On complexity and craftsmanship

Tim Dornan

Stewart Mennin sees the world of medical education as poised between traditional teacher-centred pedagogies and newer, transformative approaches to teaching and learning.[1] Whilst some, traditionally inclined, teachers remain 'rooted in Cartesian reductionism and Newtonian principles of linear causality', others are accepting complexity concepts. Mennin challenges us to re-orient our gestalt away from the safeness of simplicity towards the danger and unpredictability of complexity. Our task, whether as curriculum planners or teachers, is to disturb the status quo and create conditions in which learning emerges through a process of self-organisation. In that process, we teachers co-evolve with our students.

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Intriguingly, Mennin characterises predetermined competencies as fuzzy boundaries that promote self-organising learning. In doing so, he distances himself from a concern, which is particularly apparent in reactions to the UK's highly politicised, regulatory system of postgraduate medical education, that competency-based education will devalue individual excellence in favour of universal acceptability.[2,3] According to Mennin, 'Top-down curriculum planning and bottom-up learning are complementary' and, guided by defined learning outcomes, 'understanding … emerges whole and fully integrated'. Although a suitably fuzzy set of competencies can enhance students' motivation,[4] there is a fine line between the competency framework that emancipates learners and that which prevents their 'expansive learning'.[5] Sir John Tooke's maxim that 'good enough is not good enough'[6] well describes the risk that using outcome-focused education to 'assure the fundamental abilities of the next generation of doctors' will reduce trainees to a line of tooth-brushers and the practice of medicine to Bénard cells.[1]

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I will now explore how the pragmatist philosopher Richard Sennett's conceptualisations of 'craftmanship'[7] can help us out of that bind. Sennett sees the desire to do a job well for its own sake as an enduring, basic human impulse. He frames health professionals as craftsmen and describes how tensions between rising patient expectations, demonstrable failings in the National Health Service (NHS) and fiscal pressures have led UK politicians to adopt a model of quality that 'treats broken bones rather than patients in the round' and measures performance quantitatively. That approach is termed 'Fordism' because it stems from Henry Ford's efforts to improve quality in the early 20th-century automotive industry.

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Sennett notes that Fordism has a bad name in industry because focusing practitioners' work on parts rather than the whole tends to demotivate them, a sentiment many health professionals echo. Sennett is concerned that Fordism improves health outcomes at the cost of the curiosity and experiment habitually displayed by clinical craftsmen. He is also concerned about an important underlying assumption: 'In the Fordist model of medicine … there has to be a disease to treat – but bodily reality, as any doctor knows, doesn't fit this classifying model.'[7] Sennett believes that Fordism devalues tacit knowledge because it cannot be expressed as logical propositions. The listening 'to old men's chatter' that allows health professionals to 'glean clues that might escape a diagnostic checklist' is not encouraged.[7] Although he recognises the value of a system that works correctly and does not tolerate mediocrity, Sennett implicitly

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supports Tooke's stance that correctness may compromise excellence.[6]

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So what of self-organisation? Sennett comments that 'social and economic conditions often stand in the way of the craftsman's discipline'.[7] So, it is their regulatory intent and a lack of craftsmanship in their formulation, rather than anything intrinsically wrong with fuzzy boundaries, that make competency frameworks inhibitory rather than emancipatory. Sennett's statement that 'good (craftsmanlike) work tends to focus on relationships'[7] is central because it defines medical learners' and teachers' freedom to form craftsmanlike relationships as a precondition for good learning and practice. Provided boundaries are fuzzy enough not to thwart agency, self-organisation will surely lead to effective learning.[1]

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The value of paradoxical tensions in medical education research

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Larry Gruppen, Chair of the Department of Medical Education at the University of Michigan, tells a fantastic tale that calls into question the misnomer inherent in calling physics, chemistry or biology 'hard' science.[1] In it he argues that we in education research have a much more difficult task relative to researchers in the 'hard' sciences as a result of the inevitable lack of control with which educational researchers must grapple: we cannot guarantee dosages, genetic history or uniformity of social experiences in our subjects in the same way that biologists typically can; we cannot assume identical reactions upon repeatedly combining known quantities of molecules the way chemists can; nor can we measure our participants' knowledge or skills with the astonishing precision with which physicists can measure force, distance or velocity. Similar sentiments have been expressed by Geoff Norman[2] and, indeed, I have found myself often jokingly dismissing the difficulty of a task by saying, 'Come on, it's not education research!'

The prototypical and prominent models of research that exist in the physical sciences has led many to mistakenly believe that educational research is 'soft' rather than 'hard'

In this special issue Regehr pushes us further by arguing that not only is health professional education research 'NOT rocket science' (i.e. 'a linear system with a straightforward set of factors ... [and] a clearly defined outcome'), but that we do a disservice to health professional education when we use the metaphor of research in the physical sciences to guide educational research strategies.[3] Paradoxically, I find myself agreeing with Regehr by reflecting on the many ways that

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