PROGRAM INFORMATION

Date submitted: ___6/25/2013_____

Degree Program(s):	BA, BS	**Department:**	ECON
Department Chair:	Ortega	**Phone:**	4-5400
Report Prepared by:	Holian	**Phone:**	4-1371
Next Self-Study due :	6/2013	**E-mail:**	matthew.holian@sjsu.edu

Note: Schedule is posted at: http://www.sjsu.edu/ugs/programplanning/

ARCHIVAL INFORMATION

Location:	DMH 131	**Person to Contact:**	Matt Holian	4-1371
	(Bldg/Room #)		(Name)	(Phone)

Assessment schedule is posted at http://www.sjsu.edu/ugs/assessment
Please send any changes to the schedule or to student learning outcomes to Jackie Snell jacqueline.snell@sjsu.edu

PLO5 - Communication

Initial Evidence of Student Learning:

This is the first time we are formally assessing this PLO. In discussions with faculty during departmental teaching retreat, faculty expressed that there is wide variation in student performance on writing assignments, from very good to very poor. Faculty agreed there is substantial room for improvement, in terms of bringing up the average, and bringing up the low-end of the distribution. The following comments by a faculty member do a good job of presenting the assessment of student learning in the area of writing shared by many members of the faculty:

> Student performance in lower-division level class is poor, with regard to grammar, sentence structure, logic and word choice. In upper division classes, word choice is better but still a problem, grammar is OK, logic is still a problem but is much improved. In these classes students vary from average to very good, median being slightly better than average. To improve their performance, students need to write more.

Change(s) to Curriculum or Pedagogy:

We are proposing to move most of our undergraduate courses from three to four units, as this will enable more focus on writing throughout the curriculum. In addition, we are discussing new course, including a capstone course. See conclusion to this report for proposed changes to curriculum and pedagogy.

Evidence of Student Learning after Change.

N.A.

Results of Assessment Analysis

To complement the informal discussions with faculty, we also carried out a variety of analyses of various aspects of writing in our curriculum, including a detailed analysis of the determinants of student performance in a class with substantial writing component, and we discuss these below.

First we determined which courses have writing components. We focus here on upper-division undergraduate-level classes.[1] Undergraduate classes we determined had a writing component:[2]

Table 1: Classes in the Economics Department with a substantial writing requirement
ECON 100W (writing class; various assignments)
ECON 103 (various reporting assignments)
ECON 108 (referee report, literature review)
ECON 132 (research project)
ECON 151 (final paper; this class is not currently being offered)
ECON 158 (two written analyses, on readings)
ECON 190A (term paper)

We typically offer four of these courses each semester, out of a total of 16 upper-division undergraduate course offerings. Thus, roughly 25% of our upper-divisional offerings feature a writing component.[3]

Next, we were interested in better understanding the way in which our curriculum reinforces learning across classes. As all students are required to complete GE area Z, we decided to explore the effect of having a 100W class, before taking one of the other classes listed above.

[1] Graduate classes we determined had a writing component: ECON 203 (various reporting assignments), ECON 235 (book review), ECON 205A (literature review), ECON 205B (term paper)

[2] Courses with other communication requirement: ECON 112 (video project) and ECON 136 (video project).

[3] In Spring 2013, we offered 100W, 103, 132 and 158. Thus given we offered 16 sections of upper divisional econ classes that semester, 25% of our class offerings contained a writing component. In Fall 2013, we will again be offering four of these classes (100W, 108, 158 and 190A), and given we are offering 17 sections of upper divisional econ classes, slightly less than 25% of our courses will have a writing component.

To carry out this analysis, we decided to study Econ 158 (The Economics of Entrepreneurship) as this is a class which is typically offered every semester. (Another good candidate would have been 190A as it is the only class which requires a substantial term paper, however time constraints forced us to limit the analysis to only one class.)

The main question we hope to answer here is, *Does having prior exposure to writing, in the form of a 100W class, improve student performance in Econ 158, a class with a substantial writing component?* As we will see, there are many secondary questions we will also address in this analysis, such as, What fraction of students taking Econ 158 have had a 100W, and what fraction of these students take 100W from the Economics department versus from other departments? Table 2 below presents a tabulation of the 42 undergraduate students taking Econ 158 during the Fall 2012 and Spring 2013 semesters:[4]

Table 2: Students taking Econ 158, by Major

PLAN_DESCR	Freq.	Percent
Business Admin/Entrepreneurshp	1	2.38
Business Administration/Financ	2	4.76
Business Administration/Manage	4	9.52
Business Administration/Market	1	2.38
Computer Engineering	1	2.38
Continuing Education	1	2.38
Economics	32	76.19
Total	42	100

From this table, one can see that 76.19% of students taking Econ 158 were Economics majors, with the majority of non-econ majors coming from various majors within the College of Business.

The next table shows prior exposure to writing in a 100W class among students taking 158. As can be seen, nearly half (42.86%) of the students have not had any 100W

[4] Two graduate students also took Econ 158 during this time, but as the focus here is on our undergraduate programs, they are excluded from this analysis.

class. Among the majority of students who have had a 100W class, the top three classes were ECON 100W, COMM 100W and ENGL 100WB.

Table 3: Students taking Econ 158, by Major

1ooW	Freq.	Percent
none	18	42.86
COMM 100W	8	19.05
ECON 100W	9	21.43
ENGL 100WB	5	11.9
LLD100WB	1	2.38
MATH 100W	1	2.38
Total	42	100

The next table restricts the tabulation to Economics majors only. As can be seen, slightly less than half of the students who have taken 100W have taken it from outside the Economics Department.

Table 4: Econ Majors prior or concurrent enrollment in 100W

1ooW	Freq.	Percent
none	15	46.88
COMM 100W	6	18.75
ECON 100W	9	28.13
ENGL 100WB	1	3.13
MATH 100W	1	3.13
Total	32	100

With this background in mind, we now turn to the statistical analysis. We gathered student grade information from the last two semesters (FA12 and SP13). Econ 158 was offered both of these semesters. We then gathered roster information from the last five semesters (SP11-SP13) for Econ 100W. Using this information, we determined which students had Econ 100W in a prior or in the concurrent semester. We then looked up the unofficial transcript for each student enrolled in 158, and determined whether they had

100W in another department and recorded the 100W they had taken, if any.[5] Finally, the Econ 158 instructor entered in grades on an individual writing assignment; all other data was gathered through the CMS system. Table 5 below presents the five variables included in the analysis below, and a brief description of what it measures.

Table 5: Variable Descriptions

Variable	Description
final158grade	final grade in Econ 158 (A=4, A-=3.67, etc.)
papergrd	grade on writing assignment in Econ 158 (100 points max)
econ100w_prior_concur	an indicator variable equal to one if the student had Econ 100w in the current or previous five semester
some100w_prior_concur	an indicator variable equal to one if the student had any 100w course as of Spring 2013
sjsugpa	the students' GPA over all classes taken at SJSU

Summary statistics for the variables listed in Table 5 are presented in Table 6.

Table 6: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
final158grade	42	3.12	0.44	2.33	4
papergrd	42	85.37	6.46	71	96
econ100w_prior_concur	42	0.21	0.42	0	1
some100w_prior_concur	42	0.57	0.50	0	1
sjsugpa	42	2.91	0.56	1.28	3.91

From Table 6 we see that the final grade in Econ 158 ranged from a 2.33 (a C) to a 4.00 (An A). Meanwhile, grades on the individual assignment (papergrd) ranged from 71% to 96%). We will use both of these as dependent variables in multiple regression models.

For independent variables, we are mainly interested in the effect of having prior exposure to a 100W improves performance on the writing assignment and in the course

[5] Note, there is some error with this procedure, because we were not careful to record the semester in which students had the 100W class. Time limitations prevented us from going back and recording this information. The bias introduced by this is probably not large, but future study should take this into account.

overall. Thus both the variable econ100w_prior_concur and some100w_prior_concur is an indicator (zero or one) variable, equal to one if the student had either Econ 100W or another 100W course, respectively, in a prior semester or concurrent to enrollment in Econ 158. We also include a control for the student's GPA.

Table 7 presents the results of the simple and multiple regression analysis. The equation that is estimated is given by

$$\text{final158grade} = \beta_0 + \beta_1 \times \text{econ100w\_prior\_concur} + \beta_2 \times \text{sjsugpa} + \varepsilon \qquad (1)$$

where the variables are as described in Table 5, β_0, β_1 and β_2 are coefficients to be estimated using the method of Ordinary Least Squares, and ε is an error term with the usual properties. In addition to the exact specification presented in equation (1), we will also estimate three modified versions of this equation. Table 7 below presents the estimates of equation (1) as presented in the first column, but where β_2 is restricted to be zero. This restriction transforms equation (1) into a simple regression equation; given that econ100w_prior_concur is an indicator variable, it is possible to conduct hypothesis tests using the estimated equation that is identical to a difference in means test for the two groups, i.e. those that had and did not have Econ 100W.

Table 7: OLS Regression Regression Analysis:

Final Grade in Econ 158 as a function of prior or concurrent enrollment in 100W

VARIABLES	final158grade	final158grade	final158grade	final158grade
econ100w_prior_concur	-0.246*	-0.105		
	(0.142)	(0.138)		
some100w_prior_concur			-0.084	-0.153
			(0.144)	(0.118)
sjsugpa		0.409***		0.447***
		(0.110)		(0.098)
Constant	3.172***	1.951***	3.168***	1.905***
	(0.079)	(0.345)	(0.121)	(0.313)
Observations	42	42	42	42
R-squared	0.054	0.309	0.009	0.329
adjusted R-squared	0.03	0.273	-0.0157	0.295

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

In the first column we see that students who were enrolled in Econ100W did *worse* on average in Econ 158 than students who did not, and this difference is statistically significant at the 10% level. However in column two we remove the restriction on β_2 and we see that the coefficient on econ100w_prior_concur falls in magnitude considerably and is no longer statistically significant. In addition, when including sjsugpa in the second column, the adjusted R-squared rises from 0.03 to 0.273; apparently a student's GPA explains a considerable amount of the variation in their performance in Econ 158, but prior exposure to Econ 100W explains very little.

Table 7 also presents the estimates of models that modify Equation (1) in another way, namly by substituting some100w_prior_concur for econ100w_prior_concur. With this modification, we aim to test whether students having 100W from any department do better in Econ 158, as measured by the class grade. Given the lack of statistical significance on the

coefficient on some100w_prior_concur, we are not able to reject the hypothesis that there is no effect of prior enrollment in some 100W class.

Table 8 presents estimates of models with the final modification to equation (1). There, we substitute papergrd for final158grade as the dependent variable. The rationale for this modification is that other aspects of a student's performance go into their final grade (including participation, exams, etc.) and so prior exposure to 100W may have a greater impact on individual writing assignment.

Table 8: OLS Regression Regression Analysis:
Final Grade in Econ 158 as a function of prior or concurrent enrollment in 100W

VARIABLES	papergrd	papergrd	papergrd	papergrd
econ100w_prior_concur	-1.46		0.546	
	(2.276)		(2.147)	
some100w_prior_concur		-0.715		-1.629
		-2.129		(1.772)
sjsugpa			5.821***	5.918***
			(1.307)	(1.286)
Constant	85.68***	85.78***	68.30***	69.07***
	(1.162)	(1.805)	(4.065)	(4.128)
Observations	42	42	42	42
R-squared	0.009	0.003	0.249	0.264
adjusted R-squared	-0.016	-0.0218	0.211	0.226

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

However, as can be seen in Table 8, given the lack of statistical significance of the coefficients on econ100w_prior_concur and some100w_prior_concur across all columns, we are not able to reject the hypothesis that there is no effect of prior enrollment in some 100W class.

In short, we did not find any evidence that having prior exposure to 100W, in the Economics department or in another department, has any effect on grades in Econ 158, either the final course grade or on an individual writing assignment.[6]

Discussion

The results of the analysis presented above point to two areas for improving our curriculum vis-à-vis writing. First, only 25% of our upper-division classes have even a minor writing component, and only one of our classes has a term paper requirement. Thus there appears to be substantial room for additional writing in the curriculum. Second, given there is no evidence that having 100W (from any department) has any effect on performance in subsequent writing assignments, there also appears to be substantial room for better integration across our curriculum.

Placing a larger focus on writing in our curriculum is a challenging task as faculty are already stretched to cover the core models, methods and topics in their courses. In short, there is often simply is no time left for writing assignments. However, the economics department has been discussing moving most undergraduate classes from three to four units, and has proposed such a move this semester. Our proposal was unanimously approved by the College of Social Science Curriculum Committee and we are now awaiting approval from Undergraduate Studies. If this proposal is accepted, the first action we will take is to work with faculty to expand the depths of their course curricula. All of the faculty

[6] We do find some weak evidence (Table 7, first column) that students with prior exposure to Econ 100W do worse in Econ 158. However this simple difference-in-mean analysis should not be treated as causal evidence. Students are not randomly assignment to take Econ 100W prior or after taking Econ 158, and so the difference we find is likely to be due to selection effects (rather than treatment effects.) Apparently, students with lower GPAs are more likely to take Econ 100W than they are to take 100W from another department, as the effect of prior exposure to Econ 100W goes away once GPA is controlled for. The fact that students can select which 100W class they take is addressed in the Appendix to this report.

agree there is room for more writing in the curriculum, and a move to four-unit courses will provide the opportunity for this important move.

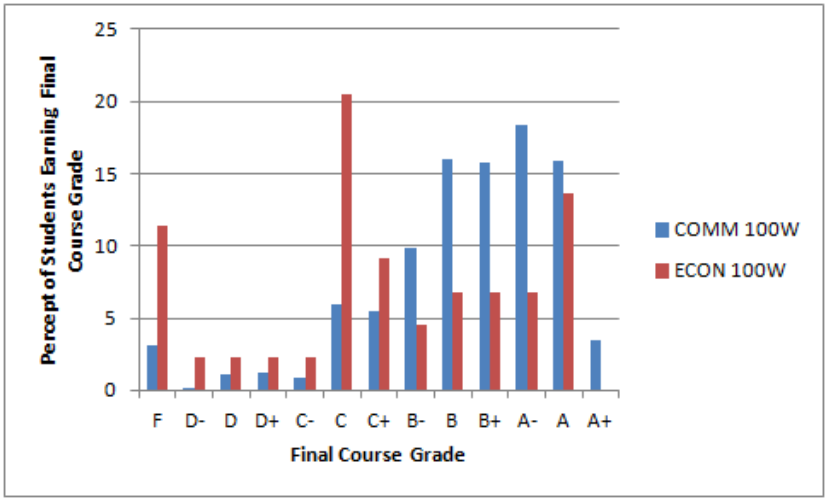
Regarding a better integration of writing across the curriculum, there are many issues which due to time constraints cannot be resolved here. However to provide a basis for ongoing discussion, we briefly discuss two of the main issues.

First, 100W courses often emphasize grammar and technical aspects of writing. These may not be the emphasis in upper-divisional courses, where subject matter mastery may be given greater weight. Perhaps this is what explains the lack of a connection between prior exposure to 100W and performance in 158. Faculty teaching upper-division courses should consider if they want to place greater emphasis on writing fundamentals.

Second, a major challenge for improved writing is that students often have limited exposure to methods. We have not yet assessed our PLO3 (methods), however it is probably true that, just as few classes focus on writing, few classes focus on methods. At the moment, there is no upper-divisional class that requires a methods course as a prerequisite. It is possible that a capstone course, which could be required of all students, and which also requires a methods course, could be developed. If such a course were developed, it would enable students to pull together all of the PLOs in our curriculum—from micro and macroeconomic theory (PLOs 1 and 2), to research methods and communications (PLOs 3 and 5), and subject matter expertise (PLO4)—to produce an original piece of written economic analysis. Offering such a class would perhaps require more resources than we currently have in the department, and it would also require our programs to better integrate their learning objectives, but the results for student learning may be large and it is therefore worthwhile to consider such a curricular change.

Appendix

As a part of the analysis undertaken for this report, we compared student grades in Econ 100W and COMM 100W. According to our analysis, most Econ majors take one of these two courses to satisfy their Area Z GE requirement. Why might a student take COMM 100W versus ECON 100W? One possible motivation would be to take the course which they perceive as easier. The histogram below describes the distribution of grades earned in these classes over the last two semesters.



As is clear from this histogram, the distribution of grades in COMM 100W is skewed to the right. The distribution of grades in Econ100W is also skewed to the right, but it appears to be a more normal (i.e. Gaussian) distribution. Therefore, it is reasonable to assume that students avoid taking Econ 100W because it is "harder". The Economics Department should therefore consider whether it has the resources to require students to take Econ 100W, and whether such a move would be desirable.