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**JUDGEMENT, REFLEXIVITY AND  
INTERDISCIPLINARITY: REFRAMING CONSTRUCTION  
MANAGEMENT EDUCATION**

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**ABSTRACT**

A core skill of the construction management professional is decision making. Disciplinary content knowledge provides the basis for effective decision making, but is largely insufficient in contexts where projects demand a responsive and flexible approach to scenarios as they evolve and change. As Beckett and Hager suggest, ‘professional practice requires a much richer set of phenomena – a capacity to make judgements, sensitivity to intuition and an awareness of the purposes of the actions are all involved’ (2002: 12). This paper begins by exploring judgement to develop a conceptual model for initiating and developing decision making skills for construction management professionals. The capacity to respond to change in a structured and self aware manner is examined through the concept of reflexivity, a concept borrowed from sociology. Reflexivity is an individual’s capacity to be aware, responsive and adaptability to constant changing and evolving environments. Coupled with this is the challenge for all built environment professionals in the need to integrate knowledge and processes from various specialist knowledge domains, particularly design domains. The conceptual model is then refined by synthesising concepts from interdisciplinary research.

The aim of this paper is to describe a framework to analyse and review current undergraduate and postgraduate coursework programs offerings from Deakin University in the School of Architecture and Building. Following Boud and

Falchikov (2007) this framework starts with practice, that is, the actual 'doing' of construction management as the basis for shaping curriculum development.

Keywords: construction management education, judgement, interdisciplinary, reflexivity.

## **INTRODUCTION**

A core skill of the construction management professional is decision making. Disciplinary content knowledge provides the basis for effective decision making, but is largely insufficient in contexts where projects demand a responsive and flexible approach to scenarios as they evolve and change. As Beckett and Hager suggest, 'professional practice requires a much richer set of phenomena – a capacity to make judgements, sensitivity to intuition and an awareness of the purposes of the actions are all involved' (2002: 12).

Construction managers, like many professionals, routinely find themselves immersed in contingencies having to 'read' and 'respond' to the situations at hand. Beckett refers to the work of professionals as characterized by 'hot action', that is moment by moment, decisions are taken on the run in the midst of experiences that are dynamic, uncertain and intense. Kemmis (2005) argues that professional practice '...involves drawing on more than that 'store' of knowledge', but it involves drawing on understandings about one's own and others intentions, understandings, meanings, values and interests and on one's own and others' reflexive, unfolding understandings of the situation in which one is practicing at any given moment' (392). He describes this characteristic as 'searching for saliences' (392); a capacity that enables professional to reach wise judgements.

The context of professional practice thus provides a rich base though which new challenges for the tertiary sector present themselves and new understandings of how best to facilitate learning emerge. At the fore of advocating a more practice-based way of thinking about teaching, learning and assessment has been David Boud. Boud makes the argument that anchoring learning for/in the world of professional practice affords an authenticity that is often lacking in traditional

university courses. Authentic practice, exposes what Nicolini et al (2003) refer to as ‘breakdowns and disturbances’ (p. 22); inconsistencies, paradoxes and tensions that are all fundamental and inescapable aspects of practice. Further, practice focuses our attention on course and assessment criteria that are fundamentally useful to those future professional contexts, in particular the development of habits, ways of working, thinking and being. In a practice view assessments provide an opportunity for professional and personal growth; it is no longer simply about a grade, but a more holistic account of student’s engagement’ in process, approach or behaviour that is generative for future professional contexts. Finally, in practice, judgments necessarily impact upon those involved, for example colleagues, and clients; assessment or learning that mirror practice enable students to develop a more sophisticated conception of professional practice.

This paper takes up this discussion in the context of rethinking our current construction management curriculum. We begin by exploring judgement to develop a conceptual model for initiating and developing decision making skills for construction management professionals. Then the capacity to respond to change in a structured and self aware manner is examined through the concept of reflexivity. Coupled with this is the challenge for all built environment professionals in the need to integrate knowledge and processes from various specialist knowledge domains, particularly design domains. The conceptual model is then refined by synthesising concepts from interdisciplinary research. In the final section we describe a framework to analyse and review current undergraduate and postgraduate coursework programs offerings from Deakin University in the School of Architecture and Building in relation to the development of decision making skills. Following Boud and Falchikov (2007) this framework starts with practice, that is, the actual ‘doing’ of construction management as the basis for shaping course development. This represents the theoretical construction for a pilot study to examine the models in use by successful construction and project managers in the field.

## JUDGEMENT

Making judgements is an engaging act; it is not sufficient to ‘know about’ making judgements and be able to answer questions about how other people do it. Like any other form of practice, it is a skilful activity that is embodied and involves more than the intellect. Students need to desire to make good judgements not only because they themselves will be judged on this but because it is a part of becoming an accomplished and effective professional ( Boud and Falchikov, 2007: 184).

Boud and Falchikov (2005, 2007) have been at the fore of reframing learning experiences that equip students for a lifetime of learning, and the assessment challenges that they will face in the future. The development and practice of making judgements is critical to such advancements but as they argue is currently under recognised. Traditional assessment practices have not attended to the role of student judgement, but rather as a means for students to attend to the judgements of others (Boud and Flachikov, 2007). As Candy et al (cited in Boud and Falchikov, 2006:403) remind us, ‘...in real world contexts, they (students) must be able to judge or evaluate the adequacy, completeness or appropriateness of their own learning’. Preparing students for lifelong learning necessarily involves preparing them for the tasks of making complex judgements about their own work and that of others and for making decisions in the uncertain and unpredictable circumstances in which they find themselves in the future (Boud and Falchikov, 2006:402). For the development of ‘professional’ construction managers, cultivating and enabling the making of judgements is fundamental.

Joughin (2008:15) sees ‘assessment as judgement’ (2008:15), as the core of assessment if we are serious about informing future practice. This implies an approach to assessment which is not simply about applying a judgement to students’ work but ‘serves actively to inform students’ *own* judgement of their work’ (15). Assessment practices that stimulate learning for the longer term, and enable students to become proficient judges of their own and other’s learning are important. So too is the broader framework of teaching and learning activities, consistent with Biggs’s (2003) well established notion of constructive alignment,

whereby teaching and learning activities and assessment tasks are aligned to support the intended outcomes.

Boud and Falchikov (2006) provides a comprehensive list of ways of thinking about everyday practices in teaching, learning and assessment, that emphasise ‘preparation for learning that is socially constructed, participative, embedded and necessarily contextualised’ (408). These include: *‘engages with standards and criteria and problem analysis; emphasises importance of context; involves working in association with others; involves authentic representations and productions; promotes transparency of knowledge; fosters reflexivity; builds learner agency and constructs active learners; considers risks and confidence in judgement; promotes seeking appropriate feedback and requires portrayal of outcomes for different purposes’* (408-409). We take up the concept of reflexivity in the following section.

## **REFLEXIVITY**

Reflexivity has its derivation in sociological research (Giddens, 1991). According to Giddens (1991), “modernity’s reflexivity refers to the susceptibility of most aspects of social activity, and material relations with nature, to chronic revision in the light of new information and knowledge<sup>1</sup>” (Giddens, 1991, p20). CM professionals not only need this openness to change but also the skills and culture or mechanisms that allow change. To allow for change does not necessarily mean that everything is in a state of flux – there is a suggestion here that there is no need for prior learning of knowledge and that past experience does not contribute to our current practices. Therefore there are core principles that are not subject to change and boundaries should be placed around elements that are considered unchangeable. Reflexivity capability in individuals and firms has been studied comprehensively by London (2006, 2007, 2008) whereby a Reflexivity Capability Framework has been developed for firms working in international markets; ie for the internationalisation process. However as consistently claimed by London it is not restricted to the internationalisation process it is a skill for people and organisations – reflexive people and reflexive organisations. The framework is guided by three main parts:

## Awareness

- Awareness of the need to create, use and maintain social, cultural and intellectual capital for practices and processes
- Awareness of key strategies needed to create, use and maintain social, cultural and intellectual capital to support practices/processes
- Awareness of key strategies as changeable depending on project scenarios or market requirements
- Awareness of judgement and decision making models
- Awareness of role of integration in practice

## Responsiveness

- Responsiveness both individually and collectively towards developing an openness to change in practices and processes
- Responsiveness skills and capacity
- Responsiveness to new knowledge and new scenarios and the ability to respond using various judgement
- Responsiveness to interdisciplinary scenarios and strategies to deal with disciplinary knowledge integration and disciplinary process integration

## Adaptability

- Adapting core principles and practices that can be to be maintained and adapted and having knowledge of those that must be maintained

Reflexive capability is considered to be on a continuum and designed to demonstrate the relationship between increasing levels of reflexive capability and a movement towards central embeddedness of the principles of reflexive capability within the firm. The movement is from the implicit to the explicit; from practices which are often uncritically examined through procedural mechanisms for establishing new ways of thinking and efficient ways of doing things, to explicit definition of these values as central to reflexive capability formalised in firm policies and strategic objectives. Ideally practices are formalised and enshrined in policy to provide clear direction and purpose, which are clearly communicated to staff members. Individual staff members should therefore be clearly aware of both the nature of the firm's process and their own role in the process. Such an understanding implies the ability to perceive that any given position in practice requires a specific yet interrelating mix of various forms of social, cultural and intellectual capital. Staff members should be clearly aware of the various strategies needed to create, use and maintain social,

intellectual and cultural capital for various practices and processes and that the strategies are changeable depending on project scenarios and market requirements.

Within the context of teaching, learning and assessment activities, there are a range of tasks and approaches that support the development of reflexivity. The inclusion of self-and-peer evaluations, which allows students to reflect on their contribution to, for example, project team's functioning, leadership, and outputs, provide an opportunity for significant learning. The structuring of formative assessment can provide opportunities for significant self-assessment when the nature of the assessment task shifts from merely satisfying program requirements to truly being future-orientated.

Thus far we have argued that the development of judgement and reflexivity are critical to the educational process of becoming a construction management professional. While Boud and Falchikov raise awareness of how teaching, learning and assessment can strategically cultivate such capacities and provide students' with the sorts of learning that can be carried forward into professional practice, an approach to curriculum development which is grounded in practice can be additionally harnessed to cultivate what London (2008b) refers to as an 'interdisciplinary practice skill.'

## **INTERDISCIPLINARITY**

As explained by London (2008b) a number of writers in the field have suggested that it is too difficult to define interdisciplinarity. However a useful conceptualisation is that provided by Maasen (p 174, 2000), '...interdisciplinarity presupposes (a) a realisation that certain topics cannot adequately be approached by a single discipline and (b) an identification of various disciplinary activities that converge on topics that - at first sight - might be capable of being conceptualised as a joint problem. This type of interdisciplinary practice can then be described as the act of transferring insights from different disciplines into a set of problems and a set of methods for approaching them. In the course of conceptually relating problems and methods, a certain something we call 'inter' may emerge with respect to the overall topic in question'. It is the skill of being

able to integrate disciplinary knowledge that students should acquire to some degree in undergraduate and postgraduate programs.

To achieve disciplinary knowledge integration requires a deep understanding of the core disciplinary knowledge and then a level of awareness and understanding of other disciplines.

It is acknowledged that it is important that this is achieved at the undergraduate level, however we propose that the future of the construction professional relies upon the integrative skill. The construction management graduate needs to not only combine discipline knowledge and methodologies but develop and a new kind of 'interdisciplinary practice skill'. It is not difficult to see the landscape of what this might involve in terms of integration process however there is less thinking around if there is integrative knowledge. We should also not be so complacent in relation to the integrative process skill we are trying to develop in our graduates – too often we simply say it is 'teamwork' or 'leadership' or 'culture' or 'information systems management'. We then tend to borrow much material from other mainstream management disciplines on various leadership type theories without reflecting carefully on the process of hybridisation.

Perhaps what is more fruitful is to consider that the process of knowledge production (which takes place in disciplinary and interdisciplinary practice) is a process of specialisation and differentiation. Interdisciplinarity can recombine bits of knowledge from other fields, where it has been determined that something is lacking and needs innovation to explore the particular problem. Capstone subjects are one way of designing an integrated learning experience, where the primary focus is on interrelating previous material to produce a coherent form, usually an extended essay or project. It can also afford students a significant opportunity to work in multidisciplinary teams with students from different built environment discipline. Final year portfolios provide another opportunity for such integration; in this model students bring together a cross-section of material or evidence from individual units that they feel best reflects their learning but does so in a way that represents the totality of their work.

## **A FRAMEWORK FOR CURRICULUM RENEWAL**

In this section we attempt to tease out how such theoretical considerations might inform a framework for the renewal of undergraduate and postgraduate Construction Management courses. We have argued thus far that new sets of teaching and learning practices and ways of organising assessment need to be developed in order to cultivate the making of CM professionals, but to do so requires, following Boud and Falchikov (2007) a systematic approach to curriculum development which integrates assessment with teaching and learning, integrates across individual course units or modules and enables the integration of learning by students (190-191).

It has been suggested that we start with practice, that is, the actual doing of construction management work and hence concepts such as judgement, reflexivity and interdisciplinary practice underpin curriculum development and indeed provide the filter through which the construction of teaching, learning and assessment activities may be seen anew. While not within the confines of this paper to develop fully, we can hint at a way forward. Central to the undertaking will be a holistic approach to curriculum development where, in the spirit of practice as articulated above, the course team engages in a comprehensive mapping exercise aimed at exploiting opportunities to explicitly teach, to model and have students' model, practice and receive feedback on activities and assessment reflect authentic practice, but in a manner where the context and stakes increase in complexity.

Given the nature of practice and the importance placed upon judgement, reflexivity and interdisciplinary it is conceivable that the outcome will encompass multiple opportunities for students' to practise decision-making. This will be achieved through the development of an approach to learning where students are immersed in highly situated, case-based learning environments that replicate real-world activity. Central to such an approach will be the development of rich assessment tasks where students work on authentic projects, for example, a project brief, and where teams and self and peer reflection feature prominently. Such tasks would require students to engage a variety of resources and learning processes, and might require a variety of inputs, including peers, academic staff

or knowledgeable others. Traditionally assessment tasks tend to be undertaken sequentially, where students generally submit one assessment before commencing on the next. Current work in the Masters of Construction Management requires students to connect assessment tasks, so that the final assessment is the culmination of various elements of the previous assessments. Exploiting non-linear assessment opportunities within single units and across a course is critical as ‘...judgement capability does not build linearly but through cycling through different tasks and returning to previous tasks when confronted with new domains of learning’ (Boud & Falchikov, 2007:186).

With specific reference to reflexive capability and judgement the curriculum needs to be dynamic to exploit the development of those capacities that take place along a continuum rather than a series of linear categories. Those involved in curriculum development can identify the different areas that require improvement for student progression towards an attribute of ‘reflexivity’. The advantage of understanding reflexive capability as a dynamic continuum lies in the realisation that influencing any particular component of a practice can also impact upon some other practice indicating the interdependency between the various forms of capital. The extent to which non linear assessment design facilitates a deeper learning experience, and contributes to the development of judgement and reflexivity will be the focus of an evaluation as we move forward.

Technology will continue to play an important role as technology-enhanced learning affords further opportunities to augment our traditional face to face, or indeed to deliver wholly online offerings. Critical to the development of judgement and reflexivity is the need for students to transcend their own assumptions and have their understanding of concepts tested in public domains. Tools such as blogs or journals can stimulate self and peer reflection, while tools such as self and peer evaluation offer a more formalised way to manage judgments on individual and team performance. These and other applications will be integral to the curriculum redevelopment as they have the potential to shape the kinds of learning experiences, including the development of social networks, instrumental in the development of judgement, reflexivity and of interdisciplinary practice skill.

## CONCLUSION

In responding to the emergent challenges of construction management professional practice, and in the nurturing of learning whose meaning extends beyond the lifespan of a degree we have argued that what is required is explicit attention to the development and practice of judgement and reflexivity, and to the development of a new kind of interdisciplinary practice skill. But such skill development is an iterative process and is likely to be refined and to develop with continued practice. As Boud and Falchikov (2007) remind us, ‘developing the skill of being an informed judge of one’s own learning is not simply cognitive. Like all expertise, it requires conscious volition, and it is embodied...it is a form of what Aristotle discussed as ‘practical wisdom’ (190). Taking up Dreyfus and Dreyfus’s account of practical wisdom, (Dreyfus and Dreyfus, 2005) they note, ‘[practical wisdom]...is about developing the style of the culture of experts that involves how the students ‘encounters himself or herself, other people, and things’ (Dreyfus, 2001:47. quoted in Boud and Falchikov 2007:190). The framework for curriculum renewal, we suggest, is a fruitful way forward in cultivating graduates who will be well placed to take up this challenge.

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<sup>i</sup> To clarify some terms common to sociological thought yet perhaps less well known in other academic fields; modernity is the underlying conditions and modes of thought correlating to 'modern society'. The underlying premise is that the natural and social world can be understood, and through this understanding can be brought into the realm of human intervention. Material relations with nature encompasses the interactions between the social system and natural world, including modes of production through which material (natural) resources are transformed into products and commodities, and systems of thought that dictate such processes. To be able to chronically revise means a continual responsiveness to change by participants in the system. Participants need to have some sense of self-awareness about what practices they are embedded within and be conscious of that constantly changing environment.