Essay

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Recognizing and Supporting a Scholarship of Practice: Soft Skills are Hard! †

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Modern professional practice requires not only recognized 'technical' skills, but also high-level generic or 'soft' professional skills. Recent professional negligence claims suggest that technically well-qualified professionals with deficiencies in these generic skills may fail to effectively identify and satisfy client requirements, contributing to the professional indemnity insurance (PII) crisis which has developed in the last few years. In 2003, the Federal, State and Territory attorneys agreed to introduce legislation to address the PII crisis. The NSW Professional Standards Council (PSC) now has national responsibility for reviewing current continuing professional development (CPD) programs and improving their effectiveness. As a first step, the PSC commissioned a discussion paper, followed by a forum reviewing its findings. In this paper we review the PSC paper and forum, with a focus on their relevance to engineering education. We explore four central areas for action that we believe need to be addressed by engineering educators: integration of CPD with undergraduate programs; attention to broad ethical and futures issues, including sustainability; clarification of the nomenclature describing these skills; and the importance of internships to the development of generic competencies. We also challenge two widely held assumptions about professional practice. The first is that the generic skills essential to successful professional practice can be readily acquired after graduation through professional induction and CPD programs. The second is that these 'soft' practice skills are somehow less demanding and less academically challenging than the 'technical' skills which are the almost exclusive content of most professional qualifications, including those in engineering. We argue that the investigation of generic professional practice skills and their development is a critically important area of scholarship that must be incorporated into engineering research and teaching (Asia-Pacific Journal of Cooperative Education, 2005, 6(1), 1 - 6).

Keywords: Professional practice; continuing professional development; internships; life-long learning; Australia.

Increasingly, professional engineers practice in turbulent global and local contexts, confronting problems that need to be framed and addressed by teams incorporating a variety of disciplinary perspectives. All team members need to be competent in their own specializations, and comfortable working with people from other disciplines. Indeed, all professionals now need the professional skills and attitudes involved in recognizing other perspectives and valuing diverse contributions. Nieragden (2000) suggests that broad professional skills can be grouped into four areas: self-management; interaction; communication; and organization. Deficiencies in generic professional skills are even considered to be a factor in the increasing number of professional negligence claims (Professional Standards Council, 2004). For many years, Peter Miller has been exploring professional negligence issues in 'Miller's Tales', a regular and well-respected column in Engineers Australia. Miller regularly demonstrates how difficult professional practice can be, and how important these broad skills are to establishing and maintaining effective working relationships between professionals and clients. However, the typical expectation in engineering is still that broader practice ('soft') skills such as communication and management will be developed after graduation, as part of a graduate development process in a workplace context.

The almost exclusive emphasis in most engineering undergraduate programs is on de-contextualized technical areas of practice has serious implications that affect the development of generic practice skills by graduates. This narrow focus has been challenged by Australian and overseas reviews of engineering education, and accreditation requirements for engineering undergraduate programs now include attention to contextual issues, including 'sustainable design and development' (Johnston & Eager, 2001).

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However, current economic trends are reinforcing 'back to basics' moves within engineering faculties to cut back on this material in undergraduate programs. The obvious absence of generic skill material in the curriculum can be read by students as an indication that these skills and abilities are much less important than the technical content. This perception is commonly reinforced by technically-focused academics who frequently challenge or undermine any attempts to broaden the curriculum (Vanderberg, 2000). In the short-term, this failure to value 'non-technical' areas trivializes the broader social and ethical program content required by accreditation requirements. In the longer term it fosters a narrow approach to professional responsibilities and inhibits the development of generic practice skills, skills that are essential to identifying client needs and providing appropriate levels of professional service.

The authors have been involved with the cooperative education of professional engineers for over 25 years and have published widely on professional issues, including seminal texts on engineering and society and professional communication (e.g., Johnston, Gostelow & Jones, 1999: Mohan, McGregor, Saunders & Archee, 1997, 2004). This paper aims to refocus on the importance of including the development of generic professional skills as part of the undergraduate curriculum. The publication of a report by the Professional Standards Council has provided the springboard for discussion of these issues and their significance to engineering practice.

Professional Standards and Professional Indemnity Insurance

Failures associated with professional services can have serious economic and human consequences. Professional Indemnity Insurance (PII) was developed to address the personal and professional implications of such failures. In recent years, the size and frequency of claims have escalated. Particularly since the demise of HIH, which was a major provider, insurance is no longer available for many areas of work and, even where it is available, the cost of PII has increased steeply (Ryle & Hardwicke, 2004).

In order to ensure the continuing availability of socially-important professional services, Professional Standards schemes have been developed, aimed at improving both professional performance and mechanisms for resolving consumer claims. For the professionals who join them, the schemes would cap liability for economic loss or property damage (but not for personal injury or death). To join a scheme, a professional is required to meet a range of initial and ongoing professional competency criteria, and to have PII at a level which will cover consumer claims. Schemes are state-based, and only currently in force in NSW and Western Australia. However, during 2003, the federal and state governments agreed to introduce consistent national professional standards legislation. The first schemes under the legislation are expected to be in place in early 2005. As the basis for its professional standards scheme, Engineers Australia (the new working title for the Institution of Engineers Australia, IEAust) decided to set up a new Technical Society, using the existing national engineering registers as the standard of competence for engineers to be included under the scheme. Professional standards arrangements are expected to be coordinated by the NSW Government's Professional Standards Council on behalf of all other State and Territory governments (Ryle & Hardwicke, 2004).

As part of its ongoing program to improve the quality of professional practice in New South Wales, the Professional Standards Council (PSC) commissioned a report on continuing professional development (CPD) aimed at improving practice skills (Field, 2003). The report is directed particularly at professional associations. It challenges these associations to recognize the importance of 'soft skills' to professional competence and to develop programs to increase proficiency in these areas. Publication of the paper was followed on 24 March 2004 by a forum in Sydney. Forum participants came from a range of disciplinary areas, including accounting, building, law and engineering. The presentations to the forum and a summary of the discussion are available from the Council's website (Professional Standards Council, 2004). The Council has also developed a website to encourage and inform debate on soft skills issues, and to support the creation of alliances across business, industry, government and higher education, Technical & Further Education (TAFE) institutions, and other training providers.

In this paper, our goal is to highlight the important issues from the PSC report and to focus on their relevance to engineering education. In our response to the report, we argued that the discussion initiated by the Council needs to be expanded to include initial professional formation as an important part of the continuum of professional development. Our responses to the Council's initiative focused on four key issues: 1) nomenclature, 2) undergraduate formation, 3) the value of internships, and 4) ethics and social responsibility. In the remainder of the paper we have located these responses in the context of an outline of the discussion paper and the forum associated with it.

Soft Skills: The Current Environment

The discussion paper (Field, 2003) starts with an analysis, based on interviews with six PSC associations, of the current environment in which continuing professional development (CPD) activity takes place. CPD is defined (p. 5) as:

> The systematic maintenance, improvement and broadening of knowledge and skill and the development of personal qualities necessary for the execution of professional and technical duties throughout the practitioner's working life.

The paper refers to the non-technical skills and personal qualities required for successful professional practice as 'soft skills'. It also acknowledges the inadequacy of this term, in that it could suggest that these were:

> Skills, which are somehow easy, light, and not to be taken seriously. Nothing could be further from the truth.

> Numerous studies have highlighted the importance of soft skills to the work of professionals and the value that employers place on soft skills. (p. 5)

Other possible terms suggested for these skills include 'non-technical skills', 'general skills', 'generic skills', 'essential skills' and 'employability skills'. The paper outlines the scope of these skills. They include information handling skills like learning, thinking communicating and problem solving. They include organizational skills like planning and managing projects. They also include interpersonal skills like leadership, working with others and in teams. The paper makes the point that the way these skills are exercised in the workplace depends very much on personal values and attributes, including integrity and business and technical competence. It also emphasizes that whether a skill (for example, 'planning and coordinating') is technical or not depends significantly on the context.

The authors find it interesting that skills in posing and framing problems were not mentioned specifically in this part of the paper. It seems to us that this omission highlights a key problem with most models of the design process (in engineering and other disciplines), which assume that 'the problem' is somehow 'out there' and simply needs to be discovered. Work by scholars like Bucciarelli (1994) shows that deciding on the nature of the problem and framing it so that it can be addressed can be at least as challenging as any other professional task.

Nomenclature: Soft Skills vs. Generic Professional Skills

As acknowledged in the report (Field, 2003, p. 5) the term 'soft skills' is problematic. While the Notes to the paper list a variety of alternate terms, the choice of soft skills indicates some preference for this descriptor. We would argue that the nomenclature to describe the suite of skills and abilities that are referred to in the report should be changed. Logical and more useful alternatives, even in a paper that is issued to discuss the issues, would be generic skills or generic professional skills, since these terms suggest the basic commonality across all professional areas, while implying contextual differences.

In technical and professional writing it is preferable to choose the most accurate descriptors. The term 'soft' seems to be the least accurate of those proposed. The choice of the term 'soft skills' also seems likely to impede the realization of the objectives expressed in the report. In our experience, these aspects of professional work are much more difficult to learn and practice than many of the so-called 'hard' skills. The use of this term is misleading and denigrates both the importance of these skills and their complexity. There is a parallel in the use of the term 'soft systems' as an alternative to hard systems engineering. Even in this field, terms like 'socio-technical systems' have evolved as more accurate descriptions of the study of the more complex systems that involve human interaction.

Discussion during the Forum also focused on the negative aspects of the term 'soft' skills. Although the use of the term has certainly caused a reaction, so stimulating discussion, the authors suggest that the term 'soft' skills be avoided and recommend 'generic professional skills' as a more appropriate and accurate descriptor of the required competencies.

Improving Soft Skills CPD

The paper discussed a range of soft skills improvement strategies: promotion; E-learning; experiential learning; mentoring; alliances; and evaluation. The study explored the extent of the gap between the current situation, and an ideal one, with ready availability of suitable opportunities for professionals and others to develop their soft skills. The paper noted that: "Associations generally don't promote well the value of soft skills" (Field, 2003, p. 12), and suggested that associations should acknowledge their importance in newsletters and websites, as well as in: "…material relating to professional quality service delivery and risk minimization, and statements of association values and perspectives on CPD" (p. 12).

In both the paper and his forum presentation, Dr Field emphasized the importance of attitudes and values in the exercise of soft skills, adding that deficiency in soft skills was a significant contributor to negligence claims. He noted the paradox that, even though this is recognized by most professional associations, the demand for soft skills CPD was low across all the professions studied, in comparison to the demand for development of technical skills. Some of the explanations offered for this low demand for soft skills CPD included: failure by practitioners to see the need to further develop these skills; cynicism about their perceived 'touchy-feely' character; lack of professional incentive in terms of concrete knowledge; cost of time away from the workplace weighed against the perceived benefit; and a lack of clear-cut evidence of the impact of soft skills CPD and consequently a questionable return on investment. In our view, from our experience in engineering, those reasons resemble the arguments presented to reduce or eliminate professional development subjects in the undergraduate curriculum (McGregor & Saunders, 2001).

At the forum, Steve Dilli outlined the approach taken in the Professional Development Program offered by Engineers Australia (Professional Standards Council, 2004). Engineering Education Australia offers a range of CPD programs, with nine out of 10 of these programs including some soft skills content, although (as seems commonly to be the case) the evaluation of this content was rather limited.

A problem with existing CPD is that most effort in delivery goes into large-scale seminars and conferences, approaches which are not well-suited to actual individual development of soft skills. The availability and quality of direct and indirect opportunities for soft skills development varied widely. The approach taken by particular associations to soft skills CPD was recognized as a central issue. For the range of cognitive and behavioral skills involved, effective CPD requires experiential learning (doing and reflecting on what was done, Kolb, 1984) in contrast to presenters talking about issues and behaviors. This calls for close involvement and interaction with others, including role plays and activities which bring in life experience and prior learning. AAEE has from time to time

made an effort to build this sort of learning into its conferences, and the difficulties in sustaining this effort illustrate the cultural and organizational difficulties in making such changes.

Coaching and mentoring can help people to develop a number of soft skills, including listening and observing. Good mentoring can encourage attention to the issues of problem framing and problem setting, as well as problem solving. Mentoring can also facilitate a two-way exchange of knowledge which can be particularly helpful for senior mentors prepared to improve their information technology skills, learning from their younger colleagues. Mentoring is a powerful way of passing on the culture of an organization, so it can have a down side, and training for mentoring is important. At least some of the time spent on coaching/mentoring ought to be recognized as valid and valuable soft skills CPD.

While computer-based E-learning has a role in a range of learning and development activities, present forms appear best suited for initial information presentation and compliance training. CPA Australia uses it effectively through its web-site for presenting 'SNAPS' – packages of material that are short, relevant, accessible and practical, and aimed at meeting an immediate member need. The current relevance of this approach for personal development and building interpersonal skills seems rather limited, although innovative approaches to team building are showing promise. In the short term, at least, hybrid mediated and face-to-face programs are most likely to achieve some successful outcomes.

Associations in the same professional sector are likely to be more or less in competition, so sharing training resources is problematic. However, alliances between sectors, including the presentation of jointly-badged seminars in regional areas, may well be attractive.

In his forum presentation, Bruce MacDermott of Risk Management Services, LawCover, acknowledged that for his organization, the key driver for improving soft skills CPD was economic. Their detailed claims analysis had highlighted a particular age group of sole-practitioners for attention. For this group, better soft skills performance would have avoided four out of five claims. A modest but ongoing discount on their Professional Indemnity Insurance premiums was offered to this group for completion of a CPD program developed specifically to meet its needs. He believed that this approach had been very successful.

In the context of CPD, Field (2003) suggests that the least well developed area is probably that of evaluation. The relevance of evaluation to this audience is obvious. Field suggested at least six levels of evaluative data which are relevant to CPD, from participant reaction, through consideration of behavioral change and its impacts, to looking for evidence of future impacts on risk and quality. He noted that: "Current approaches to evaluating soft skills CPD are highly inadequate and many CPD activities do not incorporate any evaluation at all" (p. 21). Reasons suggested for the general failure to evaluate beyond the lowest level include an emphasis being placed on 'customer satisfaction' rather than on actual skills or workplace behavior and priority being given to other social and professional purposes, including networking and awareness raising. In addition, the cost and effort involved in higher level evaluation was an obvious deterrent.

Possible approaches for improving evaluation include: having facilitators report changes in participant behavior; emailed follow-ups to participants asking for comment and reflection; encouraging the use of online learning journals; short phone interviews; two-part training programs, with an second face-to-face session in which participants can discuss what they have learned and how they have applied it; and pairing participants, so that 'buddies' can liaise after the session and encourage ongoing application of new skills.

The Way Forward

Submissions on the paper were invited, and we responded with enthusiasm because we believe it is crucial to open wide debate on this topic. Our first suggestion for improving the development of generic professional skills, both within the engineering profession and more generally, was in terms of improving the connection between undergraduate and graduate formation. Although the target audience of this report was professional associations, we see the absence of any discussion of the relationship between professional foundation study (as in undergraduate work) and continuing professional development as a major omission from this study. Generic skills, such as communication and even negotiation, are developed throughout the whole educational process from kindergarten onwards. However, when students enter an undergraduate program, and embark on their professional formation, generic skills start to be developed within the contextual framework of that discipline area. This would suggest that an additional way forward (Field, 2003, p. 24) would be for professional associations to liaise with universities and other institutes of learning to ensure that the development of generic skills is valued and included as part of undergraduate curriculum.

The report recommended that alliances be set up (Field, 2003, pp. 19-20) and we suggest that these should also include alliances of business and the PSC with tertiary education. Given that many Australian universities now specify graduate attributes intended to be developed during their undergraduate programs, proposals for cooperation with the Professional Standards Council along these lines seem likely to be well received. We strongly urge professional associations, universities and other educational providers to be conscious of the ways that these generic competencies are developed throughout the formal educational process. This valuing of the broader, contextualized aspects of professional work, should extend to supporting and encouraging collaborative research with professional associations, industries, and organizations working with universities to extend knowledge of these generic components of professional formation.

The role of universities in developing generic skills at post graduate and CPD level is clouded by the 'competition' between universities and professional associations at this level. While practitioners might legitimately seek their on-going professional formation through their associations, it is

more difficult for these bodies to challenge the existing paradigms and thus to move discourse communities beyond their comfort zones. Our work in 'captivity' is important here (Johnston, Lee & McGregor, 1996). The role of universities has always been to extend the limits. Despite the pressures of economic rationalism, it is important for universities to continue to assert their mandate to challenge and extend knowledge.

Internships

As was noted earlier, our work at the University of Technology, Sydney has involved us in cooperative education, and our third recommendation is that the value of student internships needs to be recognized and supported by governments, industries and professional associations. While the report discussed the role of experiential learning (pp. 13-14), we believe that an essential component of professional formation is learning how to learn. Through our work with the Professional Practice component of our undergraduate program in Engineering at UTS, we have identified learning how to learn through experience as one of the key learning outcomes of tertiary study. The UTS internship program is supported by a suite of subjects that help students prepare for learning through their work experience, document their learning and share and validate that learning. This educational model constantly endorses the importance of the generic skills, especially the communication skills, and clearly indicates that students develop these skills through testing theories in practice during their experience (Johnston, Taylor & Chappel, 2001: McGregor, 2000; McGregor & Saunders, 2001).

The continuing importance of contextualizing basic skills implies that further development of generic skills needs to occur throughout life. Therefore, both an understanding of experiential learning and some development of the abilities to plan, reflect, review and revise are essential career development tools for any professional. While this development can occur as continuing professional development, the value of laying the foundation through educationally sound student internship programs must be endorsed. We recommend that professional associations, industries and governments seek ways to support and encourage educationally sound student internships.

Ethics, Social Responsibility and Sustainability

We see ethics, social responsibility and sustainability as central to the leadership role of the Council, and we are deeply concerned that these topics are not raised in this report. It is our strongest belief, based on our experience with students that a constant challenge for them is to develop a framework for their professional practice that reconciles their own personal codes of conduct with professional codes, mores and practices (McGregor, Johnston & Bagia, 2002). We recognize the difficulty of 'learning' these skills, but would argue that the process of learning is as important as the outcome. These considerations underpin all relationships. Unless there is scope for professionals to collectively discuss, debate and develop their thinking and practice, societies cannot move forward in constructive ways. This is particularly important for multi-cultural societies such as Australia. We therefore recommend that ethics, social responsibility and sustainability be included as core areas of generic professional skills.

Towards a Theory of Practice?

The topics discussed here are central to the ongoing development of a practical understanding of professional practice, a debate in which the authors have been involved for many years, both within UTS and more widely. It would be nice to think that it would be possible to develop a comprehensive theory of professional practice, even within engineering, that would be as clear cut as the engineering science which still dominates our curricula, not to say the thinking of more than a few of our colleagues, for whom practice issues are outside the scope of the academy.

Given the complexity of practice, involving as it does human beings with their various understandings, attitudes and values, it seems to us unlikely that a comprehensive theory is likely to be possible. However, we do believe that some order can be found in the complexity, if not at the level of laws, then at the level of models, metaphors and insights. Checkland (1999) describes the development of a methodology for approaching problem situations. In this process it is essential to recognize the world view from which the model is formulated, and to spell this out explicitly in the system model. This supports the development of models based on other perspectives, permitting an open and multi-faceted exploration of the issues. Checkland (1999, p. A10) describes this methodology as a "learning system". Although beyond the scope of this present paper, approaches along these lines could be fruitful.

Conclusion

We were impressed with the amount of information collected for the report and the forum and the detailed picture presented of the current situation with respect to CPD in NSW. We were also troubled by what we saw as a number of significant gaps in the paper. It seems to us that an excellent start has been made, a start which opens up a number of promising directions for further research aimed at improving our understanding of the situation and addressing the shortcomings of preparation for practice, both within undergraduate degrees and in the professional development that is now recognized as needing to continue throughout our professional lives.

We encourage engineering academics to consider the ways in which 'soft skills' can be developed throughout the curriculum. Professional competence involves the development of skills in posing and framing problems, which increasingly can be complex and multi-disciplinary, and need to be addressed in a global as well as a local context. The evidence is strong that both technical competence and well developed broad professional skills are

needed for effective professional practice. The Professional Standards Council Report effectively endorses that vision.

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