

# Interprofessional and interdisciplinary learning: an exploration of similarities and differences

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# Interprofessional E-Learning and Collaborative Work: Practices and Technologies

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# Chapter 1

## Interprofessional and Interdisciplinary Learning: An Exploration of Similarities and Differences

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### **ABSTRACT**

*This chapter begins by considering the words used to discuss collaborative education. Although it can be argued that “practice” separates “a profession” from “a discipline”, the merit in separating theory from practice is highly questionable. The literature suggests that the challenges to interprofessional and interdisciplinary learning are very similar; for example, the “silo” mentality causes problems within both. In addition, it is evident that the reasons behind advocacy of interprofessional and interdisciplinary learning are also similar. The chapter demonstrates that successful interprofessional and interdisciplinary learning requires fundamental changes to both the curriculum and the organisation delivering it. The authors conclude that while subtle differences might exist between interprofessional and interdisciplinary learning their promotion is based on a similar rationale, which is to ensure that students are prepared for the real world in which collaboration, boundary crossing, adopting multiple perspectives and working with others to achieve optimal outcomes, is paramount.*

### **INTRODUCTION**

Advocates of interprofessional learning frequently claim that it is distinct from interdisciplinary learning. D’Amour, Ferrada-Videla, San Martin Rodriguez and Beaulieu (2005) argue that the two concepts are rarely clearly defined and are used

rather loosely, causing conceptual confusion, which is well recognized. Gilbert (2005) is resolute that interdisciplinary is not synonymous with interprofessional learning. Notwithstanding inherent concerns for those who wish to promote interprofessional education and claim that such ambiguity is not helpful, we critically examine the arguments in the context of the functioning and development

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of the Centre for Interprofessional e-learning (CIPeL). The CIPeL is a Centre for Excellence in Teaching and Learning (CETL) funded by the Higher Education Funding Council for England (HEFCE) in the United Kingdom. Although its remit has been to enhance interprofessional learning amongst health and social care professionals in the first instance, there is a sound rationale for dissemination across other disciplines. Extending the Centre's work into areas such as geography, environmental management, business management and engineering brings into sharp relief the contextual, conditional and contested nature of collaborative learning and teaching across boundaries.

An equally pressing concern stemming from inquiry into wider disciplinary areas as well as the interprofessional literature has been for the coherence of this book. We have worried about, "Should we provide a glossary?" "Should we attempt to standardize the labels used?" "Would we expose ourselves to the risk of widespread criticism if we allowed authors to use their own chosen terms and stayed true to the author's usage?" Clearly we needed to gain a greater depth of understanding of the issues and concerns before making an informed choice as to our strategy.

This chapter provides a firm rationale for variance in the use of terminology and therefore a major signpost for the chapters to follow. Readers will notice that authors use various labels, to describe initiatives that bring students together to 'learn with, from and about each other' (CAIPE, 1997). They will also recognize a great variation in the extent to which interprofessional or interdisciplinary learning is embedded in curricula and in the ways in which e-learning is used as a medium. To set the scene for chapters to follow, this chapter begins by discussing a variety of definitions in common usage. We conclude that in fact, interprofessional and interdisciplinary learning, both of which endeavour to promote collaborative and integrative learning and despite subtle differences, meet with comparable challenges

with regard to implementation. By exploring both interprofessional and interdisciplinary learning across a wide range of contexts we conclude by providing insight into the antecedents of successful initiatives, elements of which will recur in the chapters to follow.

## **Useful Definitions**

Conceptual ambiguity begins with the words 'discipline' and 'profession', which 'are often used interchangeably', despite the claim that they have 'distinctly different meanings' (Mu & Royeen, 2004, p. 245). Rawson (1994, p. 40) suggests that whereas 'profession' has connotations of ideology, 'discipline', 'although a useful term, is limited by its association with background theoretical and methodological contributions'. Preferring to consider a discipline to be 'a field of study' and a profession 'a calling requiring specialized knowledge and often long and intensive preparation', Mu and Royeen (2004, p. 244) argue unequivocally that 'occupational therapy is a profession, not a discipline' because it has a practice element.

A discipline can be readily defined as 'a branch of learning or field of study' (Chambers Dictionary of English, 2003). Disciplines emerged as loci of authority during the Enlightenment; social sciences such as history, anthropology, psychology and sociology were born and developed alongside the natural sciences and became powerful determinants of the types of knowledge that we still value in contemporary society (Maxwell, 2003). Definitions of a profession incorporate the notion of occupation or career, vocation or calling, which involves advanced or specialized learning or training (Oxford Encyclopedic English Dictionary, 1991).

Professions are further defined with respect to underpinning values and beliefs:

*a disciplined group of individuals who adhere to high ethical standards and uphold themselves to, and are accepted by, the public as possessing*

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*special knowledge and skills in a widely recognised, organised body of learning derived from education and training at a high level, and who are prepared to exercise this knowledge and these skills in the interest of others (Australian Council of Professions, 2007).*

The notion of profession is also imbued with certain defining features such as formal qualifications, regulatory bodies with powers to admit and discipline members, and some degree of monopoly rights (Bullock & Trombley, 1999). An emphasis on moral probity, service orientation and codes of conduct mean that professions have historically been revered in wider society. Professional status, once reserved for the clergy, architects, lawyers, doctors and the armed forces, has been moderated the professionalization of many other occupational roles, such as teaching and the allied health professions (Eraut, 1994), previously considered to be ‘semi-professions’ (Etzioni, 1969). Allied health professions have fought hard to escape medical dominance and subordinate status in the medical hierarchy by becoming graduate professions (Bines, 1992). The imperative to professionalize that has groups vying for professional status is powered by rewards of social esteem and prestige, traditionally bestowed on professions (Hoyle & John, 1995).

However, there are “professional” mathematicians, physicists and historians (see, for instance, Mooney Melvin, 1987) working in what we might term disciplinary fields that distinguish between their academic discipline and their professions. For instance, Mu and Royeen (2004) make a distinction between occupational science and the profession of occupational therapy. Similarly, Gibson (2003) argues for the separation of the academic discipline of physics from the profession of physics. The merit in separating theory from practice when they are so fundamentally related seems highly questionable, although other definitions such as Wilde’s (2007), which refers

to, ‘the study, or practice, of a subject using a specific set of methods, terms and approaches’ is inclusive. Reflecting the esteem and prestige associated with certain professions, disciplines are equally hierarchical. Maxwell (2003) discusses the creation of modern science, which has been hugely influential in the development of the social sciences that have sought to identify with the scientific method. In considering the detrimental effects on social inquiry in disciplines such as sociology, economics and anthropology there is arguably an analogy with medicine and associated health and social care professions.

Expanding on these basic definitions we add multiprofessional learning, which is commonly used interchangeably with interprofessional learning (Finch, 2000). Cornish, Church, Callanan, Bethune and Curran (2004) suggest that the prefix ‘multi’ infers an additive and non-integrative system, in which labour is divided through traditional hierarchical power-over structure and interaction is limited. CAIPE (1997) reinforces distinctions from interprofessional learning by referring to multiprofessional learning as ‘learning side by side’, limiting the development of shared understanding and collaboration.

The term interprofessional learning has a long pedigree, having been consistently promoted around the world over several decades and has become associated almost exclusively with health and social care education. It is most commonly defined as, ‘the process, through which two or more professions learn, with, from and about each other to improve collaboration and the quality of service (CAIPE, 1997). Freeth, Hammick, Reeves, Koppel and Barr (2005) develop this definition by suggesting that interprofessional learning will ‘enhance learners’ understanding of other professions’ roles and responsibilities, whilst fostering mutual respect and understanding between members of the health care team’. It is also variously termed integrative, collaborative and ‘non-disciplinary’ (Munro, 2000).

Interdisciplinary learning has had periods of being in vogue and is currently experiencing a revival. It is considered as interaction:

*involving collaborations between students from differing subject areas in pooling their disciplinary knowledge in addressing complex and significant, real world problems [leading to] the ability to understand and be understood by a diverse group of specialists (Woods, 2007, p. 854).*

Franks, Dale, Hindmarsh, Fellows, Buckridge and Cybinski (2007) identify a number of typologies of interdisciplinary teaching and research, one of the most interesting of which is Lattuca's (2003) that moves up through 'informed', 'synthetic', 'transdisciplinarity' and finally, 'conceptual interdisciplinarity', which integrates disciplinary perspectives and critique of disciplinary understandings but addresses questions that do not have a disciplinary basis.

Definitions of interprofessional learning appear to acknowledge more overt connections with practice and the workplace than definitions of interdisciplinary learning; however, both explanations stress the centrality of collaboration and integration (Van den Besselaar, 2001) and both focus on the desired outcome of collaboration in addressing complex problems, whether such problems are those of whole communities or of individuals. Decreasing emphasis on the distinctions between professions and disciplines by focusing on the prefix of 'inter' further emphasizes similarities between the two modes of learning. Rawson (1994) suggests that 'inter' infers a relationship both between and among elements and implies some notion of reciprocal operations, whereas the term 'trans' also signifies a relationship across or beyond but does not carry with it any indication of mutuality'.

Rawson's thinking has recently been challenged from within the health professions where 'transdisciplinary learning' has been used to refer

to practice that is characterized by a deliberate exchange of knowledge, skills and expertise that transcends traditional disciplinary boundaries (Stepans, Thompson & Buchanan, 2002). Such practice is characterized by a highly integrated team, organized according to comprehensive constructs and methods (Wall & Shankar, 2008). The benefits are presented as: the valuing of the knowledge and skills of each team member, blurring of disciplinary boundaries, increased levels of trust and the creation of broad networks of professionals able to analyze multi-faceted factors influencing human health and well-being. It is arguable that the notion of transdisciplinary learning captures the essence of interprofessional and interdisciplinary learning. It might in fact, have contemporary relevance, especially given the current emphasis on graduate capability and employability, which means that experience in the workplace is no longer restricted to vocational programmes. Clearly, terminology is fluid; the reader will recognize in the chapters to follow that differences exist between fields and within and between countries and even between individuals from the same fields. We will leave the reader, to weigh similarities and subtle differences in the hope that ideas about interprofessional and interdisciplinary learning might be considered to be mutually reinforcing.

## **CHALLENGES TO OVERCOME IN IMPLEMENTING INTERDISCIPLINARY AND INTERPROFESSIONAL LEARNING**

Many of the case studies that follow discuss the establishment of collaborative and integrative learning opportunities from scratch. Others frame interventions in terms of improving on past efforts, not least by moving from face-to-face to blended or e-learning approaches. As a means of setting the scene for the case studies we turn



to highlighting some of the challenges that will have undoubtedly been faced by many of the interprofessional and interdisciplinary initiatives presented in subsequent chapters.

### **The Nature of Knowledge**

The importance of the nature of knowledge and how it is communicated should not be underestimated as a barrier to promoting integrative and collaborative learning. Knowledge of professionals in a specific field is usually necessarily specialized into a moderately narrow spectrum, which although increasingly necessary as the knowledge base increases, is an issue that impedes interdisciplinary learning (Tarvainen, 2004). Stew (2000) suggests that as knowledge becomes more complex disciplines are divided into sub-disciplines each wishing to demarcate the body of knowledge within boundaries relevant to their practice leading to ‘occupational imperialism’. Again this militates against collaborative learning, especially when there are perceptions that it might devalue professional or disciplinary learning if it leads to the creation of generic workers and generic knowledge. Clearly these are very real issues. However, they highlight how crucial it is to attempt to integrate learning to avoid already tenuous understanding being lost.

Creating dialogue and finding a common language is essential, although not straightforward, especially in the light of different disciplinary pedagogies. Law is an extreme case in point because it has traditionally been dominated by the study of primary sources of ‘black letter law’ in the form of statutes and judicial decisions. This model is not easily transferable to other disciplines (Soetendorp & Byles, 2000) and creates challenges for law and associated disciplines to find a middle ground. Undoubtedly other professions and disciplines experience similar problems, although as Wood (1999) infers many of the issues would be relatively easily addressed should there be a will and a readiness to do so.

### **Structural Challenges**

Every culture has its norms and ways of working that are deeply embedded and resistant to change. ‘All educational contexts represent and replicate, within their own internal processes, external power relations’ (Vince, 1996, p. 47). Vince captures the sense in which the learning experienced by students in the health and social care professions, as well as students across other disciplines in higher education, is fundamentally shaped by dominant discourses in the workplace. Despite suggestions that functions within health, rather than being hierarchically stratified are increasingly differentiated (Adams, 2005), health is characterized by a strong sense of hierarchy and authority, which holds both within and between professions. For instance, medicine is still perceived to be an economically and socially desirable profession (Whitehead, 2007) and doctors are acknowledged as particularly influential and dominant players in the health hierarchy (Allen & Hughes, 2002).

Within any hierarchy, power and status conspire to elevate some and diminish others; if the status of one group is to increase, that of another must decrease (Whitehead, 2007). Status is therefore, a relative ranking, and a particularly valuable resource because its availability in any given context is limited (Milner, 1994). Whitehead (2007) acknowledges the challenge of interprofessional initiatives, with their collaborative working emphasis and makes no pretence that the success of such initiatives will depend to a great extent on buy-in from doctors. In recommending clarification of what is meant by collaboration and suggesting it might be conceptualised on a spectrum, she acknowledges that medics will be reluctant to see power differentials eroded. One assumes that such resistance to fundamental change will do little to change current hierarchical relations, which we believe thrive at least partially because the players are bound by the close proximity, the context and history in which they operate, namely the National Health Service.



Interprofessional initiatives challenge notions of power and hierarchy that socially construct health and social care education and this is why it is so problematic for many. Territorialism in the health care professions is predictable as in any situation where there are issues of power and control arising from a capitalist competitive system (Ericson, 1991). Doctors have remained firmly in ascendancy in the health sector, which has not experienced the same level of changed power relations as has occurred in some industries (Eraut, 1994). For instance, the construction industry is characterized by interprofessional relationships defined by the increasing financial power of developers and construction companies. Architects and engineers, once in charge of building projects and responsible for employing surveyors, service engineers, builders and subcontractors, have themselves become service providers without managerial control (Eraut, 1994). Inevitably this suggests a less hierarchical structure where power is more diffuse, possibly because it is not confined within the rules and norms of an institution such as the UK National health Service (NHS).

Gilbert (2005) acknowledges that despite major moves to promote interprofessional education, nationally and internationally, there is still a reluctance to make structural changes. De Witt and Baldwin (2007) identify enduring barriers, originally identified by Baldwin and Baldwin (1979), which include conceptual confusion, language, communication and culture but also involve faculty attitudes, cost of curriculum change and professional regulation. Neither the language and cultural issues nor the structural constraints to integrative and collaborative learning are confined to health. Fry (2001) refers to the 'sociology of academia' with specialized languages, dominance of some disciplinary jargon and insular disciplines. Conceptual confusion is identified in engineering where in one learning context the approach claiming to be interprofessional, in fact demonstrates very little integration (Tarvainen, 2004). Demonstrating the power of academics'

attitudes, Levinson (2003) points to a lack of clarity in learning objectives and cites a lack of evidence of the effectiveness of interprofessional learning to justify giving it low priority. Such indolent attitude to change is possibly a reflection of management values. For instance, Wood (1999) identifies ambivalence of senior academics at one UK University to the need to promote interdisciplinary learning in built environment education. This hesitancy, despite earlier agreement on the desirability of greater collaboration in response to criticism of the UK construction industry, is attributed to hindrances created by faculty structures and resource pressures.

Interestingly, the Built Environment programme at Leeds Metropolitan University, where these challenges appear to have been overcome, provides a stark contrast, notwithstanding the acknowledgement of the need for adequate resources and high levels of coordination (Higher Education Academy, 2008). Perhaps the vision of a creating something better, even without hard evidence is enough to promote change in some of the more forward looking institutions, while for others structures provide tangible evidence of the immovable.

## **Issues of Identity**

Becher and Trowler (2001, p. 47) suggest that 'being a member of a disciplinary community involves a sense of identity and personal commitment, a way of being in the world' that reflects particular epistemological and cultural attributes that define the community to the outside world (Geertz, 1983). The strong sense of identity that develops promotes what William Sumner identified in 1906 as, an 'in group' and 'out-group' dynamic that leads to jostling for position in inter-group competition (Brewer, 1979). Whilst the dynamic makes for strong professional commitment and solidarity, it does not make for ease of collaboration across professions or disciplines. Traditionally each profession has socialized its newcomers within its

own boundaries, resulting in limited knowledge about ‘the practices, expertise, responsibilities, skills, values and theoretical perspectives of [other] professionals’ (San Martin-Rodriguez, Beaulieu, D’Amour & Ferrada-Videla, 2005, p. 137).

Becher and Trowler (2001) go as far as referring to the professions as ‘warring tribes’, while Eraut (1994) observes that interprofessional relations are absent from accounts of the ideology of professionalism, except in asserting the supremacy of the true professions over newcomers (Eraut, 1994). DeWitt and Baldwin (2007, p. 32) are disheartened that even after years of promoting interprofessionalism, ‘overwhelming barriers of disciplinary territoriality and systems inertia persist’ so that ‘each generation seems to have to repeat the experiences and frustrations of the past’. The silo mentality has prompted a call for a need to cultivate ‘professional plurality’ (Glen, 1999). However, even where interdisciplinarity has thrived for some time, Franks et al. (2007) note that there is always a tendency to default to disciplinary positions where disciplinary structures are perpetuated.

### **Practical and Logistical Issues**

Norman (2005) highlights several of the practical challenges in implementing interprofessional education at pre-registration level. He highlights issues such as cost sharing and resources and securing joint validation and accreditation of courses that cross disciplinary boundaries. However, one of the major logistical issues is the difficulty of getting large numbers of students from different geographical locations together, which puts pressure on timetabling as well as on estates. Norman (2005) also identifies the issue of coping with unequal numbers across groups in a way that avoids students from smaller professions being overwhelmed by those from the larger professions. These sorts of issues have more recently led to the advent of the use of e-learning approaches,

many of which are presented as case studies in this volume.

### **IF IT’S SO DIFFICULT WHY BOTHER DOING IT?**

The primary rationale for interprofessional learning and its corollary interprofessional working in health is the promotion of improved patient-centred practice (CAIPE, 1997). Mapping its development in the USA, DeWitt and Baldwin (2007) trace the origins back to World War II. They attribute resurgence in interest during the past decade to inadequacies in the health system, a need to reappraise how care is delivered due to rising costs and growth of health maintenance organizations and growing interest in continuous quality improvement as a means of enhancing quality, efficiency and effectiveness. The situation in the UK is not dissimilar, although Price (2005, p. 76) suggests that greater complexity of the health care system, ‘with increased reliance on clinical team working, and the necessity for communication and cooperation between both teams and team members’ is a primary driver. However, he too highlights inadequacies in the system and points to recent high profile failures (Bristol Inquiry, 2001; Department of Health, 2003) that have had a heavy influence on recent government policy (Department of Health 2000, 2001a, 2001b, 2002). It seems that the post-war social and cultural discourse underpinning interprofessional learning has been replaced by a discourse of economics tangled with the rhetoric of quality and political expedience that unfortunately do not guarantee positive changes in practice.

Outside the health context, interest in learning that crosses subject boundaries is a growing theme in recent higher education literature (Woods, 2007) and arguments in support of interdisciplinary learning are persuasive. Woods (2007, p. 854) is an advocate of the ‘educational benefits of engaging critically with one’s own discipline by viewing its

limitations from another perspective', although she too identifies the need for changed working patterns that require team work. In the context of law, there is acknowledgment that 'greater complexity and interdependency within the workplace has required the creation of different kinds of knowledge': the need for interdisciplinary dialogue has never been greater (Soetendorp & Byles, 2000). Similarly, in engineering, interdisciplinary studies are recognized as promoting 'skills that help future engineers to cope in a changing environment' (Tarvainen, 2004, p. 1). Woods (2007, p. 854) argues that future graduates need to be prepared to tackle problems troubling society; 'pandemics, water politics, global warming, famine, migration, [and] international crime'. Added to this list are issues of social inclusion (Wilson & Pirrie, 2000). The complexities of the health service might be seen as a microcosm of this larger picture. Like every sector, change is constant and graduates must become flexible and adaptable to cope with the pace of change.

Regardless of whether the focus of collaborative learning is an individual patient or client, or a building or management project there is an imperative for contemporary graduates to acquire capabilities that allow them to cross boundaries, adopt multiple perspectives and work with others to achieve optimal outcomes. What name is put to this is almost inconsequential; the rationale is of prime importance. Again the Built Environment programme at Leeds Metropolitan University illustrates this point. The programme claims to be responsive to the 'interdisciplinary nature of complex design development problems, which have caused an increased blurring of the boundaries between professions' and involves finding 'comprehensive solutions to complex problems' (Higher Education Academy, 2008). It uses the full gambit of terminology as student's progress through their programme: multidisciplinary in Year 1, interdisciplinary in Year 2 and interprofessional in Year 3. The positive outcomes associated with the programme are an increased awareness of

professional roles and recognition of students' own responsibilities and those of others, recognition of the benefits of a team approach and understanding of the complexities of the construction industry and the interdependence of construction disciplines.

## **FACTORS THAT FACILITATE COLLABORATIVE AND INTEGRATIVE LEARNING**

The number of case studies presented in this volume highlights a wealth of successful interprofessional and interdisciplinary learning initiatives. However, when we talk of facilitating factors we set the scene in terms of instigating change, engaging staff, launching and developing new programmes or altering delivery to achieve improved learning outcomes associated with collaborative learning. Freeth, Hammick, Koppel, Reeves and Barr (2002) provide a comprehensive critical review of evaluations of interprofessional education that covers a more detailed breakdown of success in terms of specific interprofessional attributes that goes beyond the scope of this chapter. However, readers of the chapters to follow will gain insight into evaluations of more recent initiatives. We turn now to focus on factors that have been deemed helpful in aiding implementation across a diverse range of programmes.

The literature supports the need for a multifaceted strategy. Although external structural and cultural issues will endure, structural challenges within academia are within a scope of influence. Successful interdisciplinary learning for the Built Environment programme at Leeds Metropolitan University required fundamental curriculum change and restructuring across the entire School, adequate resourcing and staff commitment to the programme. These findings are supported by the achievements of a long established Interdisciplinary Foundation at Griffith University, Australia, which are also attributed to fundamental curriculum change and structural reorganization (Frank et

al., 2007). The Australian School of Environmental Studies employed the 'lifeboat model' of selecting staff, grouping them into interdisciplinary units and separating them from their traditional disciplines. A problem-based learning approach was adopted. Deliberate mechanisms such as team teaching, random allocation of office space, creating applied research teams and providing a common room, were employed to promote interaction amongst staff. This approach not only solves the issues of hierarchies and jostling for disciplinary superiority by removing staff from their disciplinary contexts, it throws them together and increases the potential for developing a shared language and culture. Perhaps most importantly, we are told that staff self-selected themselves for the venture on the basis of having a commitment to working across disciplines. Inevitably this was likely to create buy-in to making the project work and is important in that it indicates a high level of pre-existing commitment to the adopted philosophy.

The adoption of a problem based learning pedagogy at Griffiths University clearly addressed the issue of potential differences about the teaching and learning approach to be used as would any other approach if imposed across the School. Interestingly, given the focus for this book, Walsh's (2007) findings suggest that online learning approaches can successfully overcome barriers of different methods of learning adopted by different professional groups. In fact, there is firm evidence that online delivery of interprofessional learning does successfully overcome some of the issues associated with logistics and large cohorts (Scammel, Hurchings, Quinney, Hean, Dumbrell & Pulman, 2008; Walsh, 2007) notwithstanding the fact that learning to use technology is an added consideration with an associated time commitment (Scammel et al., 2008).

Wall and Shankar (2008) who conducted a study of a group of doctoral students engaged in a transdisciplinary learning programme found that aside from adequate resources, readiness for

change was a fundamental factor in the success of the programme. They suggest that an open attitude to developing a broader perspective than is available within disciplinary boundaries is crucial. Interestingly, Wall and Shankar stress that this does not mean that one's own perspective should not be maintained; on the contrary, being open but maintaining one's perspective is vital. There are important messages here which suggest that staff who are allocated interprofessional or interdisciplinary teaching without having a commitment to it are jeopardizing the programme before they start. In addition, the notion of preserving a disciplinary perspective is considered positive, suggesting that the removal of staff from their disciplinary roots is far more nuanced than we might at first think. Wall and Shankar (2008) also stress the importance of relationality on the basis that learning is a social activity. Gilbert (2005) favours the need for a dedicated core faculty drawn from across the disciplines (presumably with a commitment to interprofessional learning), time to facilitate learning and structures that facilitate formal and informal student learning interaction outside of disciplinary boundaries, which would promote relationality and sense of community.

Lattuca (2002, p. 711) suggests that implementation requires not only policies and programmes but also a process of collective learning. It seems that structural change is clearly a fundamental precursor to promoting learning that gives rise to collaboration and integration. However, this is not enough. Academic staff must be open to the notion of thinking across disciplines or professions to be able to translate these principles into their teaching. Changing heart and minds cannot be achieved by writing policies and changing room allocations. Staff commitment appears fundamental. Franks et al. (2007) argue that it must take the form of a philosophical and practical willingness to embrace 'conceptual interdisciplinarity' (Lattuca, 2003). Only if staff engage with the concept of interdisciplinarity and believe in what they are trying to

achieve at a fundamental level will they be able to communicate their commitment to students.

## CONCLUSION

‘Ways of thinking and orientations to learning that can ultimately lead to mutual incomprehension when specialists from different subject domains try to collaborate’, (Woods, 2007, p. 854) are no longer tenable. It is incumbent on higher education institutions to ensure students are prepared for the challenges they will encounter as graduates by promoting collaborative and integrative learning. Initiatives that do so are not without their problems and solutions involve fundamental change both structural and attitudinal. As the chapters that follow illustrate, tinkering around the edges will not work; only wholehearted commitment will do.

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