Results: UCUES-Based Assessment of Student Learning in Relation to the Eight Guiding Principles of General Education

OUTCOME MEASURE	N Students	Items	Reliability	Scale	Range	Correlation with		One Way Analysis of Variance						
						CORE 001 Grade	UCM GPA	First Gen	Male	Home Language	Pell 1st Sem	Pell F09	STEM 1st Sem	STEM F09
Scientific Literacy Gain Scale	199	2	0.413	6 pts	Very Poor to Excellent	Not Sig	Not Sig	Better	No Diff	N/A	Better	Better	Better	Better
Proficiency with quantitative skills (difference between when began at UCM and senior year)														
Proficiency with computer skills (difference between when began at UCM and senior year)														
Scientific Literacy Scale	199	5	0.859	6 pts	Never to Very Often	Not Sig	Not Sig	N/A	No Diff	No Diff	No Diff	No Diff	No Diff	No Diff
Recognize or recall specific facts, terms and concepts														
Explain methods, ideas, or concepts and use them to solve problems														
Create or generate new ideas, products or ways of understanding														
Used facts and examples to support your viewpoint														
Examined how others gathered and interpreted data and assessed the soundness of their conclusions														

OUTCOME MEASURE	N Students	Items	Reliability	Scale	Range	Correlation with		One Way Analysis of Variance						
						CORE 001 Grade	UCM GPA	First Gen	Male	Home Language	Pell 1st Sem	Pell F09	STEM 1st Sem	STEM F09
Decision Making Gain Scale1	185	5	0.786	6 pts	Very Poor to Excellent	Not Sig	Not Sig	No Diff	No Diff	No Diff	No Diff	No Diff	No Diff	No Diff
Proficiency with analytical and critical thinking skills (difference between when began at UCM and senior year)														
Proficiency with internet skills (difference between when began at UCM and senior year)														
Proficiency with analytical and critical thinking skills (difference between when began at UCM and senior year)														
Proficiency with library research skills (difference between when began at UCM and senior year)														
Proficiency with other research skills (difference between when began at UCM and senior year)														
Ability to read and comprehend academic material (difference between when began at UCM and senior year)														
Decision Making Scale1	201	4	0.860	6 pts	Never to Very Often	Not Sig	Not Sig	N/A	No Diff	No Diff	No Diff	No Diff	No Diff	No Diff
Break down material into component parts or arguments into assumptions to see the basis for different outcomes and conclusions														
Judge the value of information, ideas, actions, and conclusions based on the soundness of sources, methods and reasoning														
Incorporated ideas or concepts from different courses when completing assignments														
Reconsidered your own position on a topic after assessing the arguments of others														

OUTCOME MEASURE	N Students	Items	Reliability	Scale	Range	Correlation with CORE 001 Grade	Correlation with UCM GPA	One Way Analysis of Variance: First Gen	Male	Home Language	Pell 1st Sem	Pell F09	STEM 1st Sem	STEM F09
Communication Gain Scale	179	5	0.668	6 pts	Very Poor to Excellent	-0.194	-0.17	N/A	No Diff	N/A	Better	Better	No Diff	No Diff
Ability to be clear and effective when writing (difference between when began at UCM and senior year)														
Ability to speak clearly and effectively in English (difference between when began at UCM and senior year)														
Ability to prepare and make a presentation (difference between when began at UCM and senior year)														
Proficiency with foreign language skills (difference between when began at UCM and senior year)														
Proficiency with interpersonal (social) skills (difference between when began at UCM and senior year)														
Communication Scale	204	3	0.787	6 pts	Never to Very Often	Not Sig	Not Sig	No Diff	No Diff	No Diff	No Diff	No Diff	Worse	Worse
Contributed to a class discussion														
Asked an insightful question in class														
Made a class presentation														

OUTCOME MEASURE	N Students	Items	Reliability	Scale	Range	Correlation with CORE 001 Grade	Correlation with UCM GPA	One Way Analysis of Variance: First Gen	Male	Home Language	Pell 1st Sem	Pell F09	STEM 1st Sem	STEM F09
Self and Society Gain Scale	200	4	0.720	6 pts	Very Poor to Excellent	Not Sig	Not Sig	N/A	No Diff	No Diff	No Diff	Better	Worse	Worse
Ability to understand international economic, political, social, cultural perspectives (difference between when began at UCM and senior year)														
Ability to appreciate, tolerate and understand racial and ethnic diversity (difference between when began at UCM and senior year)														
Ability to appreciate cultural and global diversity (difference between when began at UCM and senior year)														
Self awareness and understanding (difference between when began at UCM and senior year)														
Ethics and Responsibility Scale	201	4	0.732	6 pts	Never to Very Often	-0.153	-0.177	No Diff	No Diff	No Diff	No Diff	No Diff	No Diff	No Diff
Turned in a course assignment late														
Gone to class without completing assigned reading														
Gone to class unprepared														
Skipped class														
Ethics and Responsibility Gain	201	1	N/A	6 pts	Very Poor to Excellent	Not Sig	Not Sig	No Diff	No Diff	No Diff	No Diff	No Diff	No Diff	No Diff
Understanding the importance of personal social responsibility														
Aesthetic Understanding and Creativity Gain	201	1	N/A	6 pts	Very Poor to Excellent	-0.147	Not Sig	No Diff	No Diff	N/A	No Diff	Better	N/A	N/A
Ability to appreciate the fine arts (e.g., painting, music, drama, dance)														

[1] The correlation between decision_making_gain and decision_making is .143, which is significant at the 0.05 level (2-tailed)

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Assmt of Guiding Principles

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The attached spreadsheet summarizes the key findings from the various analyses I've run. I am still troubled by the negative correlations between some of the guiding principle outcome measures and grades earned at UC Merced, but in the interest of condensing the data, I've excluded the correlation matrices that contrasted STEM and Non-STEM majors, although I did present ANOVA results based on this contrast.

Since we last offered CORE 100 during the spring of 2007, too few students who took CORE 100 remained enrolled at UC Merced during the spring of 2010 when we last administered the University of California Undergraduate Experience Survey (UCUES) to include them in the analysis.

Among the 3302 students who had taken CORE 001 as of spring 2010, 399 of them were seniors in spring 2010 who had entered UC Merced as freshmen. Of these, 58% (n=233) participated in UCUES and were included in this analysis. It is noteworthy that students with higher grades in CORE 001 had higher UCUES participation rates, even after controlling for the fact that many of the students who did not do well in CORE 001 dropped out of UC Merced before reaching their senior year. This is one source of bias in the data.

The bulk of the report is a matrix that shows each outcome measure. I color coded interesting results about each measure to make it easier to see them, using green to highlight "good" results and red to highlight "bad" results. A description of each item from the UCUES questionnaire used as an outcome measure on its own or as part of a scale is provided. In the event that a scale was constructed, the scale reliability is indicated. The only scale that does not have an adequate reliability coefficient is the scientific literacy gain scale. This is because the scale only has two items. The items are correlated with each other, and appear to be measuring different aspects of UC Merced's scientific literacy guiding principle, but we just don't have enough items to properly measure such a complex learning objective.

To give you information faculty can use to reflect on their programs and practices and their impact on the student populations served, in addition to focusing on the correlations between grades earned and outcome measures, I also looked at differences in outcome measure scores between first generation and not first generation students; males and females; students who lived in homes where only English, English and another language, or just another language were spoken when they were children; students who got Pell grants and students who did not; and STEM and Non-STEM majors. For the Pell and STEM comparisons, I ran the comparisons based on their status at the time they applied, and also as of Fall 09, since in the case of STEM in particular, membership in the STEM group may have changed between the time the students applied and their senior year. This is particularly true for students who entered as Undeclared.

An "N/A" in the table summarizing the ANOVA results means the variances of the groups being compared are not equal, so the ANOVA results should be ignored.

There are no statistically significant differences between males and females on any of the measured outcomes. Similarly, the primary language spoken in the childhood home does not appear to impact gen ed performance. A student's first generation status only impacted one outcome, and that is the scientific literacy gain, which has the most statistically significant differences. (Recall that this is the scale with the lowest reliability, which complicates somewhat the task of identifying which groups did better and which did worse.) Many of the measured outcomes have no statistically significant differences.

I believe the key finding is that low income students (i.e., Pell recipients) appear to benefit the most on the measures used to assess UC Merced's Guiding Principles. That said, it may be that they benefit the most because they had the most to gain (i.e., they started off at a lower level of functioning). This analysis has not controlled for that possibility.

One of the things WASC wants us to do is improve our programs, policies, and practices when the data indicate that they need improving. One of the things I learned from this exercise is that we can improve the way we assess how well our guiding principles foster the development of the knowledge and skills embedded in the Guiding Principles for General Education. I hope these results will help the faculty consider what we should measure and how. I would be happy to provide all the statistical output to anyone who wants to see the details behind my shorthand "better" and "worse" designations.

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