REDUCING THE EXPECTATIONS GAP: USING AN ACADEMIC LITERACIES APPROACH TO IMPROVE STUDENT WRITING IN ECONOMICS*

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ABSTRACT

This paper reports on the evaluation of a writing program embedded within an intermediate macroeconomics course at an Australian university. This program was designed to address core issues identified by an academic literacies analysis of what might be called the higher education writing problem: an observed poor quality in the writing of higher education students across a range of disciplines. The program attempted to close an expectations gap between student and academic perceptions of what constitutes “good writing” by using clear and detailed assessment criteria, providing exemplars of good writing, and interacting with students about their writing in a series of writing workshops. Regressions of assignment results on a range of factors and a comparison of assignment results for students who attended the writing workshops versus those who did not, indicate a small but positive, and statistically significant, effect of important aspects of the writing program on assignment outcomes. A distributional effect was also observed whereby students at the pass-fail margin who attended the writing workshops performed better than those who did not. Limitations of the study are identified and suggestions are made for further work.

Keywords: academic literacies, assessment expectations, embedded writing programs.

JEL classifications: A13, A22

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1. INTRODUCTION
The poor quality of student writing in undergraduate university courses is now legendary. It applies across a range of discipline areas, including economics, and is both a source of frustration for academics responsible for grading poorly written essays and reports, and a cause of concern for employers wanting to hire graduates with the ability to communicate clearly and effectively. Research over the last ten years or so into problems with the quality of student writing in higher education has delivered a number of insights into these problems and provided the rationale for programs to improve writing quality.

The contributions of Lea and Street (1998) and Carless (2006), for example, have provided interview and survey-based evidence that identifies differing perceptions and expectations about student writing and assessment structures as an important factor affecting the quality of student writing. Further, Hansen (1998) and Simpson & Carroll (1999) report on the design and implementation of writing intensive programs that embed the explicit recognition and assessment of writing skills into economics subjects in ways that directly address the problems identified in the literature. There is, however, little work to date that carefully evaluates the effectiveness of these writing programs. This is partly because evaluation is difficult, involving a number of measurement problems, and partly because many writing programs (including those referred to above) are targeted at small classes which provide little data that can be used for evaluation.

In an earlier paper, the present authors described a writing program which systematically attempted to address the perceptions and expectations dimensions of the student writing problem in a large intermediate macroeconomics subject (cf. Docherty, Tse, Forman & McKenzie, forthcoming). A rich set of quantitative and qualitative data was collected from that program about student utilisation of program resources and student performance in various written assessments. The present paper reports findings from a study of quantitative data collected from that program.

The paper proceeds by reviewing the relevant literature on student writing in higher education, and economics courses more specifically. It then briefly outlines the writing program before describing the data collected from it and reporting the results of regressions relating assessment outcomes to various dimensions of the program. Some
conclusions are drawn in the final section and suggestions made for further work.

2. LITERATURE REVIEW
The “student writing problem” in higher education is anecdotally characterised as the poor ability of students to write clear and cogent prose that directs attention to the ideas being discussed rather than to the writing itself. Koutsantoni (2007, p.21) distinguishes between two dimensions of the problem, the first associated with poor grammar, spelling and syntax, and the second associated with poor organisation of ideas and deficient argument construction. In economics, the latter often takes the form of poor specification of assumptions and an apparent inability to undertake analysis within a coherent conceptual framework.

Hansen (1998, p.82) argues that the problem is to some extent inherited by universities but that little is done to correct the problem once students arrive at university. This is particularly the case in the economics discipline where students are often set assignment tasks that require them to solve problem sets and answer multiple choice questions rather than to write papers that academics regard as too time-consuming to grade (Walstad 2001, pp.283-285). Davies, Swinburn and Williams (2006, pp.vii-viii) advance a similar argument but make the additional point that this lack of skills means that students are not able to “make the most of their education” while at university.

An implication of framing the “writing problem” in these terms is that its source is often regarded as a reflection of the quality of the students being taught. Lea and Street (1998, pp.158-159) describe this way of thinking about student writing as the study skills approach. According to this approach, student literacy is comprised of a set of general abilities associated with reading and knowledge of such things as sentence-level grammar and syntax. The problem arises because students lack these skills, and the solution is to more effectively inculcate them although the success of this strategy is ultimately limited by the underlying ability of the students in question. Lea and Street compare this with a second academic socialisation model that defines skills more broadly to include a knowledge of and ability to adhere to academic conventions such as correct referencing and the avoidance of plagiarism. According to this approach, student writing
may be improved by more effectively inducting students into academic society and teaching them to better follow the appropriate conventions. The second model to some extent encompasses the first but both models imply that writing skills are essentially generic and once learned, can be applied with relative ease to new areas of study.

A third model, however, provides a very different perspective. The academic literacies model views literacy as socially constructed and context dependent. Rather than being a set of generic skills that can be applied across a range of disciplines, writing skills vary from discipline to discipline as do the features of what constitutes “good writing”. Koutsantoni (2007, p.19) argues, therefore, that the nature of writing is closely linked to the “discourse communities” within which it is written and within which it is intended to be read (cf. Bloxham & West 2007, pp.77), and its features are governed by the epistemologies, ideologies and methodologies of these academic communities. Lillis and Turner (2001, pp.62-64) describe writing and language within this view as tools for constructing ideas and knowledge rather than simply as instruments for conveying ideas and knowledge as the study skills model might suggest.

Lea and Street (1998, p.165) outline the importance of discipline-specific contexts for writing with reference to the example of a student majoring in history who took a course in anthropology. While the student achieved high results in his history major, as well as in subjects taken prior to university, he scored poorly on his first anthropology paper receiving feedback that suggested a weakness in his ability to structure arguments. Lea and Street analyse this apparent difference in the student’s ability to write in history relative to anthropology as in fact reflecting a difference in the methodologies of the two subjects themselves. The student constructed an argument for his anthropology paper based around the description of facts and events, an approach that had delivered high results in history. But Lea and Street argue that the methodology of anthropology makes greater use of abstract theorising and values factual description to a significantly lesser extent than does the methodology of history. The meaning of terms such as ‘structure’ and ‘argument’ thus take different concrete forms in the two disciplines so that the student’s successful structure and argument in one subject did not translate into the other.
An interesting aspect of this case was the grader’s evaluation of the problem. While the grader interpreted the poor quality of the anthropology paper as reflecting the student’s inattentiveness to ‘structure’ and ‘argument’, Lea and Street suggest that it was not that the student did not value structure or argument but that his conception of these features of writing for the discipline did not match that of the discipline community. Interestingly, while Lea and Street (1998, pp.163-164) provide evidence that students are aware of problems associated with switching between subjects with different epistemologies, academics are less aware of this problem and, more disturbingly, lack awareness of the importance that their own epistemology plays in the way they interpret what they read.

In economics, this methodology probably takes the form of the hypothetico-deductive method where assumptions and initial conditions are specified, a proposition or set of propositions is formulated, and then a set of logically implied consequences is inferred. These logical consequences may also be tested against data from which statistical inferences are drawn about the probability of their truth. The method of falsification then allows hypotheses to be held tentatively until such time as they are rejected on the basis of statistical inference (Blaug 1980). McCloskey (1983, p.482) has raised a number of problems with this methodology (as have a number of others, see, for example, Caldwell 1982 and Dow 1985) suggesting that in reality many economists apply quite different methodologies in their research and writing. It is, however, the case that economic methodology is rarely articulated to the majority of students who are essentially left to pick it up by observing its implicit use in lectures and textbooks.

Lea and Street (1998, p.164) suggest that this lack of methodological self-consciousness may lead academics, dissatisfied with the underlying epistemological methodology of a piece of student writing, to use more general dimensions of the writing, such as ‘structure’ and ‘argument’, to articulate their dissatisfaction. Students are thus sent inaccurate and misleading signals about the nature of problems with their writing and are likely to experience a kind of dissonance between feedback and their own perceptions of their writing, especially where they have given careful attention to such features as structure and argument. Lea and Street also argue that such differences are generalisable to a much broader range of disciplines,
that students are aware of these differences, and that this awareness is the source of considerable uncertainty for students as they approach writing tasks in unfamiliar subjects (cf. Bloxham & West 2007, p.79).

This dimension of the problem has been further analysed in the literature in terms of the tacit nature of the knowledge academics possess about the epistemology and methodology underpinning a discipline area. Ecclestone (2001), O’Donovan, Price and Rust (2004), Price (2005) and Sadler (2005) all identify the tacit nature of this knowledge and point out the impact it may have in reducing the effectiveness of student assessment processes (cf. Bloxham & West 2007, p.78).

Analysis of the student writing problem in terms the academic literacies model, the tacit nature of understandings academics have about the epistemologies and methodologies of their discipline areas, and the expectations gap between student and teacher that this tacit knowledge creates, suggests a range of possible measures to improve student writing. Firstly, it suggests that writing programs are more effectively embedded in discipline-based units of study rather than offered to students from a range of discipline backgrounds because the nature of good quality writing is discipline-specific. Secondly, academics should increase their own awareness of the epistemological and methodological dimensions of how they interpret student writing in their specific discipline area. Thirdly, the gap between student and academic expectations of what constitutes good writing could be reduced if academics communicated these expectations to students more effectively and provided more resources that help students to understand these expectations. Fourthly, feedback that more accurately addresses the fundamental problems with student writing could be provided rather than misdirecting students to features of their writing not directly related to the real sources of problems.

A number of these issues have been addressed either explicitly or implicitly in programs designed to improve student writing. Hansen (1998) reports on a Writing Intensive (WI) course at the University of Wisconsin, Madison in which the “critical role of writing in the learning process” (Hansen 1998, p.80) is emphasised. This course in elementary economics, with an enrolment of between 50 and 100, embeds a program of writing instruction within an economics course, the objectives of which are linked explicitly to graduate proficiencies developed in conjunction with colleagues and employers. Students are
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given complementary writing instruction, required to complete a range of writing tasks, and feedback is an essential element in the program. Hansen clearly spells out a set of assessment criteria at the beginning of each semester and students study a collection of good quality writing in the field of economics which provides them with models they can use to shape their own writing. The Wisconsin program thus embodies all four measures outlined above to improve the quality of student writing.

Simpson and Carroll (1999, p.402) report on a program of WI courses in the undergraduate economics offering at Davidson College in the US. Three features characterise these courses: firstly, written assessment makes up at least 50% of final grades; secondly, academic support and feedback is provided for the entire writing process including drafting, editing and revising of drafted material; thirdly, course enrolment is capped at 12. The program asks students to “become flexible, critical thinkers who [are] simultaneously knowledgeable in a discipline and able to apply their skills beyond it” (Simpson & Carroll 1999, p.408). This program strongly emphasises the last of the measures outlined above.

Northedge (2003, pp.173-174) argues that higher education teachers should address the expectations gap by guiding students through their own exploration of discipline-specific epistemologies and methodologies, and by engaging them in on-going dialogues about these features of the discipline. This can be facilitated, he argues, by designing appropriate student learning experiences. Northedge’s conception of “dialogue” in this context can include traditional lecture-style teaching but students must be given the opportunity to converse with their teachers in order to articulate the way they understand discipline-specific frameworks and in order to allow their teachers to provide feedback about whether these understandings are consistent with established interpretations.

Carless (2006, p.230) suggests a useful framework for structuring Northedge’s recommendation of dialogue between academics and students to reduce the expectations gap and to facilitate a greater shared awareness of others’ perceptions of good writing. He proposes four objectives which may be used to organise ‘assessment dialogues’ between tutors and students:

- Helping students to unpack assessment criteria;
- Genuine use of these criteria to grade assessment tasks;
Greater awareness by tutors of the formative function of comments on written assessment;

Moderation processes to improve student perception of fairness in the grading process.

A number of reported writing programs and strategies have incorporated aspects of Carless’s measures. The criterion referenced approach to assessment attempts to close the expectations gap by having academics articulate their expectations using carefully formulated criteria against which assessment tasks are graded (Rust, Price & O’Donovan 2003). Writing across the curriculum (WAC) or writing in the disciplines (WID) programs stress the integration of teaching about writing into disciplinary courses and view writing as a tool for discipline-specific teaching as well as for improving student writing generally (cf. Cohen & Spencer 1993). Somerville & Creme (2005), for example, describe a WID program which placed heavy stress on a freewriting strategy to provide students with the opportunity to find a ‘voice’ in the writing process. Feedback on the writing produced from this strategy was then provided to shape student writing into more formal pieces that conformed to standard expectations of discipline-based writing. Bloxham & West (2007) describe an initiative that used well defined assessment criteria, grade descriptors and feedback on initial papers, and they provide student interview evidence that demonstrates the effectiveness of this approach. Saltmarsh & Saltmarsh (2008) report a program in which students completed regular “critical reviews” of key disciplinary texts which became the focus of student-teacher dialogues that helped students to engage with key methodological issues in the area of teacher education.

All of these programs are examples of practical approaches that may be taken to improve student writing by reducing the expectations gap described above. But despite this, most of these approaches remain outside the reach of large degree courses which have enrolments numbering in the hundreds. Evaluation of these approaches has also tended to be conducted on small samples of students and has tended to be mainly qualitative in nature. Scope therefore exists to develop large class programs which embody the key measures of these smaller scale initiatives and which may also provide the opportunity for quantitative evaluation that can complement the kinds of evaluation already reported. The following
sections outline an attempt to implement such a program and initial findings from the program’s evaluation.

3. FEATURES OF THE WRITING PROGRAM

The writing improvement program developed by the present authors attempted to reduce the expectations gap between academics and their students about what constitutes high quality writing in an intermediate macroeconomics course using a number of the measures described in the previous section. The course offered by the School of Finance and Economics at the University of Technology, Sydney (UTS) had an enrolment of 269 students, was implemented by a team made up of both academic language and subject area experts, and had the following key features:

- fifteen assessment criteria relating to the structure and content of assignments were specified and papers were graded carefully against these criteria;
- a variety of writing support materials were provided online;
- a series of writing workshops were held to help students understand the assessment criteria;
- a single essay in the assessment structure was replaced with two smaller papers on related questions to facilitate the provision of feedback to students and its use by them to learn and improve their writing.

A detailed description of the program is provided in Docherty, Tse, Forman and McKenzie (forthcoming) but a number of these key features are worth discussing briefly. The fifteen criteria were designed to provide students with a relatively detailed picture of what lecturers in the course would be looking for when grading assignments and are outlined in Table 1. While the criteria were formulated in relatively general terms, they articulated the importance of logical development in argument structure, connections between ideas and an appropriately critical stance in the writing expected of students. They were also cross-referenced to a sample essay from a previous semester on a different question to provide students with concrete examples of how the criteria could be reflected in student writing and they were also discussed and explained in the writing workshops considered below. These criteria were printed on the assignment coversheet and made available on the subject’s website (a Blackboard Version...
Table 1: Assessment Criteria

ARGUMENT/CONTENT/STRUCTURE
1. Executive Summary states main features of argument and conclusions
2. Introduction orients reader to the approach taken in the assignment
3. Assignment uses a good range of relevant concepts and ideas
4. Assignment demonstrates understanding of relevant concepts and ideas
5. Explanation/argument is developed in a logical sequence
6. Clear connections are made between points/ideas
7. Assignment critically evaluates arguments and conclusions in the literature
8. Conclusion summarises main points and results

PRESENTATION
9. Clear layout
10. Intelligent use of graphs and diagrams
11. Appropriate use and presentation of referencing and footnote details

STYLE
12. English usage is clear and easy to follow
13. Acceptable spelling and grammar

SOURCES
14. An appropriate range of sources is consulted
15. Adequate acknowledgement of ideas and data used in assignment

6 - supported platform called *UTS Online*) well in advance of the due date. Each paper was assessed on a six point scale (poor, marginal, satisfactory, good, very good and excellent) against each criterion. The formulation of these criteria and their cross referencing to a sample assignment required the economics lecturers to reflect on their tacit standards for grading assignments and to make these standards both explicit and accessible to students as is suggested by the literature considered in the previous section.
The online resources were similarly designed to help students understand more clearly what was expected of good writing in the course. These resources included:

- a 70-page Guide to Writing Assignments published by the Faculty of Business (2006) which examines how to read for an assignment and how to prepare for writing, how to identify and use different writing styles and business writing genres, and how to follow academic citation conventions; in addition a shorter guide of three pages was made available;
- the sample paper annotated against the assessment criteria;
- references made available via the University Library’s Digital Resources Register (DRR) and accessed via UTS Online, which were required to write the assignment. Since writing was the program focus rather than the development of research skills, it was decided to specify these references so that students could devote more time to the writing process itself.

The writing workshops were offered in the weeks leading up to submission, in order to facilitate an academic-student dialogue of the type suggested by Northedge (2003) and Carless (2006), and embodied in the approaches taken by Bloxham & West (2007) and Saltmarsh & Saltmarsh (2008). One workshop was offered in each of the three weeks before submission for each assignment, a total of six workshops in all. Each workshop dealt with a different set of issues and each series of three workshops was also designed to get students working on the relevant assignment at an early stage. It was decided to make the workshops voluntary since the project was at the development stage and this would provide the opportunity to iron out logistical problems before making the workshops mandatory. The workshops were, however, strongly advertised in lectures.

Each workshop was 90 minutes in duration, was taught by specialist academic language staff from the UTS ELSSA Centre (which provides academic and professional English assistance to students and staff) with support from the economics specialists, and was repeated twice per week to maximise convenience for student attendance. The first series of three workshops focused on helping students to:

- unpack the question for the first assignment and comprehend the readings. A worksheet activity was used to help students appreciate the purposes of each part of the assignment and to
recognise the language features and writing styles each part of the assignment would require;

- identify the required content. Small segments of a model assignment were used to demonstrate the language structure of the whole text, model the language required in each part of the assignment and to draw attention to specific features of analytical writing in economics;

- identify the genre, formats and styles of “essays” as opposed to “reports”. Format issues were considered including the role of abstracts and executive summaries, subheadings, and the use of graphs and lists. Style issues such as language complexity versus accessibility, and argumentation versus explanation were also considered.

The replacement of a single essay with two smaller papers on related questions was designed to facilitate the provision of feedback to students that could be incorporated into preparation of further work within the semester. The core theme of these related questions focused on the forces affecting oil prices, which had increased significantly in the previous few years, and the potential impact that these increases could have on the macroeconomy. Via the first series of writing workshops, students were engaged in dialogue that began with accurate description of what had happened with oil prices in the immediately preceding years, what factors may have caused these developments and how this analysis could most accurately be articulated in writing. Students were thus taken from descriptive through more analytical modes of economic argument. In the second series of workshops, students were given feedback in addition to that on their individual papers concerning how the class as a whole had approached the first assignment, what had been the main strengths and weaknesses of this approach, and how this might be improved in the second assignment. Students were also engaged in dialogue about how more complex analytics that examined the impact of oil price movements on the broader economy might be approached and written about.

The program thus attempted to embody all of the main lessons from the literature about academic expectations of students in assessment items, communication of these expectations to students, and the provision of feedback to students on their learning and performance against clearly articulated criteria. Data on student interaction with
various aspects of the program were collected to facilitate program evaluation. Dimensions of this data relevant to student performance in the first assignment is described in the following section.

4. THE DATA

The ideal way to evaluate programs of this kind is to gauge the extent to which students’ writing improves as a result of the intervention. This could be done by comparing the characteristics of student writing samples before and after implementation. However, neither writing samples of previous students in the course nor writing samples of current students from previous courses were available for comparison.

An alternative approach arose, however, due to the voluntary nature of the program. Some students attended the workshops while others did not; and some students made use of the online resources while others did not. It was thus possible to compare the performance of students who made use of resources with the performance of students who did not, controlling for other factors likely to affect performance. Data on student access to online resources was available from UTS Online’s tracking function. This data is described in the first sub-section below. Data on workshop attendance is described in the second sub-section below, and data on student performance is outlined and an initial evaluation of this data is offered in the third sub-section below.

Data for Online Self-Accessed Resources

Figures 1 to 5 present information about student access to the resources provided online for Assignment 1. Two particular resources that ought to have played an important role in reducing the expectations gap were the assessment criteria and the annotated sample paper. Figure 1 shows the pattern of first time hits by students on this resource for a range of dates in March of the semester in which the program was implemented. The first assignment was due on March 31. Students who accessed these criteria early enough should have had more time to digest and come to terms with them and should have been better able to use them in shaping their assignments. Other factors held constant, they should also have performed better than students who ignored these criteria in preparing their assignments or who had little time to shape their papers using the criteria. It is worth noting that these criteria appeared on the compulsory assignment cover page, so that the high number of first hits on the due date of
Figure 1 - Access Dates for First Hits on Assessment Criteria

Figure 2 - Access Dates for First Hits on Sample Paper

Figure 3 - Access Dates for First Hits on References:
March 31, and possibly March 30, represents students who were not necessarily using the criteria to frame their assignments but who were simply preparing documentation for submission. The total number of first hits in Figure 1 was 209. Excluding the 56 hits on March 30 and 31 leaves only 153 students who accessed the assessment criteria with more than 2 days to submission.

Figure 2 shows first hits for the annotated sample paper. The pattern indicates considerable activity on the day of and the day prior to submission. This is not surprising given that access data for the references shown in Figure 3 suggests that many students only began working on their assignments within this short period. The total number of first hits for the sample paper was 193 indicating that 72% of students made some use of the paper in the preparation of their
assignments. Use of this paper might also be expected to have had an impact on student performance in the assignment.

Notice that the pattern of access to the references is quite different to that in Figure 1. The total number of hits in Figure 3 is 247 indicating that most of the 269 students enrolled in the subject consulted the required references (not surprisingly). Hits are, however, spread relatively evenly across the whole pre-submission period compared with those on the assessment criteria, although the peak is still the day before submission. One would expect from this pattern that, holding other factors constant, students who accessed the reference list early, would have had more time to understand, digest and make use of the literature, and should have performed better in the assessment task compared to students who accessed the references only the day before submission.

Figures 4 and 5 show first hits for the assignment writing resources. The first of these, the Faculty of Business (2006) Guide to Writing Assignments, was also available in hard copy from the student book store but no data was available on the degree to which students in this subject made use of the hard copy version. However, the second shorter guide was only available via UTS Online. The number of first hits for the Faculty and shorter guides respectively were 211 and 232. The number of students who looked at either of these guides was 232 and the number of students who looked at both the Faculty guide and the shorter guide was 211. Thus while 21 students looked at the shorter guide but did not look at the Faculty guide (at least via UTS Online), no student looked at the Faculty guide who did not also look at the shorter guide. One would expect that use of either of the guides would have had a positive impact on student performance in the assignment.

Data on Workshop Attendance

Individual attendance data for each workshop in the first series of three was not collected, but registration for the series which closely matched average attendance numbers was available. Fifty five students registered for the workshops, representing 20% of the subject enrolment. Given the role of these workshops in trying to close the expectations gap, there would be a strong \textit{a priori} disposition to regard workshop attendance as an important factor in shaping student performance in the first assignment.
Table 2 – Summary Statistics for Assignment 1

<table>
<thead>
<tr>
<th></th>
<th>Overall</th>
<th>Workshop</th>
<th>Non-Workshop</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>245</td>
<td>55</td>
<td>190</td>
</tr>
<tr>
<td>Mean mark/10</td>
<td>5.92</td>
<td>6.43</td>
<td>5.78</td>
</tr>
<tr>
<td>Variance</td>
<td>2.64</td>
<td>1.89</td>
<td>2.76</td>
</tr>
<tr>
<td>Skewness</td>
<td>-0.1303</td>
<td>0.1942</td>
<td>-0.1121</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>-0.5574</td>
<td>-0.9366</td>
<td>-0.6342</td>
</tr>
<tr>
<td>% Fails</td>
<td>23.67</td>
<td>9.09</td>
<td>27.89</td>
</tr>
<tr>
<td>% Distn</td>
<td>22.45</td>
<td>21.81</td>
<td>12.63</td>
</tr>
</tbody>
</table>

Data on Student Performance in Assignment 1

Statistics summarising the results for Assignment 1 are provided in Table 2. Of the 269 students enrolled in the subject, 245 submitted Assignment 1. The mean for the cohort who submitted the assignment was 5.92 out of 10 with a variance of 2.64. Of these, 23.67% received a Fail grade (less than 5) and 22.45% received a Distinction grade (7.5) or better.

A more detailed distribution of the results is presented in Figure 6. These overall results were decomposed into two groups corresponding to students who attended the workshops and students who did not. Table 2 indicates that the mean result for those attending the workshops was 0.65 higher than the mean for those not attending, a statistically significant difference at the 5% level (the Z-statistic for the difference between the two population means was 2.94 against a Z-critical value of 1.959). The variance of results for workshop attendees was also lower. Figures 7 and 8 show the respective distributions in more detail. The distribution for the workshop cohort is clearly skewed to the right. This is confirmed by the positive skewness measure in Table 2, the lower failure rate of 9.09% compared to the failure rate of 27.89% for the non-workshop cohort (also shown in Table 2), and a higher proportion of Distinction grades and above for the workshop cohort compared to the non-workshop cohort. Figure 9 further suggests that results for the non-workshop cohort are mildly skewed to the left and this is confirmed by the negative skewness measure shown in Table 2.
Figure 6 - Distribution of Results for Assignment 1: Entire Cohort

Figure 7 - Distribution of Results for Assignment 1: Workshop Cohort

Figure 8 - Distribution of Results for Assignment 1: Non-Workshop Cohort
These data suggest that attendance at the first series of workshops was an important factor affecting student performance in Assignment 1. It must be remembered that markers had no information about which students had attended the workshops and which had not, so that marker bias could not have contaminated the data. It is, of course, possible that students systematically self-selected for the workshops on the basis of some factor that was positively correlated with performance in Assignment 1. One could reasonably expect that any of the most likely causes of this kind of self-selection bias would be correlated with general student ability. However, using the mid-term result, a multiple-choice exam, as a proxy for general student ability, self-selection bias can be ruled out as a significant factor since the correlation coefficient between the mid-term result and workshop attendance was close to zero at 0.04965.

This data provides an excellent basis on which to answer questions about the effectiveness of the first stage of the writing program described above, and we turn to these questions in the next section.

5. REGRESSION RESULTS
To further evaluate the impact that the program had on writing outcomes, the mark for Assignment 1 (graded out of 10) was regressed against a series of variables representing access to each of the resources, workshop attendance and the mid-term grade as a proxy for general ability. For access to the various online resources (listed in Table 3), dummy variables were used which took the value of 1 if the resources were accessed, and 0 otherwise. For attendance at the writing workshops, a dummy variable took the value of 1 if the workshops were attended, and 0 otherwise.

<table>
<thead>
<tr>
<th>Resource</th>
<th>Dummy Name</th>
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<tbody>
<tr>
<td>References</td>
<td>REFT</td>
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<tr>
<td>Assessment Criteria</td>
<td>CRITT</td>
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<td>Faculty Writing Guide</td>
<td>FGT</td>
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<td>Short Guidelines</td>
<td>SGT</td>
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<td>Sample Paper</td>
<td>SSAT</td>
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<tr>
<td>Writing Workshops</td>
<td>W1</td>
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</table>
It was argued above that the timing of access to various online resources could also have been a factor underlying good performance in Assignment 1. As an alternative to the single 0,1 dummies for access to each resource, a series of dummies was also constructed for each resource indicating whether it had been accessed within a more...
specific period of time prior to the assignment submission date. The resources for which these dummies were constructed and their precise definitions are shown in Table 4.

In addition to these dummy variables, the result for the mid-semester exam, comprising 30 multiple choice questions, was used as a proxy for general ability. While far from perfect, this was the only feasible general ability control available at the time. The only potential problem with using the mid-term exam in this respect was that it was held after the workshops and the submission of Assignment 1 so that some effect could have been running from the assignment grade to the mid-term grade leading to estimation bias in the regression coefficients when the mid-term was included as an explanatory variable. However, the results for Assignment 1 were not known by students at the time of the exam and the skills taught in the workshops were likely to have had little effect on performance in a multiple choice exam with no written component. It is, therefore, unlikely that there was any effect running from the written assignment to the mid-term that would have caused estimation bias.

The first step in the process was then to regress the mark awarded for Assignment 1 on each of the explanatory variables listed in Table 3 individually. Regressions were thus of the form:

\[ Mark_i = \beta_1 + \beta_2 X_i + \epsilon_i \]  

(1)

where \( X_i \) represents the appropriate variable from Table 3 and \( \epsilon_i \) is an error term. For each variable apart from the mid-term and the workshop dummies, this regression was run for both the overall dummy variable defined in Table 3 and for the set of more detailed dummies corresponding to a given resource, as defined in Table 4. At the 5% level of significance only three of these individual variables or individual sets of detailed dummies were significant. These were the mid-term result, the workshop dummy and the full set of detailed reference dummies. The results for these three regressions are shown in Table 5.

The second step was to regress the mark for Assignment 1 against all of the variables listed in Table 3 together, as follows:

\[ Mark_i = \beta_1 + \beta_2 MT_i + \beta_3 W1_i + \beta_4 REFT_i + \beta_5 CRITT_i + \beta_6 FGT_i + \beta_7 SGT_i + \beta_8 SSAT_i + \epsilon_i \]  

(2)
Table 5 – Single Variable Regression Results for Assignment 1 Mark

<table>
<thead>
<tr>
<th>Variable</th>
<th>Constant</th>
<th>Coefficient</th>
<th>t-value</th>
<th>p-value</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-term</td>
<td>2.88</td>
<td>0.50</td>
<td>7.57</td>
<td>0.0000</td>
<td>0.1867</td>
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<tr>
<td>Workshop 1</td>
<td>5.77</td>
<td>0.68</td>
<td>2.68</td>
<td>0.0079</td>
<td>0.2453</td>
</tr>
<tr>
<td>REF1</td>
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<td>1.09</td>
<td>2.44</td>
<td>0.0156</td>
<td>0.0497</td>
</tr>
<tr>
<td>REF2</td>
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<td>1.47</td>
<td>3.11</td>
<td>0.0021</td>
<td></td>
</tr>
<tr>
<td>REF3</td>
<td></td>
<td>1.41</td>
<td>3.09</td>
<td>0.0022</td>
<td></td>
</tr>
<tr>
<td>REF4</td>
<td></td>
<td>2.01</td>
<td>3.78</td>
<td>0.0002</td>
<td></td>
</tr>
</tbody>
</table>

Table 6 – Multiple Variable Regression Results for Assignment 1 Mark

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>t-value</th>
<th>p-value</th>
<th>Adj R²</th>
<th>F-statistic</th>
</tr>
</thead>
<tbody>
<tr>
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<td>7.57</td>
<td>0.0000</td>
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<td>Workshop 1</td>
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<td>2.44</td>
<td>0.0156</td>
<td></td>
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</tr>
<tr>
<td>References</td>
<td>0.9165</td>
<td>3.11</td>
<td>0.0021</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Criteria</td>
<td>0.0316</td>
<td>3.09</td>
<td>0.0022</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faculty Writing Guidelines</td>
<td>0.2599</td>
<td>3.78</td>
<td>0.0002</td>
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<td></td>
</tr>
<tr>
<td>Short Writing Guidelines</td>
<td>-0.1786</td>
<td>-0.42</td>
<td>0.6570</td>
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</tr>
<tr>
<td>Sample Paper</td>
<td>0.0958</td>
<td>0.44</td>
<td>0.6570</td>
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<td></td>
</tr>
</tbody>
</table>

The results for this regression are shown in Table 6. The value for $R^2$ indicates that the variables on the right-hand side of equation (2) explain about 21% of the variation in the mark for Assignment 1 and the $F$-statistic indicates that the null hypothesis of a zero underlying $R^2$ can be rejected at the 1% confidence level.\(^1\) The relatively low value of $R^2$, however, suggests either poor model specification or that some important explanatory variables have been omitted. Candidates for omitted variables would include some indication of non-English language backgrounds and it would be desirable to include a better measure of general ability than the grade for the mid-term.\(^2\)

\(^1\) $F_{critical}(7, 237)$ at the 1% level = 2.73.

\(^2\) Becker (1997, p.1363) summarises the results from studies which suggest that “the only consistently significant and meaningful explanatory variables of post-TUCE
Taking these results into account, a third set of regressions was run in which only the mid-term result, the workshop dummy and the set of detailed reference dummies were included as endogenous variables. In addition, the two most distant detailed criteria and sample paper dummies (CRIT3, CRIT4, SSA3 and SSA4+SSA5) were included on the grounds that it was difficult to reject the idea that utilisation of both the assessment criteria and the sample paper would have had a strong impact on writing quality if accessed sufficiently far in advance of the submission date. However, only the mid-term and workshop dummy variables were significant in this regression. CRIT3 and SSA3 were thus dropped and the detailed reference dummies were replaced by their corresponding overall dummy due to insignificance of some of the detailed reference dummies when CRIT4 and SSA4+SSA5 were included. These last two variables were insignificant in this model leading to a suspicion of collinearity between them and separate models were estimated, dropping each in turn. Only CRIT4 was significant in these models.

Results for the final version of the model, which included the mid-term, the workshop dummy, the overall references dummy and the most distant of the detailed criteria dummies, are reported in Table 7. All variables are significant at the 5% level, the model explains 23% of variation in the mark for Assignment 1 and the $F$-statistic of 19.3860 indicates that the hypothesis that $R^2=0$ can be rejected at the 1% level. The model suggests that a student’s mark in Assignment 1 was made up of a base mark of approximately 2 out of 10 plus about a half mark for each mark scored out of 10 in the mid-term (reflecting general level of ability), an additional half mark for attendance at the writing workshops, an additional mark if the references were consulted and an additional 0.7 if the assessment criteria were accessed more than two weeks before the deadline.

Taken together, these results suggest that the writing program outlined above had a positive impact on student performance in the first of two written assignments in the course although the size of the effect is perhaps smaller than might have been expected. Students who made use of key resources such as the reference list, the assessment (Test of Understanding of College Economics) scores are pre-aptitude measures such as pre-TUCE and SAT/ACT scores”. This highlights the importance of selecting an appropriate measure of general ability.

$F_{critical} (4, 240)$ at the 1% level = 3.41.
criteria (sufficiently far in advance of the submission date) and the writing workshops performed better in the assignment compared to students who did not. Students who attended the workshops were also less likely to fail the assignment and more likely to receive a Distinction grade or better. The workshops thus appear to have had a positive effect on the distribution of results, skewing it to the right with important positive implications for students at the pass-fail margin. All of this evidence is consistent with the hypothesis that these resources played a positive role in closing the expectations gap between students and academics regarding what constitutes good writing and thus enhancing the quality of their economics writing.

6. CONCLUSION
This paper has reported on an evaluation of an embedded writing program in an intermediate macroeconomics course at an Australian university. This program was designed to address the core issues identified by Lea and Street’s (1998) and Carless’ (2006) analyses of the higher education writing problem. The program attempted to close an expectations gap between student and academic perceptions of what constitutes “good writing” by building a treatment of basic writing genres and an exploration of how meaning was constructed in a specified list of references on a foundation of instruction about more generic writing issues such as basic grammar, correct referencing practice and the roles of introductions and conclusions. A range of supporting resources was also provided to students in the course to assist them with their writing.

The evaluation indicates that student engagement with the key dimensions of this program improved the quality of their writing. The mean mark on a written assignment was higher for students who

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>t-value</th>
<th>p-value</th>
<th>Adj R²</th>
<th>F-statistic</th>
</tr>
</thead>
<tbody>
<tr>
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<td>2.0800</td>
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<td>0.0001</td>
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<td>Mid-term</td>
<td>0.4633</td>
<td>7.14</td>
<td>0.0000</td>
<td></td>
<td>19.3860</td>
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<tr>
<td>Workshop 1</td>
<td>0.5230</td>
<td>2.31</td>
<td>0.0219</td>
<td></td>
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</tr>
<tr>
<td>References</td>
<td>0.9132</td>
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<td>0.0205</td>
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<td>Criteria 4</td>
<td>0.7165</td>
<td>2.01</td>
<td>0.0459</td>
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<td></td>
</tr>
</tbody>
</table>
attended a series of writing workshops aimed at developing skills relevant to the assignment, and the results of these students were skewed upwards compared to students who did not attend the workshops. This had implications for students at the pass-fail margin who were more likely to pass than members of their cohort who did not engage with the workshops. Students further along the distribution were also more likely to perform at a higher level than members of the class who did not attend the workshops. Students who engaged with detailed assessment criteria at an early stage in the assignment preparation process were also more likely to perform better controlling for a range of factors such as overall ability.

The present study did, however, have a number of limitations that should be noted and which raise possibilities for further work. The low coefficient of determination for all of the regressions reported in this paper suggests that variables potentially important for explaining grades on written assessment have been omitted, and further work could identify and include such variables. Students’ backgrounds in English would be one possibility in this respect. Better control variables for general ability could also be tested given reservations expressed earlier about the control used in this study. Further evidence from longitudinal studies of student writing experiences across entire degree programs, examination of pre- and post intervention writing samples and student interviews would also be useful.

Two surprising aspects of the evaluation results presented above might, if correct, also signal the need for refinement of the writing program itself. The first of these was that the size of the writing workshops’ effect on writing outcomes was smaller than expected. Attending the workshops made only a half-mark contribution to the writing assignment’s grade out of ten in the final model. One would have thought that this measure would have played a significant role in reducing the expectations gap so that the size of its effect on grades should have been larger.

This result may reflect two underlying factors. On the one hand, it may reflect the high proportion of students attending the workshops for whom English was not their first language. Three workshops could be expected to have at best only a marginal impact on the writing performance of these students. From the perspective of students more comfortable with English on the other hand, the small impact of the writing workshops may reflect the balance of basic literacy skills in
the workshop curriculum compared to more discipline-specific epistemological training discussed by Lea and Street (1998). This balance may have been set too far in the direction of the former for students with greater English competency. Together these factors suggest that in future a differentiated intervention for students with English and non-English backgrounds should be considered. This could include an even stronger emphasis on the epistemological dimensions of writing in economics for students from both types of background but a more extended curriculum for students with non-English backgrounds that approached these epistemological dimensions with additional attention to lexico-grammatical and other language instruction that would also strengthen their general command of English.

The second surprising result was that student use of the annotated sample assignment appears to have made virtually no contribution to writing performance. This was despite the fact that this resource represented a concrete example of how the assessment criteria could be reflected in a piece of actual writing. This outcome may have derived from too little explicit discussion of the sample paper in the workshops themselves and this paper may need to be brought more explicitly into the curriculum in future to increase its effectiveness.

Even taking the above limitations into consideration, the overall results of this quantitative evaluation suggest that the provision of writing resources and embedded writing instruction has the potential to noticeably improve student writing outcomes. Qualified support for the academic literacies perspective is also provided since the program evaluated in this paper was designed with this perspective firmly in mind. Further work of the type suggested above is, however, strongly encouraged to provide further validation of these conclusions.

REFERENCES
Improving Student Writing in Economics


