

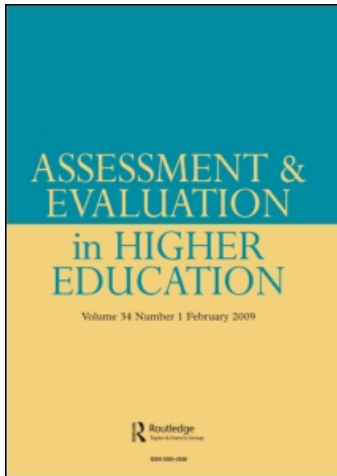
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### The relationship between engagement in the scholarship of teaching and learning and students' course experiences

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## **The relationship between engagement in the scholarship of teaching and learning and students' course experiences**

Angela Brew\* and Paul Ginns

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While there has been a good deal of discussion about the scholarship of teaching and learning, and models have been developed to understand its scope, the effects on students' learning of academics engaging in the scholarship of teaching and learning are unclear. In the context of initiatives to develop the scholarship of teaching and learning in a large research-intensive university in Australia, this paper discusses the relationship between faculty performance on a set of scholarly accomplishments in relation to teaching and learning from 2002 to 2004, and changes in students' course experiences from 2001 to 2005. The paper provides evidence of the relationship between the scholarship of teaching and learning and students' course experiences and demonstrates the effectiveness of institutional strategies to encourage the scholarship of teaching and learning.

### **Introduction**

Most scholars now agree that while there are a number of formulations of the scholarship of teaching and learning, it includes ongoing 'learning about teaching and the demonstration of teaching knowledge' (Kreber and Cranton 2000, 477–78). These authors distinguish four components:

- (1) discovery research on teaching and learning;
- (2) excellence in teaching as evidenced by teaching awards or evaluations of teaching;
- (3) reflection on and application of the work of educational researchers;
- (4) reflection on practice and on research on teaching in the teacher's own discipline.

There is now general agreement that the purpose of the scholarship of teaching is to infuse teaching with scholarly qualities in order to enhance learning (Hutchings and Shulman 1999; Kreber and Cranton 2000; Hutchings et al. 2002; Kreber 2002; Trigwell and Shale 2004). Trigwell et al. (2000, 156) say the aim of scholarly teaching is to 'make transparent how we have made learning possible'. In order that this can happen, they argue, 'teachers must be informed of the theoretical perspectives and literature of teaching and learning in their discipline, and be able to collect and present rigorous evidence of effectiveness'.

The scholarship of teaching and learning carries with it a value that it is something good; something to be applauded; something to be developed. It has emancipatory ideals. The direction of change is clear. It is towards student-focused activity-based learning in which inquiry becomes central (see for example, Trigwell and Shale 2004). Trigwell and Shale (2004) suggest that the scholarship of teaching has descriptive aspects (understanding, categorising, defining and describing what teachers and teaching are) and purposive aspects (a means to an end, namely, the improvement of students' learning). However, how the scholarship of teaching translates into

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improvements in the practice of teaching, and, more particularly students' learning experiences remains unknown. Recently Healey (2000) reported that there was very little research evidence that engaging in the scholarship of teaching and learning enhanced learning. There were numerous anecdotal examples of teachers improving aspects of their practice as a consequence of engaging in inquiries into their students' learning. There was also anecdotal evidence that teachers initiated into the practice of scholarship of teaching and learning were becoming leaders in teaching developments in their faculties. Since that time, research evidence that the scholarship of university teaching and learning enhances learning appears to be growing. There is some research evidence that engaging in training in university teaching leads to increased student satisfaction and an increase in the use of student-focused approaches to teaching (Lueddeke 2003; Gibbs and Coffey 2004). However, it is not generally known whether such training is characterised by a focus on scholarly approaches. An Australian study of tertiary teaching award programmes (Dearn et al. 2002) found that such courses were most likely to be focused on the development of teaching skills or the development of a specific teaching practice, for example, flexible and online teaching, assessment of student learning, postgraduate supervision and internationalisation.

This paper discusses the strategies that have been implemented to encourage and support the scholarship of teaching and learning at the University of Sydney and examines the effects of these initiatives on teaching and student learning. The university has taken a systematic and scholarly approach to the improvement of teaching and learning through its performance-based funding system. This includes a series of questionnaires designed to measure students' experiences of a range of aspects of the teaching and learning environment. The improvement agenda has also included rewarding departments for a defined and weighted set of scholarly accomplishments in relation to teaching and learning via what is known as the Scholarship Index. These strategies have now been in operation for several years. In this paper, data from one of the student experience surveys, namely, the Student Course Experience Questionnaire (SCEQ), are compared with results on the Scholarship Index to show the relationship between the scholarship of teaching and learning and students' course experiences.

### *Development of the scholarship of teaching and learning at the University of Sydney*

The development of the scholarship of teaching and learning at the University of Sydney has taken place within a broader programme of institutional change ongoing since 1999. This programme adopted a multi-level, cross-disciplinary approach explicitly informed by research on the student experience (e.g. Ramsden 2003; for a comprehensive description of this programme and its constituent parts, see Asmar 2002). A key part of this programme was the development of a performance-based funding system incorporating indicators of teaching quality. The major part of the performance-based funding system is a 'Teaching Dividend' comprising the allocation currently of 6% of operating grant money to faculties in proportion to their relative teaching quality as measured by a series of Teaching Performance Indicators (University of Sydney 2005). These include several survey-based measures of the student experience of both graduate and currently enrolled students (Ramsden 2001). The teaching funding system also provides additional resources currently in the order of A\$1,675,075 (approximately £698,986) to enable faculties and colleges to address areas for improvement identified in Academic Board reviews.

In order to reward scholarly performance associated with teaching, the Scholarship Index was set up. This was designed to provide recognition and reward for excellence in teaching and the communication of good practice to the scholarly community on a set of weighted inputs and outcomes (Ramsden 2001). The criteria were designed to operationalise the four components of the scholarship of teaching mentioned above: published and presented research on teaching and

learning; excellence in teaching as demonstrated through awards at different levels (national, institutional and faculty); the application of educational research through, for example, textbooks; and evidence of reflection on practice through engaging in accredited courses in teaching and learning in higher education. The weightings were designed to reflect the differing levels of contributions to the scholarship of teaching. The weighting scheme was designed by the Pro-Vice Chancellor (Teaching and Learning). At the time that the Index was devised the effects of these different elements on teaching and learning were not known. The Scholarship Index is sourced from 0.5% of operating grant money and a contribution of 0.5% of the previous year's International student fee income. So for example, the budget available for distribution via the Scholarship Index in 2005 was A\$841,000 (i.e. approximately £ 351,000). Claims are made annually and evidence for each claim is required. The criteria and their weightings are given in Table 1.

The development of the scholarship of teaching has been part of a university-wide project that was established in 2000, first increasingly to employ undergraduate teaching and learning strategies which enhance the links between research and teaching and utilise scholarly inquiry as an organising principle in departmental organisation, and curriculum development; and second to encourage and reward the scholarship of teaching and learning.

Further institutional strategies to encourage the scholarship of teaching and learning have included the establishment of a strategic working group with representatives from each faculty nominated by deans, the development of a website with resources to encourage development, and revision of the criteria for the Vice-Chancellor's award schemes for outstanding teaching to strengthen the emphasis on scholarship in teaching. In 2001 the University's Academic Board initiated a series of reviews in which questions were asked in each faculty about the development of research-led teaching and the scholarship of teaching. In addition, a Graduate Certificate in Higher Education unit of study focused on the Scholarship of University Teaching and Learning was established to teach academics the skills of scholarly inquiry related to teaching and learning. To date, some 200 academics have completed the graduate certificate.

The overall levels of achievement in the Scholarship Index are given in Figure 1. This table shows the variation in the extent to which faculties have actively engaged with the Scholarship Index. Some faculties have taken it extremely seriously, demonstrated by substantial achievements in the scholarship of teaching and learning having been made.

Table 1. The University of Sydney Scholarship Index criteria.

Criterion	Points
Qualification in university teaching	10
National or state teaching award	10
National teaching award (finalist)	5
Vice-Chancellor's Award winner (includes Outstanding Teaching, Research Higher Degree Supervision and Support of the Student Experience awards)	5
College or Faculty award winner (includes Outstanding Teaching, Research Higher Degree Supervision and Support of the Student Experience awards)	2
Publication on university teaching – book	10
Publication on university teaching – refereed chapter	2
Publication on university teaching – refereed article	2
Publication on university teaching – non-refereed chapter, article or published conference paper	1
Presented conference paper or poster on university teaching	1

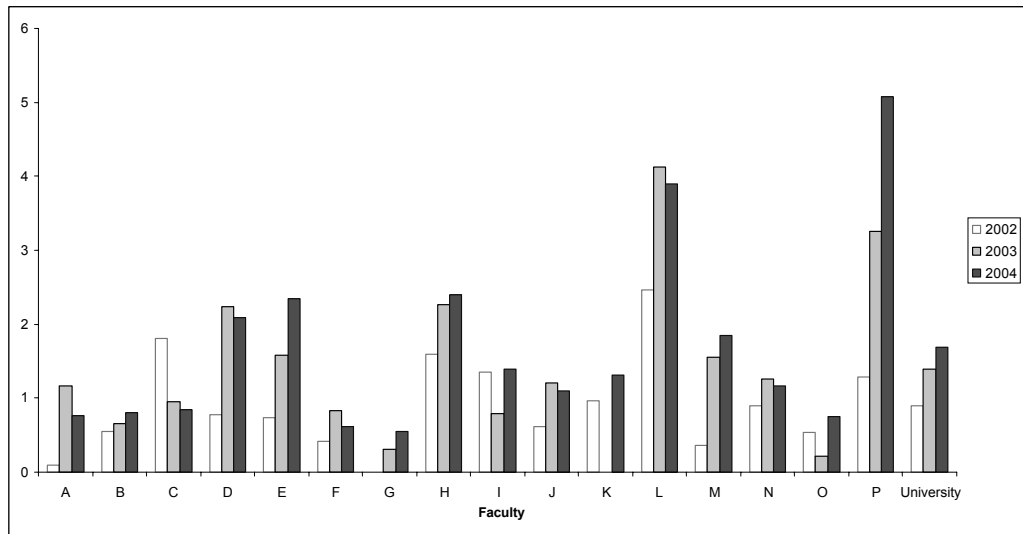


Figure 1. Scholarship Index points per FTE academic staff.

The variation shown in Figure 1 indicates two major trends. First, it would appear that across faculties over the three years there have been substantial gains in points allocated. This indicates increasing levels of scholarly work being undertaken across the university as a whole. In addition, the results show considerable differences between faculties in the levels of scholarly work undertaken with some faculties showing quite marked gains over the three years. Faculties have adopted a series of strategies to develop the scholarship of teaching and learning. These vary from faculty to faculty but include: making changes to faculty policies; seminars and discussions of research on teaching and learning; research on teaching competitive grant schemes; making the graduate certificate in higher education compulsory for all new staff; using scholarship index money to fund teaching awards; conference attendance or research on teaching. Anecdotal evidence suggests that faculties that have put in place explicit strategies to engage with the Scholarship Index have indeed been successful.

### *The Student Course Experience Questionnaire*

Over the past 30 years there has been increasing interest in how students experience teaching and learning environments, and how these experiences are related to students' approaches to study and the quality of learning outcomes. In investigating the relations between these constructs, the student learning research literature (e.g. Biggs 1999; Prosser and Trigwell 1999; Ramsden 2003) has been the source of an approach to teaching evaluation in which the experiences of the student, not the behaviour of the teacher, is the focus of attention.

The Course Experience Questionnaire (CEQ; Ramsden 1991; Wilson et al. 1997) was developed as a student-focused teaching performance indicator, focusing on the quality of a degree rather than individual subjects. The CEQ has been used widely as both a research instrument and as a tool for student evaluation of teaching across the Australian Higher Education sector (for a recent review of CEQ-related research, see Richardson 2005). More recently, three of its core scales have been used for disbursement of federal funds to Australian universities as part of the national Learning and Teaching Fund.

As the CEQ is administered to graduates, it suffers somewhat from a time-lag problem, meaning that institutions can find its use for teaching improvement difficult. To circumvent this problem, in 1999 the University of Sydney developed the Student Course Experience Questionnaire (SCEQ), which has been administered annually between 1999 and 2003, and biennially from 2005, to currently enrolled students across all years of enrolment (for a discussion of the psychometric properties of the SCEQ, see Ginns et al. 2007). The core scales of the SCEQ are the Good Teaching Scale (GTS); the Clear Goals and Standards Scale (CGS); the Appropriate Workload Scale (AWS); the Appropriate Assessment Scale (AAS); and the Generic Skills Scale (GSS). A single item also asks students to rate their satisfaction with the overall quality of their degree (OSI), allowing a check on the validity of the other scales (Wilson et al. 1997).

This approach to teaching evaluation is intended to allow more timely assessment of teaching strengths and weaknesses at the faculty and degree level, in particular the evaluation of curriculum changes and institutional change programmes. The articulation between the CEQ and SCEQ is deliberate, with the intent being that improvements in SCEQ scores over time will feed through into CEQ improvements, with the ultimate intended result being higher-quality student learning outcomes. For discussions of the SCEQ and its use as an evidentiary base for such programmes, see Barrie et al. (2005).

The Scholarship Index ultimately may be expected to have a positive influence on the experience of students. Given the considerable time and resources bound up in the Scholarship Index, what evidence is there that it is having a measurable impact on teaching performance indicators? Specifically, is the level of engagement in the scholarship of teaching and learning, as measured by the aggregated faculty performance on the Scholarship Index over three years, related to the rate of improvement across a variety of indicators of the student experience?

## Method

The purpose of the following analysis was to determine whether relationships existed between faculties' aggregated performance in a given period of time (three years) on the Scholarship Index, and changes in students' experiences of teaching, as measured by changes in faculties' scores on the SCEQ scales. (For details of the conduct of the SCEQ, including sampling procedures, see Ginns et al. 2007).

We conceptualised the analysis in the following way. SCEQ data have been collected from undergraduates since 1999, while faculties have lodged Scholarship Index claims each year since 2002 (data for 2005 were lodged in the middle of 2006). Our analysis therefore aimed to investigate the possible link between these two institutional programmes by investigating the association between a faculty's three year performance (2002–2004) on the Scholarship Index, and the *change* in the faculty's SCEQ score between 2001 and 2005.

We justify this analysis on the basis that the Scholarship Index is intended to raise awareness of the scholarly basis of teaching, as well as teaching competence. Hence, the introduction of the Scholarship Index constitutes an extended organisational change programme, which is expected to influence students' experiences of teaching for the better, but which will also require an extended period of time to effect change. Thus, if the Scholarship Index is successful as a change programme, its effects should be discernible by examining the changes (if any) in student perceptions between the survey year before that programme's introduction, and the year following the most recent available year of Scholarship Index data. Figure 2 provides a schematic of the relations between the Scholarship Index and SCEQ results.

Prior to the main set of analyses, we calculated the level of *inter-rater agreement* for each SCEQ scale, for each faculty and survey year (2001 and 2005). Inter-rater agreement is a measure of the extent to which multiple raters rate aspects of an organisation's culture or climate in the

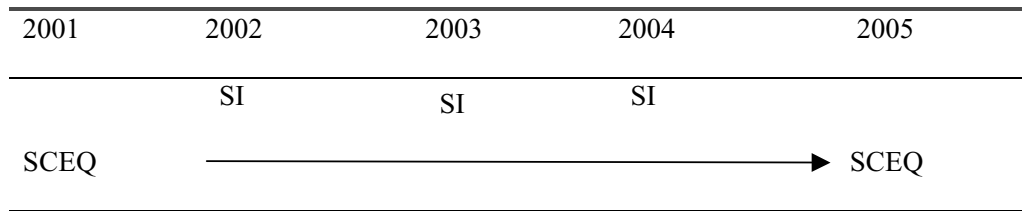


Figure 2. Data sources used in the study.

same way, typically using Likert scale formats (e.g. 1 = ‘Strongly Disagree’ to 5 = ‘Strongly Agree’) (Chan 1998). Appropriate levels of inter-rater agreement support arguments for the aggregation of ratings made at a lower level (e.g. quality of teaching at the degree level) to represent levels of a construct at a higher level (e.g. quality of teaching at the faculty level). We calculated a form of inter-rater agreement,  $AD_{M(j)}$ , using Burke and Dunlap’s (2002) recommended method; a version of this measure suitable for the Overall Satisfaction with Degree Quality item was calculated using methods described in Dunlap et al. (2003). The *AD* (Average Deviation) index is evaluated by ‘determining the extent to which each item rating differs from the mean (or median) rating, summing the absolute values of these deviations ... and dividing the sum by the number of deviations’ (Burke and Dunlap 2002, 160). When the Likert scale used has five options, the recommended cut-off level for justifying aggregation of individual results to the faculty level is an *AD* value below 0.83. Across survey years, scales and faculties, the majority of *AD* estimates were equal to or below 0.83, with the exception of the Appropriate Assessment Scale, where 10/16 estimates for the 2001 survey ranged from 0.84 to 0.95, and 12/16 estimates for the 2005 survey ranged from 0.84 to 0.99. Faculty-level results for this scale should therefore be viewed with caution.

Next, we calculated two sets of variables for each faculty. The first variable was the sum across 2002 to 2004 of the Scholarship Index performances for each faculty, weighted according to the number of full-time equivalent teaching staff in that faculty. This provides a measure of the extent of engagement by each faculty in the scholarship of teaching and learning. The overall performances for each faculty were weighted according to the number of full-time equivalent teaching staff because of the considerable differences in staff numbers between the smallest and largest faculties; in 2005, for instance, university statistics indicated the largest faculty had over nine times the full-time equivalent staff of the smallest faculty. Failing to weight the Scholarship Index results according to this factor would present a highly skewed picture of the degree of scholarly activity in faculties, as larger faculties would appear to be more active simply by virtue of their larger numbers of staff. Inspection of descriptive statistics for the Scholarship Index variable revealed the distribution of points awarded was non-normally distributed (skewness = 1.403, kurtosis = 1.494). Subsequently, we transformed this variable using a logarithmic transformation, improving its distributional characteristics (skewness = -0.023, kurtosis = -0.003).

The second set of variables was the change, for each scale, in SCEQ scores for each faculty between the 2001 survey of undergraduates, and the 2005 survey. For instance, if a specific faculty had a Good Teaching Score of 25 in 2001, and 50 in 2005, the faculty’s GTS change score would be +25. We investigated the associations between these variables using correlational analyses. As we hypothesised a positive relationship in all cases, we used directional (i.e. one-tailed) tests of statistical significance, adopting a Type 1 error rate of 0.05.

With only a small sample (16 faculties), there was a considerable risk that outliers might mask relationships, leading to Type II errors (concluding there is no relationship when in fact there is),

so for each analysis we used regression diagnostics (Hair et al., 1992) to examine standardised residuals in the case of non-significant results. Where standardised residuals for a case were close to  $\pm 1.96$ , or more, we re-ran analyses without those cases to determine whether outliers might be masking a real effect. We interpreted the magnitude of the association using the correlation coefficient ( $r$ ). Cohen (1988) suggested  $r$  values of 0.10, 0.30 and 0.50 be considered small, medium and large effects, respectively.

## Results

### *Good Teaching Scale (GTS)*

Using a Type 1 error rate of 0.05, the relationship between 2002–2004 performance on the Scholarship Index and faculty changes in GTS scores was not statistically reliable,  $r = 0.36$ ,  $p = 0.089$ . However, inspection of case-wise diagnostics suggested one faculty might be an outlier, with a standardised residual of 1.94. Without the outlying faculty, the relationship was statistically reliable,  $r = 0.55$ ,  $p = 0.018$ , indicating that there has been a large relationship between faculty success in Scholarship Index funding on that faculty's change in undergraduate GTS scores.

### *Clear Goals and Standards Scale (CGS)*

The relationship between 2002–2004 performance on the Scholarship Index and faculty changes in CGS scores was not statistically reliable,  $r = 0.38$ ,  $p = 0.074$ . Inspection of case-wise diagnostics suggested two faculties (different from that found in the GTS analysis above) that might be outliers, with standardised residuals of  $-1.83$  and  $1.84$ . When these faculties were excluded from analysis, the relationship was statistically reliable,  $r = 0.49$ ,  $p = 0.039$ .

### *Appropriate Workload Scale (AWS)*

The relationship between 2002–2004 performance on the Scholarship Index and faculty changes in AWS scores was not statistically reliable,  $r = 0.15$ ,  $p = 0.291$ . Inspection of case-wise diagnostics suggested one faculty might be an outlier (different from that found in the GTS and CGS analyses above), with a standardised residual of  $-2.56$ . However, without the outlying faculty, the relationship was still not statistically reliable,  $r = 0.15$ ,  $p = 0.298$ .

### *Appropriate Assessment Scale (AAS)*

The relationship between 2002–2004 performance on the Scholarship Index and faculty changes in AAS scores was statistically reliable,  $r = 0.52$ ,  $p = 0.020$ .

### *Generic Skills Scale (GSS)*

The relationship between 2002–2004 performance on the Scholarship Index and faculty changes in GSS scores was not statistically significant,  $r = 0.39$ ,  $p = 0.068$ . Inspection of case-wise diagnostics suggested one faculty might be an outlier (the same faculty as for the GTS analysis), with a standardised residual of 2.14. Without the outlying faculty, the relationship was statistically reliable,  $r = 0.63$ ,  $p = 0.006$ .

### *Overall Satisfaction Item (OSI)*

The relationship between 2002–2004 performance on the Scholarship Index and faculty changes in OSI scores was not statistically reliable,  $r = 0.18$ ,  $p = 0.255$ . Inspection of case-wise

diagnostics suggested two faculties might be outliers (one of which was also an outlier for the GTS and GSS analyses, the other being an outlier for the CGS analysis), with standardised residuals of 2.01 and -1.89. Without the outlying faculties, the relationship was statistically reliable,  $r = 0.49$ ,  $p = 0.038$ .

### *Average change across all scales*

We created a variable expressing the average change across all of the SCEQ scales. The relationship between 2002–2004 performance on the Scholarship Index and this variable was statistically reliable,  $r = 0.43$ ,  $p = 0.047$ .

## **Discussion**

The goal of the analyses described above was to investigate whether differences in faculties' performances on the Scholarship Index over three years were associated with faculty differences in changes in undergraduate responses on the SCEQ scales, from a year prior to the introduction of the Scholarship Index, to the year following the most recently available Scholarship Index data. This relationship was statistically significant for five of the SCEQ scales: Good Teaching, Clear Goals and Standards, Appropriate Assessment, Generic Skills, and Overall Satisfaction with Degree Quality (although the results for Appropriate Assessment should be viewed with some caution given that levels of faculty inter-rater agreement did not meet the recommended benchmark for a majority of faculties). In addition, three-year performance differences on the Scholarship Index were associated with faculty differences on an average indication of change across all SCEQ scales. The magnitude of the statistically reliable correlations was generally large, ranging from 0.43 to 0.63.

These results provide initial support for the introduction of the Scholarship Index as a means for improving student learning. The associations between three-year Scholarship Index performance and relative changes in Good Teaching Scale, Generic Skills Scale and Overall Satisfaction with Degree Quality Item faculty scores is particularly germane as these three teaching performance indicators are weighted heavily in the university's Teaching Dividend. This is because it shows that improving the scholarship of teaching may ultimately provide an extra funding stream for faculties which can, in turn, be used for further teaching development. Moreover, the Australian National Learning and Teaching Fund uses the CEQ equivalents of these scales in these calculations, suggesting that if the Scholarship Index is successful in improving measures of student learning at the faculty level, this may eventually filter through to performance improvements (and subsequent funding) at the university level. Further, this provides tangible support for Hutchings and Shulman's (1999) suggestion that the scholarship of teaching and learning is how the profession of teaching advances.

Further research is needed to examine more systematically what the faculties that are performing well are doing. It could be argued that the associations are found because the better teachers are those that engage in the scholarship of teaching and learning activities. However, since a qualification in teaching and learning in higher education (which loads 10 points for each individual on the Scholarship Index for each year in which that individual is subsequently employed in the university) is mandated for all new staff in some faculties, this assumption does not appear to be justified. Nevertheless, we do need more information regarding the contributions that the different criteria on the Scholarship Index make in explaining performance differences. For example, highly successful faculties may be marked by the emphasis they place on getting staff to obtain teaching qualifications or write textbooks, which are weighted highly on the scale. It was not possible to capture the disaggregated data for the years mentioned in this paper because

of the way the data were recorded. However, when the data for 2005 and 2006 are available we anticipate that it will be possible to carry out a further analysis to examine the effects of individual items on the Scholarship Index. Another avenue of institutional research might be to continue to refine the composition of the Scholarship Index to increase its capacity to effect change. Examining the variation between faculties in how Scholarship Index funds are dispersed and the purposes to which these funds are put is also a subject for future research. The factors leading certain faculties to be outliers on certain SCEQ change scores, in relation to the Scholarship Index, also merit further investigation.

Finally, it is pertinent to ask why developing the scholarship of teaching has the effects that are seen here on measures of students' experiences. There is also evidence to suggest that the scholarship of teaching and learning, by engaging teachers in the process of inquiring into their teaching, leads teachers to articulate a pedagogical framework or philosophy of teaching (see for example Schönwetter et al. 2002; Brew and Peseta 2004;) in which specific approaches to teaching are viewed as instances of a broader theoretical approach. Kreber found that teachers who did not engage in teaching development courses tended to reflect only at the most basic levels but that engaging in such courses led to higher-level thinking in relation to teaching (Kreber 1999, 2005).

However, we would want to go further and argue that it is in the capacity of the scholarship of teaching and learning to provide a means whereby teachers are enabled to develop a reflexive critique that its power of transformation lies (Brew et al. 2003). Reflexivity involves exploring in a systematic way what Bourdieu (1990, 10) calls 'unthought categories of thought which delimit the thinkable and predetermine the thought'. The categories of thinking that are referred to here are those that are embedded in how people think and act because of who they are. These ways of thinking are influenced by all of their prior experience, their social class, their dispositions and their tastes – what Bourdieu refers to as the habitus. Reflexivity in this sense is not just a question of critical reflection in the light of the literature, nor is it what Woolgar (1988, 8) calls 'benign introspection'. Rather, the scholarship of teaching and learning becomes a process of bringing into the light aspects of thinking and action in relation to teaching and student learning that otherwise would lie hidden. Kreber and Cranton (2000) following Habermas (1987), call these the emancipatory levels of reflection. It is in this way that the scholarship of teaching has the capacity to develop teaching professionalism.

## Conclusion

The scholarship of teaching and learning has become an extremely useful concept in drawing attention to the need for teaching to develop and in providing an organising concept around which teaching developments can cluster. In this paper we have shown that there is a significant relationship, at the faculty level, between engaging in the scholarship of teaching and learning, and changes in students' course experiences. In particular, we found that differences in faculty performances over three years (2002–2004) on the Scholarship Index were reliably associated with changes in student perceptions of Good Teaching, Appropriate Assessment, and Generic Skills development, between 2001 and 2005. Given the importance of these performance indicators, particularly the first and third, for both internal and external performance-based funding of teaching, we argue that the results are of both theoretical and practical interest.

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Paul Ginns, PhD, is lecturer in educational psychology in the Faculty of Education and Social Work, and was formerly the survey officer for the Institute for Teaching and Learning, University of Sydney. He is responsible for the design and reporting of the various large-scale surveys the Institute conducts. His research focuses on research-based and institutionally aligned teaching evaluation systems, as well as the application of cognitive science to the design of learning materials and events.

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