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Enhancing the Research-Teaching Nexus: Building Teaching-Based Research from Research-Based Teaching

Lesley Willcoxson
University of Southern Queensland

Mark L. Manning, Natasha Johnston and Katrina Gething
University of the Sunshine Coast

Definitions and practical interpretations of the research-teaching nexus are various, but almost invariably the link between teaching and research lies in the direction of transferring research into teaching rather than vice versa. This transfer is achieved by using research to inform teaching and, less frequently, by engaging students in research. Usually these students are final year undergraduates and the research project is purpose-built to develop in students the desired course learning outcomes. This paper reports an alternative realisation of the teaching-research nexus. It presents a case study of teaching that was informed by research and engaged both first year and final year undergraduate students in research, using problem-based learning. Subsequently, the research undertaken by the students as part of their learning process directly informed development of a large, government-funded research project, thus completing an unusual two-way relationship in which research underpinned teaching and learning activity, and teaching and learning activity underpinned research.

This paper presents a case study of the development of a research-teaching nexus in the context of two undergraduate business research methods courses in an Australian university, one first year course and one final year course. In both cases existing mathematics-based statistical analysis courses were transformed into problem-based learning courses that engaged students, working in collaborative research groups, in the exploration of an authentic and ongoing research problem: "What factors influence students' decisions to drop out of university?"

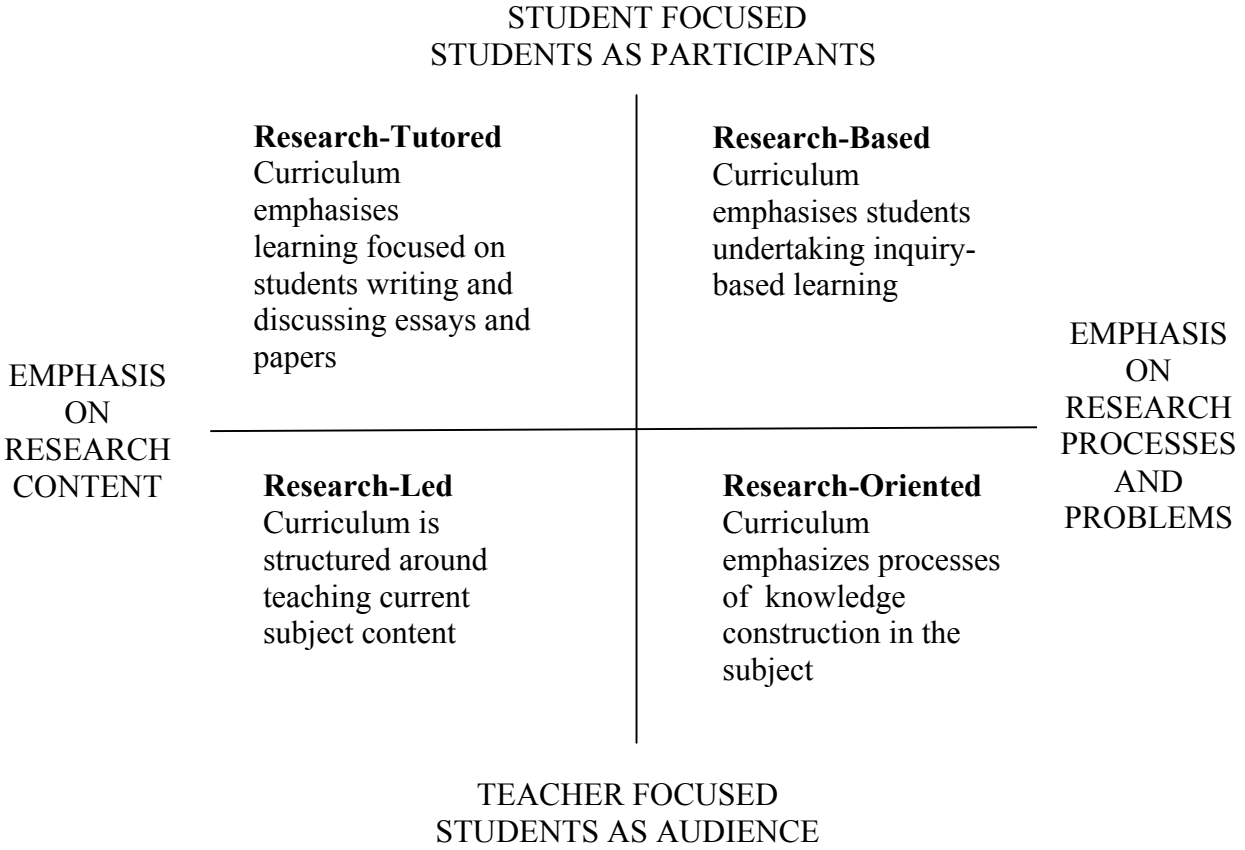
The paper begins with an overview of literature relating to the research-teaching nexus and to problem-based learning. Subsequently it describes the activities undertaken by the students and lecturer in the two courses transformed into problem-based learning courses, as well as the students' responses to the transformation. Next it details how, in a reversal of the usual process of feeding research into teaching/learning activities, teaching/learning activities fed directly into research and led to the gaining of a large government grant. Finally, the paper details evaluations of the transformed courses, presents reflections on the implemented research-teaching nexus and, on the basis of these, makes recommendations related to the implementation of a similar research-teaching nexus in other discipline areas.

Defining the Research-Teaching Nexus

Definitions and conceptualizations of the research-teaching nexus are numerous. Hoddinott & Wuetherick (2005, p. 32) describe "a continuum between teacher-focused research-based course content and a student-focused research-based process of learning." Similarly, in their discussion of "research-led teaching" Holbrook and Devonshire (2005) describe the research-teaching nexus in terms of research-informed teaching – where disciplined-based research informs content – and research skills teaching – where students develop research skills. They add, however, the additional element of research-inquiry teaching, when academics use research to investigate the effectiveness of teaching and learning activities, which Griffiths (2004), in his conception of the research-teaching nexus, refers to as "research-informed teaching." Neumann (1994) also invokes an academic perspective on the research-teaching nexus, describing it as a multi-level relationship focusing on the global (i.e., collectively, departmental research interests provide direction, frameworks and a resource base for the courses offered students), as well as the tangible (i.e., teaching serves to disseminate research knowledge and skills) and the intangible (i.e., teaching serves to develop in students a critical approach to "knowledge" and a positive attitude to learning).

McLean and Barker (2004), however, discover two dominant conceptualizations of the research-teaching nexus: one that emphasizes the role of inquiry-based learning in enabling both researchers and students to build knowledge and negotiate meaning (see, for example, Brew, 2003), and one which emphasizes curriculum design leading to the development of students' research capacity. This latter element is also present in Healey's four-quadrant schema of the research-teaching nexus (Healey & Jenkins, 2006), reproduced as Figure 1. It is this schema that will be used to describe the teaching and learning activities discussed in this paper because of its comprehensive inclusion of the elements of student learning activity present in other conceptualizations of the research-teaching nexus. It should be noted that "often the most effective learning experiences involve a combination of all four approaches, but... the emphasis should be placed on the student centered approaches in the top half" (Healey & Jenkins, 2006, p. 48).

Figure 1
Curriculum Design and the Research-teaching Nexus



Achieving a Research-Teaching Nexus

Intriguingly, while strongly advocating the integration of research into teaching, many of the authors of papers on the research-teaching nexus acknowledge empirical research findings such as those of Hattie and Marsh (1996) which point to the lack of reciprocal relationship between teaching and research (e.g. Neumann, 1994; Griffiths, 2004; McLean & Barker, 2004). It has been argued, however, that such findings are an artifact of the research method used (Verburgh, Elen, & Lindblom-Ylänne, 2007) or of a misinterpretation of the research proposition (Prince, Felder & Brent, 2007), for there is direct evidence to indicate that students themselves value the linking of research with teaching (Robertson & Blackler, 2006; Turner, Wuetherick, & Healey, 2008), as long as this does not lead to the hijacking of the curriculum by the lecturer's personal research interests (Neumann, 1994; Turner et al., 2008). Both administrators and academics argue for the value of the research-teaching relationship in terms of maintaining content currency and achieving competitive advantage in the recruitment of high quality postgraduate students (Taylor, 2007; 2008), and some academics also argue that the integration of research into teaching enables them to try out new research ideas (Griffiths, 2004; Robertson, 2007). In general, this academic-student sharing of ideas is perceived to occur most readily in the teaching of postgraduate students (Smeby, 1998), although Neumann (1994) and Robertson (2007) provide examples of such sharing at undergraduate level, particularly with students in the later years of study and in social science or humanities courses.

Generally, the achieving of a research-teaching nexus in undergraduate teaching involves academic control over content and learning tasks, i.e. in Healey's terms, research-led and research-oriented curriculum design (Healey & Jenkins, 2006). However, as Lips' (1999), Weatherall's (1999) and Robertson's (2007) discussion exemplifies, when the research-teaching nexus is enacted through a research-based curriculum design by engaging students in problem-based (or inquiry-based) learning, students potentially become

co-learners and co-researchers with the academic. In this case, the academic implicitly or explicitly cedes control over the learning process, allowing students to make 'mistakes' and follow avenues of inquiry - as do academic researchers - that may ultimately lead in the wrong direction or to a dead end. This aspect of task and process authenticity contains inherent problems for students who seek certainty or look for their learning to be guided by an "expert." It also poses problems for academic staff whose performance is often evaluated by students in terms of the perceived clarity of task and desired outcomes.

Implementing Research-Based Teaching Through Problem-Based Learning

Problem-based learning (PBL) is a student-centered teaching approach that has its roots in cognitive learning psychology and constructivism (Dewey, 1916; Piaget, 1954; Vygotsky, 1978). It reflects the constructivist assumption that learning inevitably involves the personal construction of knowledge, enacted through social and collaborative learning processes involving realistic and authentic tasks (Draper, 2002; Barrell, 2007).

In PBL, student work is generally organized around a complex, ill-structured problem that may not necessarily have any one correct solution, i.e. a 'messy' problem (Torp & Sage, 2002, cited in Savery 2006) that invokes multiple reasoning paths and multiple solutions Jonassen, 1997). The problem itself functions as 'a content and knowledge organizer, learning environment contextualizer, thinking/reasoning stimulator, and learning motivator' (Hung, 2006, p. 56), especially in courses previously characterized by a lack of student interest (Mykytyn, Pearson, Paul, & Mykytyn Jr, 2008). Weiss (2003, p. 25) notes, however, that a poorly designed problem – far from inspiring learning – may act only as the catalyst for 'a scavenger hunt for information from resources' provided by the teacher.

Although PBL is usually combined with some traditional teaching approaches such as lecturing – and is arguably more effective when it is (Barraket, 2005) – the problem is ideally presented before course content and tools are made available. In a learning environment characterized by discussion and peer interaction (Hmelo-Silver, 2004), students collaboratively strive to locate relevant information and solve the problem at hand. The role of the academic is to facilitate learning rather than "transfer knowledge" and to provide guidance and information, often on a just-in-time basis, and increasingly through the use of electronic communication tools (Hunt & Tyrell, 2000; Van Rooij, 2007). Despite perceptions that PBL involves little or no guidance of learning (Kirschner, Sweller, & Clark, 2006), a significant time commitment to preparation, management, and ongoing evaluation of learning is required to achieve the high level of scaffolding that is critical to the success of PBL (Simons, Klein, & Brush, 2004; Hmelo-Silver, Duncan, & Chinn, 2007; Oliver, 2007). Ironically for the academic from whom so much more time is taken to build a research-teaching nexus using problem-based learning, the act of teaching usually becomes less visible to students than it would have been had s/he simply delivered research-led lectures.

Enacting the Research-Teaching Nexus in Undergraduate Classes: A Case Study

Problem-Based Learning in Year Three: The Existing Course

In the small regional university that is the focus of this case study, Advanced Research Methods is a semester 1 compulsory course for all undergraduate third year marketing students and an optional course for other undergraduate students in the Faculty of Business. Its long-term goal is to provide graduates with the skills to conduct research in the business world. Its short-term goal is to provide marketing students with the skills necessary to work in small groups and complete a research consultancy for a local organisation in the following semester. The course spans 13 weeks, comprises 25% of a full-time student load, and involves students each week in a two-hour lecture, a one-hour tutorial, and a one-hour computer laboratory. To gain entry into the course students are required to perform at least at Credit level (65% or higher) in their first year introductory course, Applied Research Methods.

In its original form, prior to the revisions described here, instruction in Advanced Research Methods was heavily concentrated upon the mathematics of statistics. Three textbooks were used – a univariate statistics text (Hair, Anderson, Tatham, & Black, 1998), a multivariate statistics text (Argyrous, 1996), and a guide to the SPSS statistical software package (Coakes & Steed, 2001) – as well as a 416-page book of selected readings. Assessment comprised mid-semester (15%) and final (50%) exams and two assignments (15% and 20%) in which students were provided with 'dummy' data sets and required to conduct and write up appropriate statistical analyses.

Despite being a demanding course, many students performed very well in Advanced Research Methods. Upon its completion they had the skills to analyze quantitative data using univariate and multivariate techniques, yet when they undertook their research consultancy the following semester, they often made naïve mistakes such as poor choice of variables to represent the concepts they hoped to measure and poor choice of measurement scales which made analysis of data difficult.

In its last year of traditional presentation, 38.96% of Advanced Research Methods students achieved a final grade of Credit or higher. At the same time, however, a large proportion (37.66%) of students failed the course, including 18.42% of students who, although still formally enrolled, dropped out and did not attempt to take the final exam.

Problem-Based Learning in Year Three: The Revised Course

The goals for the transformation of Advanced Research Methods into a PBL course were, first, to increase the engagement of students with the course – particularly less able students – in an effort to reduce both the drop-out and failure rates and, second, to provide students with more practical research skills. The nexus between teaching and research was to be achieved not just through a research-based curriculum (i.e. problem-based learning), but also through a research-led approach which saw relevant examples from the academic's own organizational climate research included in lectures and the use of a book of readings which included several of the academic's papers illustrating the application of different statistical techniques. Through use of a textbook co-written by the academic (i.e. Manning & Munro, 2006) instead of the previous three texts, the curriculum also reflected a research-oriented approach aimed at developing simultaneously in students a theoretical understanding of survey data statistical analysis as well as the practical capacity to use SPSS to analyze data.

Concurrent with the course transformation, within the Faculty a small group of academics (including the academic teaching the course) were discussing the possibility of applying for a teaching grant focusing on student retention and attrition. The value of student input into such a project was recognized, and thus it was decided that the problem at the core of the curriculum should be "What factors influence students' decisions to drop out of university?" This problem not only met the condition of authenticity, but it was also a "messy" problem. It also seemed likely to engage students' interest, challenging them to weigh relevant literature against personal experience when developing research constructs. This research question was presented to students at the end of the first introductory lecture.

The problem-based learning activity spanned two stages: Stage 1, design of the study; and Stage 2, quantitative data gathering and analysis. In Stage 1, the 91 students undertook literature searches and ran focus groups in tutorials, choosing students from amongst them to act as focus group moderator and recorder. Building on these preliminary activities, in small groups they identified relevant concepts, developed conceptual frameworks and operationalized the concepts as measurable questionnaire variables. In an individual assignment (worth 20%) each student reported on these concepts and frameworks and consequent hypotheses. In whole group discussions questionnaire items devised in small groups were selected or rejected for inclusion in a single questionnaire. In Stage 2 students used hard copies of this questionnaire to gather data, and then they entered the data into SPSS files which the academic aggregated into a single SPSS file and posted on Blackboard. Students then individually decided upon the analyses required, conducted the analyses using SPSS and individually wrote up the results of their analysis as their second assignment (worth 30%). At the end of the course students completed an examination (worth 50%).

Throughout the course, communication between the academic and all 91 students took place online via Blackboard, as well as in lectures and tutorials. Tutorials and Blackboard represented environments within which possibilities could be explored – in small groups in tutorials, and with the whole group via Blackboard. Lectures represented environments for information gathering and whole group decision-making. On Blackboard students could post, for example, themes or concepts identified in the focus groups or academic literature, details of relevant articles, competing models describing relationships between concepts, or details of instruments available to measure identified concepts. In each two-hour lecture during Stage 1, the last 30 minutes were devoted to discussion and democratic resolution of issues relating to project design, such as concepts to be measured, the model to be tested, the instrument/items to be used, the population from which the sample would be selected, and the logistics of data collection.

In Stage 1, each week the academic "drew a line in the sand" and specified which issues needed to be resolved by the end of that lecture. One of the earliest sets of issues resolved related to the concepts to be measured and the model specifying the relationship between those concepts. Two models, both with strong support, had been posted onto Blackboard. In the lecture, arguments were presented to support both. The issue was resolved via a show of students' hands. The outcome was viewed as "less than satisfactory" by some who had supported the alternative position, and at least one student commented to the academic that he would withdraw from the course because of the model chosen (he didn't).

Throughout the process students were allowed to make both good and poor decisions. For example, in the lecture when the group decided how each concept would be measured, the students had agreed upon the questionnaire items that were to be used to operationalize the research concepts and were satisfied they had completed this part of the design process. It was not

until it was brought to their attention by the academic that anyone in the group realized that they hadn't worked out how to measure their most important concept and the focus of the whole study - student retention. The academic's suggestion that his research involving employee turnover intention might provide some clues as to how to measure student retention (amongst students still enrolled) led eventually to students including in their questionnaire an item that required students to respond to the statement, "I am likely to leave this university within the next twelve months," using a 7-point scale.

In another example, students voted to collect data within lectures for "core" courses (introductory courses compulsory for all undergraduate students). This method was agreed upon – despite the fact that no student had thought to ask permission from the staff members teaching these courses – and the academic teaching Advanced Research Methods made no comment about the decision. In Stage 2 of the project, it was found that such permission would not be forthcoming, and the students hurriedly made alternative arrangements.

Problem-Based Learning in Year One: The Existing Course

Applied Research Methods is a 13-week, semester 2 course, compulsory for all undergraduate students in the Faculty of Business. Its goal is to develop basic business research skills.

In its original form the course used three textbooks (Cavana, Delahaye, & Sekaran, 2001; Coakes & Steed, 2001; Voelker, Orton, & Adams, 2001), and it focused on the mathematics of statistics using a traditional lecture-tutorial format. Assessment comprised a literature review and short answer questions (20%), tutorial participation (10%), two assignments (15% each) in which students were provided with "dummy" data sets and required to conduct and write up specified statistical analyses, and an exam (40%).

The course was pitched at a low level, mostly requiring students to perform basic calculations following patterns set by the teacher. Implicitly it was assumed that these activities would develop in students the required conceptual understanding of research methods. Although over a third of all students usually received distinction or high distinction grades in the course, these students often did not in subsequent courses demonstrate the capacity to apply appropriate research methods or adequately critique empirical research.

Problem-Based Learning in Year One: The Revised Course

The revision of Applied Research Methods was designed to develop students' conceptual understanding so that graduates of the course would be able to choose and use appropriate research methods and statistical analyses rather than just perform calculations and conduct specified analyses. The revision resulted in a course that, like the more advanced course, challenged students to develop conceptual frameworks and hypotheses and engaged them in data collection and analysis. However, it used a modified, more overtly guided, less-collaboratively-based form of PBL to achieve this. Although students were asked to grapple with an authentic problem and their activity led to development of a questionnaire designed to address the problem, they were not asked to cooperatively decide upon and resolve all issues associated with researching the problem.

As with the third year group, the 229 first-year students were given the question, "What factors influence students' decisions to drop out of university?" They too conducted focus groups in tutorials to gather peer responses to this question, and in tutorials each student also conducted an in-depth interview on this question with another student. In tutorials, rather than developing their own research methods and procedures, however, students were provided with potentially relevant conceptual frameworks and analysis options. Guided by an academic, in groups students discussed and debated the merits of these and their relevance to the given problem. Each student subsequently submitted a qualitative analysis of focus group content and their interview data, a resultant set of hypotheses, and a one page questionnaire designed to quantitatively investigate the issues raised in the focus groups and interview (worth 20%).

Using the students' focus groups analyses, hypotheses, and questionnaires, as well as academic literature on retention and attrition as a foundation, the academic teaching the course constructed a questionnaire which all Applied Research Methods students completed during a lecture. This questionnaire data, collated by the lecturer, was then given to students to analyze. Their report on this analysis formed part of the course assessment (30%), with the remaining assessment marks allocated to tutorial participation (10%) and an exam (40%).

Evaluating Impacts of the Research-Teaching Nexus: Student and Staff Outcomes

Student Outcomes

The introduction of PBL and other aspects of the research-teaching nexus was accompanied by dramatic changes in student grades in both courses (Tables 1 and 2). In the third year course, the proportion of students failing fell from 37.66% to 18.68% and the proportion of students who did not take the final exam

fell from 18.18% to 8.79%, yet there was no increase in the proportion of students receiving High Distinctions (1.30% to 1.10%) or Distinctions (15.58% to 12.09%). The proportion of students receiving a grade of Credit or higher, remained relatively stable pre- to post-implementation of the PBL course, rising only from 38.96% to 41.76%. This pattern of results in the third year course arguably shows that the changes implemented served to make the course less intimidating (as evidenced by lower drop-out rate) and more comprehensible (as evidenced by the lower failure rate), without compromising academic standards by simply making the course easier.

In the first year course failure rates rose (25.37% to 32.32%) and the proportion of students receiving a Distinction or High Distinction dropped considerably (from 34.63% to 20.52%).

The reduction in high grades may be seen as an indicator of increased rigor in the course. In this context, the relatively small increase in the failure rate may be seen as a positive. It suggests that, despite the greater rigor, the PBL approach was effective in helping weaker students comprehend the course material.

Table 1
Student Results MKG301 *Advanced Research Methods*, 2005 and 2006

	2005 (n=77)		2006 (n=91)	
	Frequency	%	Frequency	%
Grades				
High Distinction	1	1.30	1	1.10
Distinction	12	15.58	11	12.09
Credit	17	22.08	26	28.57
Pass	18	23.38	36	39.56
Fail	29	37.66	17	18.68
Breakdown of fails				
Didn't sit final exam	14	18.18	8	8.79
Completed all assessment	14	18.18	5	5.49

Fail: < 50%, Pass: 50-64%, Credit: 65-74%, Distinction: 75-84%, High Distinction: 85-100%.

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Table 2
Student Results BUS101 *Applied Research Methods*, 2005 and 2006

	2005 (n=205)		2006 (n=229)	
	Frequency	%	Frequency	%
Grades				
High Distinction	22	10.73	6	2.62
Distinction	49	23.90	41	17.90
Credit	50	24.39	59	25.76
Pass	32	15.61	49	21.40
Fail	52	25.37	74	32.32

Fail: < 50%, Pass: 50-64%, Credit: 65-74%, Distinction: 75-84%, High Distinction: 85-100%.

Informally, it was clear to the academic teaching the courses that both first and third year students had engaged more effectively with subject matter typically perceived as difficult and that they had enjoyed the opportunity to investigate a topic of direct relevance to them. Many were also pleased to have the ideas developed in the process of their learning fed back into the research on which their teacher was engaged. The value of their contribution was made manifest two years later when all Faculty of Business students were invited to complete a questionnaire that formed part of a national study on student retention and attrition, for which the group of academics who first devised the research problem had received a large government grant.

Additionally, two of the students involved in the third year course so enjoyed the experience that they opted to undertake an Honours year supervised by the academic teaching the course, and these two students are co-authors of this paper.

Academic Staff Outcomes

Academic staff outcomes arising from the development of this research-teaching nexus took two primary forms: student evaluation responses and the gaining of the large grant. Typically at the end of each course in this university students are asked to evaluate their teacher's performance, with the results of such evaluations used for the purposes of performance review and promotion. The summary of the results for *Advanced Research Methods* and *Applied Research Methods* for the year prior to the introduction of the

PBL course and the year of the PBL course are provided in Table 3.

In the third year course, no dramatic changes were observed in response to any of the items and responses were stable for two items, including overall satisfaction. Slight improvements were found in responses to the items relating to the teacher's manner and the support provided, yet slight reductions were found in responses to items relating to course structure, clarity of concepts and objectives, and learning environment. This suggests that the uncertainty and reduction of teacher dominance associated with engaging students in a PBL research-based curriculum may, paradoxically, lead to improved student learning outcomes while potentially damaging academic staff outcomes. In the first year course, improvements were found in responses to almost all evaluation items, and particularly those relating to the effectiveness of the learning tasks, course structure, and teacher's manner. Given these improvements, it seems likely that the more negative evaluation of the feedback provided reflects the academic's tendency to ask students further questions rather than provide the answers requested. Reductions in evaluation scores, such as those seen here, do not argue against the introduction of a research-based curriculum, but they do highlight the need for the gathering of student success data such as those presented in Table 1.

Beyond student evaluation outcomes, the unusual teaching-research nexus described in this case study underwrote a very positive outcome for the academic teaching the courses and his colleagues. The data gathered by third year students and the questionnaire completed by first year students were analyzed and used in the construction and trial of an initial questionnaire which, several drafts later, became the questionnaire used to collect data for a national project on attrition and retention. This project was one of only 17 selected from 154 applications to receive a grant that year from the Australian Learning and Teaching Council – the peak national body for learning and teaching – and it was awarded funding of $219,877 to conduct research into attrition and retention and use that research to bring about changes in the seven project partner universities. The input of the undergraduate students involved in the research-based curricula was vital in giving focus to the research proposed in the grant application, and it also enabled testing of a questionnaire, demonstrating the viability of the project and that progress had been made prior to the application for funding.

Conclusion: Reflections and Recommendations

The transformation of Advanced Research Methods and Applied Research Methods into research-based, PBL courses achieved many of the envisaged teaching and learning outcomes: they achieved desired changes to failure rates without lessening of the courses' intellectual rigor; in Advanced Research Methods naïve mistakes commonly made in the following semester market research consultancies were successfully brought forward, and positive feedback on improved student performance was received from the coordinator of the market research consultancies; in Applied Research Methods students dealt more effectively with notoriously difficult subject matter. The transformation also underpinned the success of academic colleagues in obtaining a large, national teaching grant.

From an academic's perspective, PBL involves a much closer engagement with students than does the traditional presentation of courses, and the implementation, management, and assessment of PBL demands a significantly greater time commitment. Students interact more with their teacher, asking questions both face-to-face and through emails and postings on Blackboard. Although this additional interaction enables the academic to better understand how students are progressing, watching the slow movement of students through the process (particularly in Stage 1 of the advanced course) can also be emotionally taxing. Further, although PBL is not unguided teaching, this is not always appreciated by students who may become critical of a perceived lack of support during the course and ultimately evaluate the course as lacking clarity of direction or structure or feedback – a potential negative staff outcome that needs to be addressed through systematic data collection. Nevertheless, in terms of learning outcomes, research-based teaching delivers significantly greater benefits to students. They not only gain knowledge but also learn to ask appropriate questions and subsequently apply what they have learned even in complex or ambiguous circumstances.

In the case study presented, in an unusual two-way flow of activity, research-based teaching led to both improved learning outcomes for students and improved research outcomes for academic staff. Although the context of this research-teaching nexus case study is the teaching of research methods, the two-way process described may be adapted to any discipline in which student perspectives on a specific topic could productively inform development of a teaching or research grant application. For example, assessable documentation detailing students' strategies for thinking about, say, a physics or a history problem that forms part of a PBL course could underpin a grant application for research into how to address the difficulties faced by students and required curriculum changes. Ultimately, the opportunity to "double-dip" on the research-teaching nexus provides a powerful incentive for an academic to give the time required to develop effective research-based teaching.

Table 3
Student Feedback on Teaching: MKG301 *Advanced Research Methods* and BUS101 *Applied Research Methods*, for courses in traditional and PBL form (responses on 5-point Likert-type scales)

	3rd Year		1st Year	
	Original	PBL	Original	PBL
1. The lecturer makes clear what I need to do to be successful in this unit.[1]	4.50	4.20	3.90	4.01
2. The lecturer is skilled at developing a class atmosphere conducive to learning.[1]	4.40	4.30	3.50	4.11
3. The lecturer has a good manner (eg friendly, helpful, enthusiastic).[1]	4.60	4.80	4.00	4.37
4. The lecturer shows appropriate concern for student progress and needs.[1]	4.00	4.10	3.70	3.70
5. The lecturer provides feedback that is constructive and helpful.[1]	3.90	4.00	3.70	3.52
6. The lecturer helps me to improve my understanding of concepts and principles.[1]	4.30	4.10	3.70	3.78
7. The lecturer structures and presents the unit in ways that help me to understand.[1]	4.30	4.10	3.60	3.82
8. The lecturer is knowledgeable in their subject area.[1]	4.70	4.70	4.50	*
9. The lecturer sets tasks that are useful as learning experiences.[1]	4.10	4.30	3.50	3.71
10. Overall, how would you rate the teaching of this lecturer in this unit?[2]	4.60	4.60	3.80	4.05

[1]1 = 'strongly disagree', 2 = 'disagree', 3 = 'neutral', 4 = 'agree', 5 = 'strongly agree'.[2]1 = 'very poor', 2 = 'poor', 3 = 'satisfactory', 4 = 'good', 5 = 'very good'.* item not included in survey

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LESLEY WILLCOXSON has a PhD in Education and has worked in academic staff development roles at Sydney University and Murdoch University, Australia. She was the leader of a seven (later six) -university collaborative project on factors associated with attrition and strategies underpinning retention. Her research interests lie primarily in the areas of attrition and retention, teaching development, staff development, organizational learning and organizational change. She is currently Associate Professor (Adjunct) in the Faculty of Business and Law at the University of Southern Queensland.

MARK MANNING**,** a registered psychologist, has been a lecturer in psychology at both Griffith University and

the University of Western Australia, a lecturer in Research Methods at Southern Cross University, and is currently a lecturer in Management at the University of the Sunshine Coast. He has conducted research in the area of neuroscience and, more recently, in organizational climate in the Tourism and Hospitality industry. He has published this work in journals such as *Theory & Psychology, Vision Research*, *Journal of Nervous and Mental Disease*, *European Journal of Marketing*, and *Tourism Analysis*.

KATRINA GETHING is a consumer research scientist with the Department of Employment, Economic Development and Innovation, Queensland Government, Australia. She has a background in communications and marketing research. In her current position Katrina researches sensory science, shopping and food behaviours and nutritional intervention strategies for the horticultural and seafood industries.

NATASHA JOHNSTON was recently awarded a First Class Honours Degree by the Business Faculty at the University of the Sunshine Coast. Her thesis considered the relationships between a number of organizational parameters within an international coffee franchise system. It is her intention to further this work at the Doctoral level. Currently she is employed as a consultant in International Relations and as a Tutor in Consumer Behaviour and Services Marketing at the University of the Sunshine Coast.

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