MULTIPLE MEASURES - BACKGROUND PAPER

PREPARING FOR MULTIPLE MEASURES

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These papers offer background reading and information for users of the Multiple Measures online tool and website, www.multiplemeasures.org.au.

For further detail, or with any questions, please contact the authors, listed above.

Introduction

This paper was initially developed as background to the first Reference Group discussion for this project and has continued to inform the development and communication of the Multiple Measures project and its outcomes. The project investigated the location of 'good' where the values and practices of disciplines come together within interdisciplinary (ID) teaching and learning contexts. The project focused on the practices and support for assessment in these contexts, and the identification of relevant exemplars and productive perspectives on these. The project aimed for outcomes relevant to a range of national stakeholders, deliverables that will support best ID practice in the creative disciplines, and resources to support these.

The paper sets out key concepts over the coming sections, and identifies references for these on the basis of the completed literature review. Background and Working definitions have been developed as a means to provide a shared language for the project, and to define key concepts allowing the focus of the project to be on issues related to assessment. Following sections focus on three initial 'lenses' that have been developed to focus consideration of the exemplars currently being identified and collected for the project. These are ID Conceptions and Typologies, ID Learning and Teaching Approaches, and ID Assessment. The attached mapping of Literature by the lenses identified offers further background.

Background

Underpinning concepts and values (establishing drivers and broader context for ID) :

- (Super) complexity as the norm for professional life (e.g. Garner, 2005; Mahy & Zahedi, 2010)

- Recognised limitations of disciplines (e.g. Moore, 2011; Reese, 1995)

- Necessity for collaboration in response to complexity and in reflection of contemporary knowledge production (e.g. Bailey, 2010; McPeek & Morthland, 2010)

- Integration as the basis for new understanding, knowledge production and problem-solving (e.g. Davies & Devlin, 2010; Healey & Jenkins, 2015; Mansilla, 2005; Quinlan, Corkery & Castle, 2004)

- Linking research, teaching and learning; engaging students in inquiry; application of Boyer's four integrations (e.g. Healey, 2005; Healey & Jenkins, 2015)

Working definitions

A **discipline** is a collective of scholars who structure and delineate a particular knowledge domain, through traditions and conventions of knowledge production, validation and representation. A discipline is largely self-organising, resulting in distinct disciplinary culture, language and identity, but is also subject to external codification and reinforcement (e.g. ABS research classifications in Holmes & Fountain, 2010). Disciplinary knowledge domains, while bounded, can be sufficiently permeable to support disciplinary overlap and exchange. Over time, new disciplines may evolve out of effective interchanges between multiple disciplines and in response to social, political, ecological and technological imperatives (e.g. 'environmental science' in Franks et al., 2007).

Interdisciplinary (ID) describes a set of value positions and practices in creative arts learning and teaching that are commonly collaborative, inquiry-based, and/or practice-led. ID approaches are often devised in response to anticipated synergies between disciplines, complexity, 'wickedness', the richness of 'real world' contexts, and as a means of students developing graduate capabilities. Interchanges of theory, practice and culture centred on a common problem are foregrounded in ID approaches, with goals for new knowledge integration through student-led inquiry, meta-cognitive development, and emergence and innovation in terms of outcomes (Corkery, Roche, Watson & Zehner, 2007; Klein, 2005; Lattuca, 2002; Mansilla, 2005).

Benchmarking is a formal process of establishing relative performance, through systematic comparison of some aspect of an institution's functioning with that of other relevant 'partner' institutions. Benchmarking processes often provide richer forms of evidence for development and improvement than quality assurance, which emphasises threshold standards. Benchmarking is ideally dialogical, involving evaluative exchange with chosen partners, based on iterative reviews of data, and includes consideration of institutional processes as well as outputs/outcomes. The utility of a benchmarking process typically depends on the choice of benchmarking partners; a degree of humility and honesty in the partner relationship; inclusion of process elements in the analysis; a sound understanding of the indicators for the function/s of interest; and commitment to strategic use of the evidence it provides (Epper, 1999; Henderson-Smart et al., 2006).

Lens 1 : ID conceptions and typologies

- The accounts of ID approaches and case studies display a wide range of conceptions of ID that manifest in a range of scales and types of ID engagements, durations, rationale and targeted outcomes.

- ID approaches may also result from broader institutional strategies or commitments to disciplinary integration (Burgett, et al., 2011; Franks et al., 2007), and/or rationalisation (McDonald, 2009).

- Across art, design and architecture the ID approaches tend to be weighted in favour of either a process or outcome/application emphasis along disciplinary lines, with art/design aligned more with process, and industry-directed design/architecture with application/outcome (e.g. de la Harpe et al., 2009; Wise, 2013). This pattern is represented as a continuum in Figure 2 in recognition that several of the ID approaches considered actively mediate ID process and application during course progression and/or through learning and teaching approaches and assessment (also indicated in Figure 2).

- A process emphasis within ID approaches may also reflect graduate capability or employability agendas, irrespective of discipline, underpinned by strategies to

develop students' transferable knowledge and skills for professional practice (Bailey, 2010; Garner, 2005; McDonald, 2009) and meta-cognitive skills for lifelong learning (Winters, 2011).

- In order to differentiate variants of ID and assist others to evaluate their applicability in different contexts, Davies and Devlin (2010) defined ID gradations, introducing new nomenclature among them (relational, exchange, 'pluri-', modification, and 'trans-'). These are usefully summarised in Wise (2013), and mapped in Figure 1 on two axes. The horizontal axis represents the degree of integration between disciplines, while the vertical axis suggests a more subjective range of potential consequence of the ID approach, where hyperdisciplinarity at the extreme is associated with hyperspecialisation (Moore, 2011).
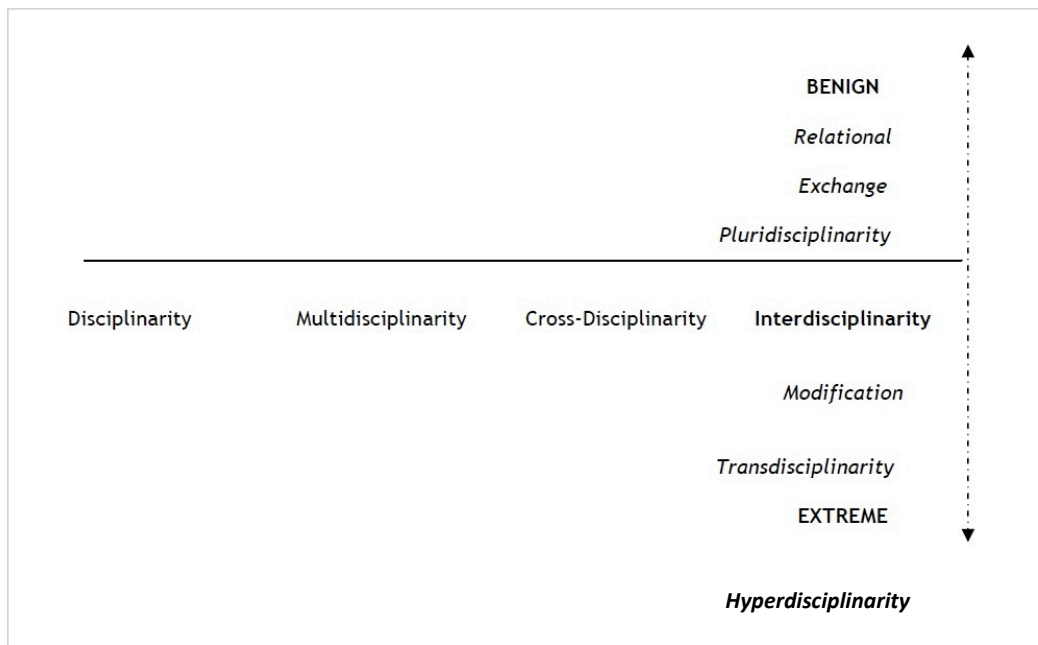

Figure 1: A typological mapping of interdisciplinarity (Wise, 2013, adapted from Davies & Devlin, 2010)

While these gradations were intended to clarify the lack of consistency and consensus in defining interdisciplinarity, they were pre-dated by Mansilla's (2005) attempt to move conceptions beyond a focus on *levels of integration* between disciplines and integration as an end in itself in ID curricula. She argued for the *purpose* of the ID engagement to drive the nature and level of integration, noting too that multiple integrations will be viable, resulting from different disciplinary intersections. 'Interdisciplinary understanding', to Mansilla, is based on four premises:

- A performance agenda for understanding i.e. an ability to 'think with it', to apply, to use.

- Understanding as deeply informed by disciplinary expertise and insights.

- A form of integration that leverages multiple disciplinary perspectives, through interchange and beyond juxtaposition.

- A view of ID that is purposeful and directed toward cognitive advancement e.g. new insights, accounts, explanations, artworks, products etc. (2005, pp. 16-17).

These premises underpin Mansilla's framework for assessing ID work in turn, elaborated below.

The development of considerable disciplinary expertise – as a pre-condition for ID learning – is similarly privileged by Bailey (2010) who maintains the goal of fostering the 'T-shaped' individual with a core expertise, but equipped to continually branch out into other fields (in postgraduate multidisciplinary design). This metaphor begins to be challenged by Thomas' (2015) 'transdisciplinary nomad' (in the context of art and science) who develops an oversight of disciplinary terrains and operates via a succession of inquiry-based engagements, from above, that are not discipline-bound.

- Multidisciplinary engagements are increasingly common, but 'transdisciplinarity' is frequently highly valued and expressed as the aspiration (according with 'modification ID' in Davies and Devlin, 2010, p. 16, i.e. going beyond cooperation and integration).

- ID engagements commonly involve multiple actors (not just students and teachers), as well as interplays between artefacts, technologies and social contexts that both support ID processes, and embed knowledge rooted in other disciplines, posing potential for integration (Corkery, Roche, Watson & Zehner, 2007; Quinlan, Corkery & Castle, 2004).

Lens 2 : ID learning and teaching approaches

Accounts of ID practices and cases reflect two major approaches in which are nested different conceptions of ID. The first is **orchestrated or directed ID** in which institutions / disciplines / teachers mandate ID curricula (e.g. Crowther & Savage, 2005; Longbottom et al. 2007; McDonald, 2009). Orchestration also occurs at the smaller scale of projects or studios where disciplinary overlaps are pre-determined (or at least anticipated), and fostered (Freeman, 2014; Goodwin, 2009; Krukauskas & Ward-Perkins, 2014).

The second approach aligns more with inquiry- or **problem-based curricula**, and design thinking, whereby issues or themes are subjected to problem framing, definition and re-definition. In these cases, potential disciplinary overlap and integration are functions of process or practice. The nature of students' ID engagements is uncapped, rather than pre-determined, evident in recent social innovation curriculum at Linnaeus University (Hyltén-Cavallius, 2012), and designing for food and agriculture at Ryerson University (Komisar, Nasr & Gorgolewski, 2009). The two discernible approaches are not mutually exclusive, however, as suggested by practice-led curriculum that is simultaneously uncapped, but still **bound** within the discipline of visual arts (Mafe & Webb, 2009), or broader creative arts (McDonald, 2009).

In summary, the approaches to ID learning and teaching explored are underpinned by goals for one or more of the following:

- Collaboration (between multiple actors and one or more disciplines)

- Inquiry-based learning (e.g. Healey, 2005; Hyltén-Cavallius, 2012)

- Practice-led learning (e.g. Mafe & Webb, 2009)

- Cultural exchange (literal and/or disciplinary e.g. Jeong Kim et al., 2015; Nyström et al., 2010)

- Meta-learning development (e.g. Cooper et al., 2010; Winters, 2011).

The two key emphases highlighted above in relation to ID conceptions – the privileging of **ID process** or **application/outcome** – also intersect the enactment of these goals. A more granular view of the knowledge and skills that are commonly targeted across ID learning and teaching approaches are mapped in Figure 2, reiterating that this continuum may actually function as a developmental progression for students over time.
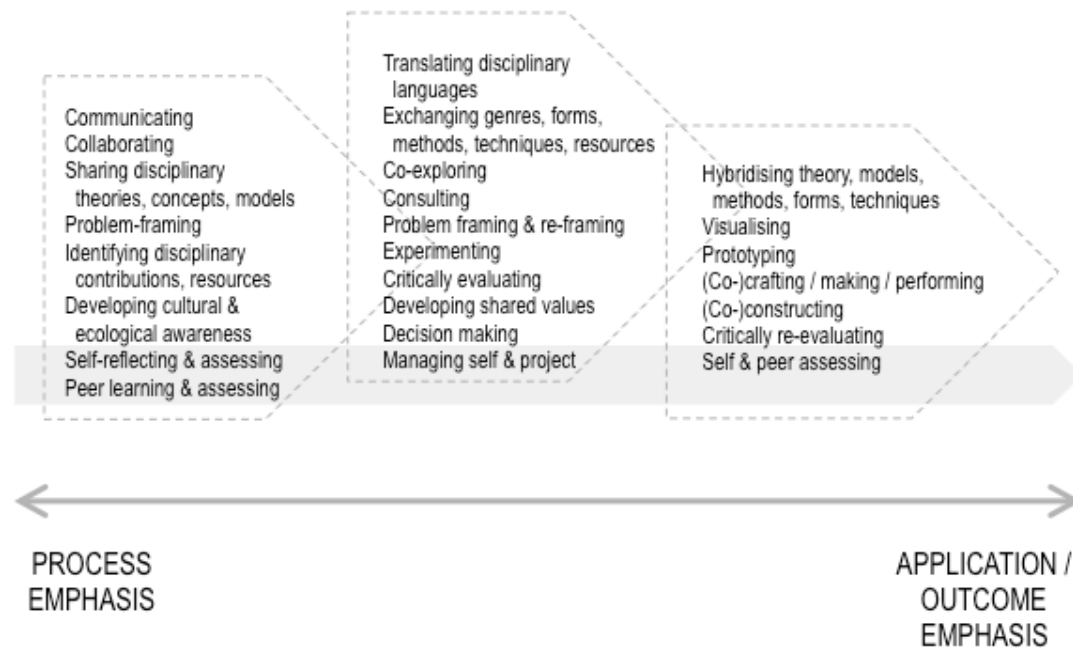

Figure 2: Indicative knowledge & skills targeted across process–application/outcome continuum

This mapping is intended to be indicative rather than exhaustive, resulting from a distillation of work on studio-focused assessment (de la Harpe & Peterson, 2008; de la Harpe et al., 2009), interdisciplinary 'real world' projects (Bailey, 2010; Corkery, Roche, Watson & Zehner, 2007), interdisciplinary understanding (Mansilla, 2005), and meta-learning in art and design (Winters, 2011). The grey-shaded arrow highlights the meta-cognitive skills that are often seen as foundational to ID learning, and are carried through when the emphasis may shift from process to application/outcome over the duration of an ID project or course (e.g. Bailey, 2010).

Lens 3 : ID assessment

The literature on the assessment of interdisciplinary creative practice is apparently limited with assessment strategies only broadly outlined integral to descriptions of approaches and curricula. A significant Australian study (de la Harpe et al., 2009) centred on the contrasting **values** and foci in scholarly reporting of assessment practices between the disciplines of architecture, design and art. Twelve categories of knowledge and skills targeted in assessment were articulated, with interdisciplinary collaboration ranking eleventh across all three disciplines (2009, p. 43). (The twelve categories of assessment foci, as ranked, comprised: process, product, hard skills, soft skills, professional and innovative practice, learning approach/style, content knowledge, technology, reflective practice, person, interdisciplinary collaboration, and participation (2009, p.43)). Where **interdisciplinary**

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collaboration and related skill development are explicitly valued, they may not be specifically assessed as in the case of Jeong Kim, Ryeung Ju and Lee (2015) who assessed a joint Korean and Malaysian, architectural and interior students' housing design project with conventional outcome-focused criteria. In other examples (Krukauskas & Ward-Perkins, 2014; Miles & Rainbird, 2014), the valuing of interdisciplinary learning appears to be enacted through the design of the ID engagement itself, and via eliciting student feedback on their experiences.

Applying the lens of the 'process–application/outcome continuum' once more, curriculum and assessment design are seen to be mechanisms for reconciling the two emphases over time, and underpinning seemingly effective pedagogic strategies. Through third year progression in the BCA at USQ (McDonald, 2009), for example, practice- and outcome-focused projects are balanced with an increasing priority for professional enculturation, and a culminating non-assessed 'tradeshow'. In the Master of Multidisciplinary Design Innovation at Northumbria (Bailey, 2010), the Familiarisation and Experimentation Projects in the first two semesters are solely assessed by ungraded reflective personal portfolio. The third semester Integration Projects are then assessed by peers, clients and tutors, and are also self-assessed. (Bailey terms this 'liberation by assessment'.) The **values** underpinning this assessment strategy are apparent even in the project nomenclature.

As noted, details of assessment practices such as criteria and rubrics are limited in the literature. Mansilla and Duraising (2007) offer **three overarching criteria** for assessing interdisciplinary student work (mindful that Mansilla's definition of ID understanding (2005) is premised on performance, application and outcome).

"Interdisciplinary student work should:

- Be well **grounded in the disciplines** – the work shows rigorous understanding and appropriate selection of some of the following: disciplinary theories, examples, findings, methods and forms of communication;

- **Advance student understanding** – the work demonstrates that the student has developed a new model, perspective, insight or solution that could only have been possible by integrating more than one disciplinary lens;

- **Show critical awareness** – the work is mindful [sic] of the purpose and means by which the disciplines have been brought together as well as the limitations of the contributing disciplines and integration in light of the aims of the work" (Mansilla & Duraising, 2007, p. 223).

Mansilla and Duraising's assessment framework arguably presents some difficulties for process-driven and practice-led creative arts ID learning. In contrast, the holistic studio assessment model (de la Harpe & Peterson, 2008) addresses **process**, **person** and **product** in equal measure, and is therefore compatible with mediating the continuum in Figure 2, at the scale of a single ID project through to courses and programs. Considered together, these two models highlight how students might become meta-cognitively engaged when criteria such as those above, is further contextualised, refined, and articulated in ID assessment specifications and rubrics.

Q: Assessing ID process? Product? New knowledge artefacts? Peer assessment? External panels / juries?

Q: Does an ID unit interact with a larger ID framework?

Q: Are these broad pre-conditions for ID?

Qualities
Values
Criteria

Bailey, 2010
De la Harpe & Peterson, 2008
De la Harpe et al., 2009
Mansilla, 2005, w Duraising, 2007
McDonald, 2009
Miles & Rainbird, 2014

Practices & cases

Orchestrated or directed ID e.g.:
Course structure (Crowther & Savage, 2005; McDonald, 2009)
Disciplinary overlaps (Goodwin, 2009; Mendoza et al., 2007)
Conceptual linkages (art+psycholgy) (Freeman, 2014)

Theme- / problem-driven ID e.g.
Design for food (Komisar, Nasr & Gorgolewski, 2009)
Social innovation (immigration+integration) (Hyltén-Cavallius, 2012)
Complexity, design thinking & industry (Bailey, 2010; Garner, 2005)

Conceptions

Typologies

Approaches
- Collaborative
- Inquiry-based (Bhana, 2010; Healey, 2005)
- Practice-led (Mafe & Webb, 2009)
- 'Cultural' exchange (literal or disciplinary) (Jeong Kim et al., 2015; Nyström et al., 2010)
- Meta-learning (Cooper et al., 2010; Winters, 2011)

Discipline (multi-dimensional, Squires, 1992)

Multi-, inter-, trans-, post-, hyper- ... (Barrett, 2012, Davies & Devlin, 2010; Klein, 2004, Mansilla, 2005)
ID **scale, engagements, duration**:
individuals / teams / institutions / communities / studios / projects / courses / programs
ID **knowledge-making** between:
actors / artefacts / technologies / social contexts

Research nexus / inquiry
Healey, 2005,
Healey & Jenkins, 2015
Corkery et al., 2007

Integration
Boyer, 1990
Klein, 2005
Lattuca, 2002
Quinlan et al., 2004

Collaboration
Burgett, et al., 2011
Klein, 2005, 2006
McPeek & Morthland, 2010
Zehner et al., 2010

Limitations of disciplines
Davies & Devlin, 2010
Moore, 2011
Reese, 1995

(Super) complexity
Franks et al., 2007
Garner, 2005
Mahy & Zahedi, 2010

ASSESSMENT

LEARNING & TEACHING

DISCIPLINES + ID

UNDERPINNING CONCEPTS

Figure 3: Mapping of lenses against references as preparation for Multiple Measures, Fountain, W.

Conclusion

This discussion paper, *Preparing for Multiple Measures*, introduces key definitions, perspectives and concepts, and approaches and references. These references \ informed the reference group and the project team at the commencement of the Multiple Measures project as well as continuing to act as a touchstone throughout the development of the project. They offered a reference point for the intentions for the project, and also assisted the development of conceptual frameworks underpinning its design. Following the launch of the Multiple Measures site and tool, these reference points have continued to assist new users and audiences to engage with these potentially slippery ideas as they investigate what might be 'good' in the context of interdisciplinary education.

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