To: Jerry Rosenberg, PSME Dean & Thomas Ray, Language Arts Dean

From: Mallory Newell, Institutional Researcher & Stephen Fletcher, Assessment Coordinator

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Subject: STEPS Analysis

Methodology

Stephen Fletcher downloaded student files for Fremont Union High School District for the years 2004-05 to 2007-08 and 2010-2011 and 2011-2012. He then worked with a STEPS team member, Dan Lamoree to create an Access database to run regression analyses using SPSS. The codes to create the Access database and SPSS analysis were provided by the RP Group (http://rpgroup.org/content/participation-instructions). An output of the regression analyses were provided and discussed in this report. Additional technical support was provided by Terrence Willett.

Statewide STEPS Results

Findings across 11 pilot colleges indicate that high school California Standards Test (CST) scores associated most strongly with the level of students' first college English and math course. The level of the first college course attempted is typically a result of a student's placement process where college placement test scores often play a large role. Due to the presumed relationship between CST scores and college placement test scores, this finding can be stated concisely as **tests predict tests**.

However, **other factors were also somewhat predictive** of the level of the first college English and math attempted. For example, the more high school "A-G" courses for UC/CSU eligibility students completed, the more likely they were to attempt a higher level English course in college. Also, students completing a higher level of math were more likely to take a higher level math course in college on average. While this finding about math may seem intuitive to the point of being trivial, the relationship was weak in comparison to what might be expected from a well-articulated pathway between K-12 and college.

In terms of performance, non-English high school grades associated most strongly with college grades for English. This finding leads us to assert that for English, **grades forecast grades as students who earned higher grades in high school were more likely to earn higher grades in college English.**

However, predicting college math grades was found to be more complex given the greater number of levels of high school math courses and tests as compared to English. The research indicated that levels of math completed and non-math GPA in high school can have some value in predicting success in college math courses. That said, these findings also underscore that predictors of college math success vary among high schools and colleges. Therefore, each

college should conduct its own research in order to verify the best predictors for its students.

Variables Explored

- Most recent California Standards Test (CST) score in English (or math) (standardized)
- Count of "A-G" or college preparatory courses completed
- Level of most recent high school course in English (or math) (ordinal rank)
- Grade point in most recent high school course in English (or math)
- High school grade point average excluding English (or math)
- Level of first college course attempted in English (or math) (ordinal rank, only used for predicting success in college course)

Course Crosswalk

The following crosswalks are provided to help interpret the analysis. There may exist some variability in the courses that students take, but overall, these are the general order of courses.

English Crosswalk

Data Variable	High School Course	Data Variable	College Course
HS Course Rank = 1	Literature and Writing	CC Course Rank = 1	EWRT/READ200
HS Course Rank = 2	World Literature	CC Course Rank = 2	EWRT/READ211
HS Course Rank = 3	American Literature	CC Course Rank = 3	EWRT1A
HS Course Rank = 4	Contemporary Literature		
HS Course Rank = 5	Honors Literature		
HS Course Rank = 6	AP Literature		

Math Crosswalk

Data Variable	High School Course	Data Variable	College Course
HS Course Rank = 1	Algebra I	CC Course Rank = 1	Math 210
HS Course Rank = 2	Geometry	CC Course Rank = 2	Math 212
HS Course Rank = 3	Algebra II	CC Course Rank = 3	Math114
HS Course Rank = 4	Math Analysis	CC Course Rank = 4	Math 10, 11, 44, 46, 41
HS Course Rank = 5	AP Stats		
HS Course Rank = 6	AP Calculus A/B		
HS Course Rank = 7	AP Calculus B/C		

Predicting Level of First Attempted College English Course at De Anza College

The descriptive statistics show that the majority of students coming from high school most recently completed the 4th highest high school English course and half enrolled in one level below college English (50 students) and the half enrolled in college level English.

An ordinal regression analysis was used to predict the level of first attempted college English. There were 265 cases observed and 156 valid cases included in the regression. The model explained between 57% and 67% of the variance in predicting the level of college English. 33% to 43% of the variance in the model is explained by factors not included in the model. The overall model was significant at the .00 level.

The CST was the most important predictor variable suggesting that tests predict tests.

- High School ELA CST shows that students who score high on this test are significantly more likely to enroll at college level English.
- Students who took the lowest ranking English course (rank 1) in high school are the least likely group to enroll in a college level English course, this was significant.

Predicting Level of First Attempted College English Course

	Estimate	Significance
ELA CST	2.655	0.000
HS Grade Point	0.314	0.184
HS A - G	-0.052	0.149
HS GPA without English	0.102	0.764
HS Course Rank = 1	-2.922	0.001
HS Course Rank = 3	-0.730	0.157
HS Course Rank = 5	18.625	.
HS Course Rank = 6	-0.400	0.534

Predicting Success in First Attempted College English Course

A logistic regression analysis was used to predict the likelihood of receiving a C or better in students' first attempted college English course. There were 265 cases observed and 156 valid cases included in the regression. The regression had a significance level of .12.
The model explained between 9% and 15% of the variance in predicting the level of college English. The overall model was not significant. The low level of predictability in this model is likely due to the low number of cases observed. We would benefit from working with additional feeder schools to input their data into CalPass for greater analysis. East Side Union is not currently submitting to CalPass Plus, the only other district in the area that submits to CalPass is Mountain View-Los Altos Union High.
High school GPA was the strongest significant predictor of college level success.

- The higher a students high school grade point in their last high school English course, the more likely they are to have a C or better in their first attempted English course, this variable is the only significant variable in the model.

Predicting Success in First Attempted College English Course

	Estimate	Significance
HS GPA without English	0.519	0.151
HS Grade Point	0.567	0.010
ELA CST	0.186	0.587
HS A - G	0.003	0.945
CC Course Rank = 1	-0.113	0.885
CC Course Rank = 2	-0.564	0.347
HS Course Rank = 1	0.653	0.498
HS Course Rank = 2	0.328	0.544
HS Course Rank = 3	-1.783	0.232
HS Course Rank = 4	0.502	0.509

Predicting Level of First Attempted College Math Course

The descriptive statistics show that the majority of students coming from the high schools completed the 5th highest high school math course out of 7 and enrolled in one level below college math (36) and college level math (32).

An ordinal regression analysis was used to predict the level of first attempted college math. There were 265 cases observed and 193 valid cases included in the regression. The model explained between 26% and 52% of the variance in predicting the level of college math. The overall model was significant at the .00 level.

Math CST, high school grade point and high school rank 7 were the strongest significant predictors of level of college math attempted.

- High School Math CST shows that students who score high on this test are significantly more likely to enroll at college level math, this is the second highest predictor.
- Students with a higher high school grade point in their last high school math course, are more likely to enroll at college level, this is significant.
- Students who took the 4th highest-ranking math course in high school are the least likely group in the model to enroll in a college level math, this variable is significant.
- Students who took the highest-level high school math course (rank = 7) were most likely to enroll in a college level math course, this was also significant.

Predicting Level of First Attempted College Math Course

	Estimate	Significance
Math CST	1.140	0.000
HS Grade Point	0.521	0.001
HS A - G	0.015	0.615
HS GPA without Math	0.388	0.127
HS Course Rank = 3	-1.175	0.404
HS Course Rank = 4	-2.303	0.000
HS Course Rank = 7	1.495	0.000

Predicting Success in First Attempted College Math Course

A logistic regression analysis was used to predict the likelihood of receiving a C or better in their first attempted college math course. There were 265 cases observed, and 193 valid cases included in the regression. The model explained between 15% and 20% of the variance in predicting the level of college math. The overall model was significant at the .00 level.

High school GPA without math, A-G courses, and high school rank = 3 were positive significant predictors of success.

- The higher a students' high school grade point in their last high school math course, the more likely they are to have a C or better in their first attempted math course, this variable is significant.
- Students who complete more of the A-G sequence are slightly more likely to earn a C or better in their first attempted English course, this is significant.
- Students who took the 3rd highest math course in high school were more likely to earn a C or better in their first attempted math course, this was significant.

Predicting Success in First Attempted College Math Course

	Estimate	Significance
HS GPA without Math	0.996	0.001
HS Grade Point	0.289	0.084
Math CST	-0.059	0.775
HS A - G	0.078	0.058
CC Course Rank = 1	1.382	0.167
CC Course Rank = 2	0.773	0.165
CC Course Rank = 3	0.690	0.158
HS Course Rank = 1	-22.375	0.999
HS Course Rank = 2	-0.111	0.874
HS Course Rank = 3	0.794	0.039

Additional Resources

Research brief on statewide study:
http://www.rpgroup.org/sites/default/files/RPSteppingFinal.pdf

Technical Report: http://www.rpgroup.org/sites/default/files/STEPSTechnicalReport.pdf