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A metacognitive profile of doctoral students

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The purpose of the study was to identify the metacognitive attributes of a cohort of doctoral students from two universities as measured by a series of self-report instruments. Consistent with expectations, the cohort presented a positive metacognitive profile, with critical measures of coping, efficacy, volition and knowledge at the higher end of the scales, and measures of procrastinatory behaviours at the lower end of the scales. However, further analysis revealed within cohort differences within this profile, with cluster analytic techniques identifying three metacognitive groupings – one that was potentially non-problematic, a second that was potentially anxious and dependent, and a third that was associated with potentially weaker and at-risk candidates. The implications of these data for supervisory pedagogy are raised.

Identification of strategies to increase enrolments in engineering

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In Australia, as in many other industrialised countries, there is considerable evidence to show that in spite of strong career prospects, there has been a decline in the study of engineering degrees in universities (Langen & Dekkers, 2005). This work reveals that the percentage of engineering graduates in Australia is in the lowest quartile for OECD comparison countries. This decline could potentially compromise Australian and many European countries' ability to be at the forefront of global scientific and technologic development. The reasons for the falling number of enrolments in engineering tertiary studies have been assessed from different perspectives, as detailed in a number of government reports over the past few years (Prieto, Holbrook & Bourke, 2006). These perspectives include: national investment; sources of information; education; and perceptions of engineering. More specifically, according to Prieto, Holbrook and Bourke the factors affecting enrolments in engineering are the following:

1. National Investment (both government and private)
2. Sources of Information (parents, teachers, careers advisors, media and industry)
3. Education
 - a. Quality, expertise and motivation of teachers
 - b. Curriculum (leading to trajectory and education opportunities)
 - c. Effectiveness of outreach programs focusing on engineering
4. Perceptions of Engineering (what engineers do, financial rewards, and personal characteristics of engineers).

This paper describes the development of an instrument created in Australia to measure the main reasons for the decline in engineering enrolments in tertiary studies and the ways in which the research team will analyse the different dimensions arising from the instrument. The instrument was administered in 2006 and preliminary results will be available early in 2007 for the full version of this paper. The survey includes over 250 schools across Australia at both primary and secondary levels in rural, regional and urban areas.

Quality indicators for PhD theses in Engineering

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Engineering education is facing a crisis across the board in western nations as demand for such courses declines but demand for engineers and engineering research is growing apace. Given the national interest implications of the engineering discipline, there is intense debate about the nature of doctoral education in this climate. This study utilises examples of text drawn from 165 examination reports for 65 engineering PhD theses, and the recommendations the examiners make on the fate of the thesis. The extent to which engineering theses can be ranked on the basis of quality indicators grounded in examination text analysis and linked to examination outcome is described and discussed. Given that more than half the examiners of engineering theses are located outside Australia, comparisons are made between examiner comments and recommendations by country/region. Comparisons are also made between examination comments made by academic Engineers and by industry professionals, in terms of the nature, agreement and consistency of quality judgements. The significance of the study resides in its contribution to examiner judgement literature while setting the stage for studies of alternate models of research training to maximize outcomes for the engineering profession.

Doctoral examiner ego and assessment etiquette

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Doctoral examination involves so much more than an evaluation of the thesis. Examiners are presented with guidelines, but are essentially free to 'approach' examination of a thesis as they see fit. Drawing on the text analysis of more than 2000 examiner reports, this paper reports the range of differences in 'approach' to report writing and mines the rich vein of personal information, position and opinion that examiners embed in their reports, including comments on process, references to supervision and indications of their own contribution to the field. Examiner reports are complex documents that capture academic culture, assessment language and assessment etiquette. But if an examiner uses a report for something more than direct comment on the thesis, does this impact on the way it is viewed by the intended audience of supervisor, candidate and committee? Does it undermine the assessment or enhance it? After quantifying the coded data we explore the extent to which 'personalised comment' predicts examiner recommendation.

Peer reviewers' perspectives of their contribution to quality research in education and physical sciences

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Editorial peer review has existed for more than 200 years and achieved universal application. However, although much is determined empirically about editorial process, little is known about the way in which reviewers approach review for journals. There is also concern about the effectiveness of peer review in improving the quality of manuscripts. Similarly, while there are many assumptions about differences in various aspects of peer review between disciplines, little is based on empirical evidence. This paper addresses both issues, with particular attention to the much discussed 'differences' between peer review practice in Education and that in Physical Sciences. A mail questionnaire was conducted of senior academics (professors, associate professors, and some senior lecturers) in Education, Physics and Chemistry in the 37 universities in Australia who had served as journal reviewers. A total of 232 academics in roughly equal numbers by discipline were approached and 54 agreed to be involved. The survey gathered reviewers' demographic information, their impression of the effectiveness of peer review, their perceptions of their contribution as reviewers, etc. The data were analyzed qualitatively with some level of quantification to produce a profile of reviewers' perspectives.

Selected findings include: editors and long-serving reviewers thought it was not up to peer review but the author to improve manuscript quality; reviewers' expression of the effectiveness of peer review was significantly correlated with their own experience with it; the most frequently cited reasons for declining to review were lack of expertise or time and conflict of interest; reviewers regarded reviewing more as part of professional obligation than a means to improve quality. There is a lack of compelling evidence to show that there was a difference in reviewers' perspectives of the role of peer review by discipline.

Diagnostic reasoning strategies used by student and registered nurses in a simulated clinical task

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The purpose of this study was to identify the diagnostic reasoning strategies deployed by beginning and experienced nurses when reasoning about a clinical problem. Sixty student and registered nurses took part in a simulated nursing diagnostic task. "Think-aloud" protocols enabled the identification of clinical information, clinical concepts and diagnostic hypotheses used by nurses along with underlying reasoning strategies. Analyses revealed four diagnostic reasoning groups discriminated by differences in the timing and breadth of diagnostic activity and outcomes, and in the use of conceptual and clinical information. Registered nurses were more successful in this process than student nurses. Implications for nursing education and professional development are discussed.