning opportunities.

### **5.3. Access to learning communities**

Building on the social-political arrangements described in Section 4.3, a key tension emerges between the value of informal learning opportunities for staff and their accessibility. While collaborative cultures support practice development, these opportunities are primarily accessible to full-time staff as opposed to casual or part-time staff. This creates what one educator described as an 'outsider/insider' perspective where staff have 'one foot in [TD]' and another within other professional roles and spaces. Given that informal learning accounts for up to 75% of learning within organisations (Bear 2008), this disparity in access significantly impacts practice development.

This access tension is compounded by the lack of formal professional learning pathways at TD, particularly related to embodied approaches. While existing studies highlight the importance of social informal learning for all higher education practitioners (Knight, Tait, and Yorke 2006), many educators report that their primary training remains in 'fairly intellectual, information transmission paradigms' with limited exposure to embodied and transdisciplinary approaches. As argued by Macrine and Fugate (2022), there is a need for professional learning pathways that foster interdisciplinary understanding and practice for embodied approaches.

These tensions manifest across the different arrangements – educators struggle to develop fluency in specialist discourse around embodied approaches (4.1), demonstrate limited confidence in utilising flexible spaces and materials effectively (4.2), and show reduced capacity to navigate institutional tensions and justify embodied learning as 'proper learning' (4.3). Critically, Kemmis et al. (2014a) argue that sustaining and transforming practice architectures requires attention to both formal and informal learning pathways.

If embodied approaches are to be enacted and sustained, TD must maintain the valuable informal learning culture while developing formal opportunities that are accessible to all staff. This means providing structured opportunities for casual, part-time and full-time educators to learn with and from each other while collaboratively experiencing embodied approaches in TDHE settings, before facilitating this for others. This integrated approach would combine TD's valuable informal culture with structured opportunities for developing theoretical understanding and practical skill, while ensuring equitable access for all staff.

While these opportunities can support individual capacity for practice, the ability to enact learning is further mediated by institutional constraints and resourcing, including funding. The tension between creative aspirations of TD and institutional structures creates challenges for the experimentation with and enactment of embodied approaches.

### **5.4. Experimentation within institutional constraints**

The tension between creative experimentation and institutional constraints manifests across the different arrangements. TD's collaborative culture enables creative risk-taking (4.3) and in turn supports the development of specialist language for justifying embodied approaches (4.1) and critical competencies such as the innovative use of space and materials (4.2). Yet, educators must often navigate the desire to creatively experiment with embodiment within institutional constraints.

Limited access to collaborative and flexible teaching spaces makes enacting embodied approaches challenging, especially when the alternatives are more rigid and inflexible spaces (e.g. tiered lecture theatres or rooms with fixed desks) (4.2). Further, rigid reporting and evaluation structures (4.3) such as student satisfaction surveys can deter educators from taking creative risks in the classroom, particularly when embodied approaches can be viewed as alternate and uncomfortable by educators and students (Wagner and Shahjahan 2015). As one practitioner stated, 'one of the critical contradictions I've encountered involves the tension between institutional constraints and the aspirations of embodied, transdisciplinary education ... traditional educational structures, assessment methods, filling the subject intended learning outcomes ... even the student feedback survey is a prioritisation of ... quantifiable outcomes over qualitative'.

The constraints of scale present another challenge for experimenting with embodied approaches. While large teaching teams (often eight or more educators) create possibilities for facilitating embodied experiences, facilitating cohorts of 300+ students within a large collaborative teaching space introduces significant barriers across all arrangements. Physical space constraints limit movement and embodied engagement (4.2), while large numbers make it difficult to create safe, supportive environments for embodied learning (4.3) and see educator's using more formal, generalised and rational language to emphasise clarity and group engagement (4.1). As Macrine and Fugate's (2022) describe, embodied approaches require attunement to students' physical responses and sensory engagement – something difficult to achieve in large-scale contexts.

These scale related tensions have several implications for practice in large-scale TDHE contexts. There is clear need to develop scalable approaches to embodied practice that maintain quality while working within environmental constraints (4.2), creating opportunities for smaller group embodied interactions within large cohorts (4.3), and developing discourse that helps students understand and value these practices even in large-scale settings (4.1). These institutional constraints reflect broader systemic tensions in Australia higher education, particularly in how different disciplinary approaches are valued and resourced. Nowhere is this more evident than in the integration of arts-based practices that emphasise embodied engagement in TDHE where institutional priorities often conflict with pedagogical needs.

### **5.5. Disciplinary values and transdisciplinary integration**

The integration of diverse disciplinary approaches within TDHE reveals tensions between the need for disciplinary depth alongside integrative transdisciplinary practice. While TDHE requires teaching across disciplinary boundaries, it also depends on deep disciplinary knowledge and practice (McGregor 2017; Nicolescu 2012), including that related to embodiment. Building on the enabling conditions identified in Section 4, particularly around arts-based practices and communities, this tension manifests in both structural barriers e.g. STEM-focused funding (Sears and Clark 2020), and opportunities such as team teaching and collaborative learning design at TD. Understanding how to navigate this tension is crucial for successfully enacting and supporting embodied approaches in TDHE.

TD educators operate in liminal positions where they simultaneously maintain deep disciplinary expertise, participating in diverse communities of practice, while expanding transdisciplinary expertise. Educator's sustained engagement with arts-based communities were found to create enabling conditions across multiple dimensions whereby individuals develop fluency in specialised language for describing and justifying embodied practice (4.1), develop a sophisticated capacity to work with available resources (4.2) and foster agency to work creatively within institutional constraints through increased self-efficacy beliefs about embodied teaching capabilities (4.3).

While not all arts-based practices are inherently embodied nor all embodied approaches arts-based, arts-based disciplines have developed sophisticated traditions of embodied knowledge (Migelow 2017). Practices like performance, visual arts, and design that integrate physical, sensory and emotional dimensions offer valuable embodied approaches for TDHE. Yet, as one practitioner noted: 'It takes years to develop the body or artistic practice to grapple with complexity as a dancer, painter, sculptor'. Forgasz and McDonough (2017) highlight that while the possibilities of practice are limited for those inexperienced with such approaches, educators are encouraged to experiment, seek out learning opportunities and support others in doing the same.

The tension created by diverse disciplinary expertise creates both challenges and opportunities for practice. While recent funding cuts to arts and humanities in Australian universities (Barnes 2020) create structural barriers to practice integration, TD's team teaching and collaborative curriculum design offer valuable opportunities for the sharing and integration of diverse disciplinary perspectives, including arts-based approaches. This suggests that successfully enacting and

sustaining practice requires both institutional structures that support meaningful disciplinary integration and explicit recognition of how diverse disciplinary contributions, particularly from the arts, enable effective practice.

The analysis of these five tensions reveals how different kinds of arrangements in practice architectures interact in complex ways to create both challenges and possibilities for enacting embodied approaches in TDHE. These complex conditions, mapped relationally in [Figure 3](#), demonstrate the value of social informal learning and embodied histories in supporting educators navigate and transform institutional tensions.

## 6. Implications

These findings have several implications for supporting embodied approaches in TDHE. Each addresses specific tensions identified in our analysis, offering pathways for institutions to support educator's practice development. First, institutions should develop integrated professional learning pathways that offer informal and formal learning. This directly addresses tensions around personal embodied histories and access to learning communities by ensuring all educators – especially casual academics who have limited access to TD's social informal learning communities – can develop understanding of and confidence for embodied approaches before facilitating them for others.

Second, institutions should prioritise flexible learning environments that support embodied engagement at various scales. This responds to tensions around experimentation within institutional constraints by providing appropriate spaces, materials, and technologies while developing educator's confidence to work creatively within existing limitations. Third, institutions should foster learning communities that span disciplinary boundaries and support sustained engagement with arts-based approaches. This addresses tensions between disciplinary values and transdisciplinary integration by creative structures that recognise diverse contributions, particularly the arts, while facilitating cross-disciplinary learning accessible to all educators.

Finally, institutions must identify and intentionally transform the structures and cultures that reinforce mind–body dualism and the notion that embodied approaches aren't proper teaching and learning. By valuing multiple ways of knowing, offering integrated professional learning pathways, and actively supporting experimentation with embodied approaches, institutions can create the conditions necessary for embodied approaches to be enacted and sustained in TDHE and beyond.

## 7. Concluding comments

Moving beyond a focus on individual educator action and experience, this study makes three significant contributions to understanding how the institutional arrangements of TD create unique conditions for enacting embodied approaches in TDHE. First, our application of TPA revealed the complex interplay between cultural-discursive, material-economic and social-political arrangements at TD. This analysis revealed how specialist discourse and collaborative cultures support practice through social informal learning pathways and arts-based engagement, while inflexible teaching spaces and cultures of knowledge transmission and their resulting discourses create significant challenges.

Second, by examining the interactions between different kinds of arrangements to identify conditions for practice, we identified five tensions that shape possibilities for enacting and sustaining embodied approaches: (1) contested notions of 'proper learning', (2) personal and embodied histories, (3) access to learning communities, (4) experimentation within institutional constraints, and (5) disciplinary values and transdisciplinary integration. The relational mapping of arrangements extends TPA by demonstrating how social informal learning and embodied histories create conditions of possibility that help educators navigate constraining arrangements and tensions.



However, our findings also highlight how the absence of formal learning pathways and equitable access to learning communities can limit broader practice transformation.

Finally, by revealing how these tensions manifest across different kinds of arrangements, we contribute practical understanding of how institutions can better support embodied approaches in TDHE. This includes recognising the value of arts-based practices and informal learning pathways while addressing structural barriers through intentional professional development and resource allocation. This study demonstrates that while institutions must identify and overcome problematic structures and cultures, educators can simultaneously be supported to actively navigate and creatively transform tensions to enact embodied approaches in TDHE.

While this study provides valuable insights, it was conducted within a specific site. Longitudinal research may reveal how these arrangements evolve as educators develop their embodied teaching capabilities and as institutional structures change. Additionally, while the case study approach enabled deep understanding of practice architectures at TD, further research in other transdisciplinary contexts and into student perspectives could support understanding of how different institutional structures and experiences shape possibilities for practice. Such research would further contribute to understanding how to better support the development and sustainability of embodied approaches in TDHE.

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