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ABSTRACT

In 1990, a study was conducted at Florida's Miami-Dade Community College (MDCC) to identify institutional factors that predict pass rates on the College-Level Academic Skills Test (CLAST). Statewide results of the October 1989 administration of the CLAST were used for the study, including the scores of all students who indicated that they had completed 60 or more credits toward the associate degree and who were writing the test for the first time. The percentage of students passing all four subtests of the CLAST was recorded for each community college in the state. The study assessed the validity of the following institutional characteristics as predictors of CLAST pass rates: minority enrollment, the percentage of entering students with below college-level basic skills, student attrition before the CLAST, and institutional size. Findings indicated the following: (1) pass rates ranged from a low of 46% at MDCC to 83% at Indian River, one of the small colleges; (2) the combined average pass rate for the state's community colleges was 69%; (3) among the colleges, MDCC had the largest minority enrollment (73%), the largest percentage of students requiring basic skills remediation (65%), and the highest proportion of remedial to college-level enrollments; and (4) for the colleges as a whole, low CLAST pass rates were positively correlated with high minority enrollments and a high proportion of remedial to college-level enrollments. Based on the study finding that percentage of minority students was a more significant predictor of an institution's CLAST pass rate than either the basic skills level of entering students or the percentage of students being screened out before taking the CLAST, it was concluded that state funding for special instructional support for minority students be allocated on the basis of the number and percentage of minority students at an institution. (GFW)

WHAT FACTORS PREDICT DIFFERENCES IN CLAST PERFORMANCE AMONG COMMUNITY COLLEGES?

Research Report No. 90-12R

May 1990

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What Factors Predict Differences in CLAST Performance Among Community Colleges?

With the implementation of the College-Level Academic Skills Test (CLAST) and judgments of students' college level skills competence also came judgments of institutions based on their CLAST pass rates. Since the beginning in 1982, some institutions have consistently been at the top of the distribution of CLAST passing rates, while others have just as consistently fallen at the bottom. As a whole, university students have outperformed community college students, probably at least in part due to the selectivity of their student bodies. Within the community college system, however, consistent differences have also emerged in CLAST passing rates.

What explains these differences? The State Department of Education has urged colleges to look to their curriculum for answers. Yet discussions with administrators and researchers around the state show that (with a few exceptions) most colleges have a fairly similar English and mathematics curriculum. Two areas, however, where the community colleges do differ involve: (1) the composition of the student body, and (2) factors within each college which lead to screening out of students before they write the test.

Miami-Dade has previously pointed to its large minority enrollment as a factor explaining CLAST performance. About 75% of the students enrolling at the institution and writing the CLAST are minorities, and many speak English as a second language. At other institutions, as few as 5% of the student body may be minorities.

The CLAST purports to measure basic skills. Students who enter with weak reading, writing, and mathematics skills have to achieve more learning to pass the CLAST. It seems probable, therefore, that institutions with large numbers of students requiring college preparatory work would have lower pass rates. In addition, minorities are more likely to have low entering basic skills as measured by entering placement test scores.

Institutions also may differ on how many students make it through to write the test. Higher attrition rates would be expected if basic skills levels of entering students are low. Some colleges may also have added requirements for CLAST test takers. At Indian River Community College, for example, students must pass a pre-CLAST test before they are permitted to take the CLAST.

Which of these factors (if any) predicts CLAST pass rates for colleges? Because of the interrelationships, is more than one factor needed to explain the differences in CLAST performance that occur among community colleges? Does the size of the institution affect the relationship? The purpose of this study was to address these questions.

Methodology

The Dependent Variable--CLAST Performance

Results of the October 1989 administration of the CLAST were used for this study for all students who indicated that they had completed 60 or more credits toward their A.A. degree and who were writing the test for the first time. The percentage passing all four subtests was recorded from state reports. The 60-credit group was used to ensure that pass rates reflected performance of students who had experienced a major portion of the college curriculum. It was believed that October 1989 was a particularly good administration of the test to be studying because new cutscores had just gone into effect and had "destabilized" the system, resulting in bigger changes in pass rates at some colleges than others.

Possible Predictors

Minority Enrollment. This factor was operationalized in several ways. The final definition used in the study was the percentage of minority credit students reported for Fall 1987 on the state EF-2 report. The percentage of minority students tested on the CLAST for the Fall 1989 administration and the difference between the CLAST and the EF-2 numbers were also considered, but were rejected because of unreliability in the numbers for small colleges.

Entering Level of Basic Skills. Recently, every community college was required to report to the Division of Community Colleges the percentage of public high school graduates who were below in one or more areas of basic skills when they were tested upon entry to the community college in 1987-88. These figures were obtained from the Division and used in the analysis.

Another measure of the level of preparedness of the student body was obtained by calculating the percentage of FTEs generated in the College Preparatory area compared to the FTEs in the A&P (Academic and Professional) area. Information was obtained from the most recent (1987-88) factbook published by the Division of Community Colleges.

Attrition of Students Before the CLAST. A combination of factors might lead to a smaller percentage of students actually making it to the 60-credit level and taking the test at some colleges. This "screening effect" was calculated in two ways. One was to find the percentage of October 1989 60-credit test-takers compared to the number of enrollees in the Fall of 1987 (from the EF-2 state report). This ratio included all credit students as the base. The other was to look at the percentage of 60-credit CLAST writers in October 1989 compared to the number of students in 1987-88 who were in the A.A. degree program (from the AA-1 Enrollments and Completions state report). This ratio refined the base to include only students who had made it to the status of A.A. program enrollees, i.e., had completed 25% of their program coursework.

A Moderator Variable: Institutional Size

Though institutional size was not of primary interest in this study, it was thought that relationships might differ depending on how many students a college enrolled. Because Miami-Dade is the largest college and also has extreme values on variables such as minority enrollment, it might bias the results-making them less reflective of the system as a whole. In addition, results for small colleges might be less reliable because a change in a few students could affect the pass rate calculations dramatically. It was also believed that urban and rural institutions could be very different institutions and "institutional size" was a convenient, short-hand way of expressing these possible differences.

Institutional size was measured by recording the number of students with at least 60 credits who wrote the CLAST for the first time in October 1989. Colleges with less than 100 test-takers were classified as "small", while colleges with 100 or more were classified as "large". The 11 small colleges were Central Florida, Chipola, Florida Keys, Indian River, Lake City, Lake Sumter, North Florida, Okaloosa-Walton, Pasco-Hernando, South Florida, and St. Johns River. The 17 large colleges were Brevard, Broward, Daytona Beach, Edison, Florida Junior College at Jacksonville, Gulf Coast, Hillsborough, Manatee, Miami-Dade, Palm Beach, Pensacola, Polk, Santa Fe, Seminole, St. Petersburg, Tallahassee, and Valencia.

Statistics

The data were analyzed using the Stepwise Multiple Regression procedure of the Statistical Analysis System (SAS). CLAST pass-all-four rates (CLSTPASS) for each of the 28 community colleges were predicted based on five variables: percent of the student body that was minority (PCTMINOR), percent of the student body who enrolled needing basic skills help (PCTBSA), percent ratio of CLAST writers to enrollees in Fall '87 (WRT/ENR), percent ratio of CLAST writers to A.A. degree-seekers (WRT/AA), and percent ratio of college preparatory FTEs compared to A&P FTEs (CPFTE).

The procedure was set so that variables would be added to the prediction equation as long as they were statistically significant at the .15 level. They would remain in the equation as long as they continued to meet that criterion, even after other variables were added. The resulting multiple correlation coefficient were tested at the .05 level for significance. Separate analyses were conducted for the total group, for small colleges, and for large colleges.

Results

There was wide variability on all measures included in the analysis (see Table 1). The number writing the CLAST with 60 or more credits ranged from a low of 17 (North Florida) to a high of 1,207 (Miami-Dade). The pass rate ranged from 46% (Miami-Dade) to 83% (Indian River) with an average pass rate of 69%. In terms of the percentage of the student body

who were minorities, the lowest was Pasco-Hernando with 5% while Miami-Dade had the highest with 73%; the average was 16% minority.

Miami-Dade also had the largest percentage of students requiring basic skills help (65%), while St. Johns River had the fewest (23%). The ratio of college preparatory to A&P credits was also highest at Miami-Dade (19% or 1 to 5); the minimum was less than 5% at Florida Keys, Indian River, and South Florida.

Very few students were writing the CLAST in October 1989 compared to the number enrolled in 1987. The college with the highest ratio was Tallahassee (4% of Fall 1987 enrollees), and the lowest ratios were at Indian River and South Florida (0.6% of Fall 1987 enrollees). Compared to A.A. program enrollees, Miami-Dade had the highest percent writing the CLAST (6.6%) and Lake City had the lowest (1.5%). Summaries of the variables can be found in Table 1, while Appendix A contains the raw data.

Table 2 contains the correlation matrices for the total group of colleges, for small colleges, and for large colleges. For the group as a whole, with a correlation of -.78, the strongest relationship was CLAST performance and the percentage of minority students at the college. The higher the percent of minorities found, the lower the CLAST pass rate. Other variables which had a statistically significant correlation with CLAST performance were the percent of A.A. degree-seekers who were writing the CLAST (a screening variable) and the ratio of college preparatory to A&P FTEs (a basic skills variable). Small colleges had only one variable related to CLAST performance, percent minority, which correlated -.82. Besides a correlation of -.88 with percent minority, large colleges added another variable not found for the total group that was statistically significant: percent of the student body below on entering basic skills ($r = -.61$).

In conducting a multiple-regression analysis, the relationship of the predictors to each other as well as their relationships to what is being predicted is important. In this way, redundant variables are not brought in as predictors, and only the strongest relationships to the dependent

variable are preserved. Note that for the total group, having more CLAST writers compared to A.A. degree-seekers and having more college preparatory compared to A&P credits was more strongly related to minority percent than to CLAST pass rates. Not surprisingly, the two screening variables were also related to one another as were the two basic skills variables.

So what did the stepwise procedure indicate was needed to predict CLAST performance? For the total group of colleges, only one variable -- percent minority of the student body -- was needed for the prediction. This measure accounted for 60% of the variability in CLAST performance. Table 3a displays the results, including the predicted CLAST performance for each institution.

A separate analysis for the 11 small colleges again indicated that only percent minority was needed for the prediction. The proportion of variance accounted for was increased to .67, and predictions were slightly more accurate (see Table 3b).

Only for large colleges were two variables needed to best explain CLAST performance. In this case, the combination of percent minority and percent of students entering with a need for basic skills help accounted for 82% of the variability in CLAST performance. The minority variable, however, remained the strongest predictor (see Table 3c).

Discussion

If you want to guess how a community college is performing on CLAST, the one question to ask is what percentage of the student body is minority. The answer will make more difference than knowing the entering basic skills levels of students or the percentage of students being screened out before reaching the CLAST. In addition, we believe it will make more difference than asking about English and mathematics courses.

Clearly, there is a strong relationship between the CLAST and minority group affiliation. Previous analyses have shown that: (1) minority students score lower on the test, (2) increasing standards has a

disproportionate effect on minorities, and (3) the CLAST does not predict minority performance in the State University System as well as for other students. This study adds the finding that what is true based on an individual's ethnicity is also true for institutions. The simple correlations between percent minority and percent passing CLAST ranged from -.78 to -.88 depending on the size grouping of the colleges. The amount of variability in pass rates accounted for exceeded 60%, and went as high as 82% for the large college group.

One must ask why the CLAST is such a stumbling block for minority students and minority institutions. Why was the strongest relationship not found for entering basic skills and CLAST performance instead? Or for the screening variables and CLAST performance? Minority students have lower entering basic skills than white non-Hispanic students. Yet knowledge of performance of students on an entering test of basic skills was less useful in understanding later test performance than was knowledge of the size of the minority population at the college. At larger colleges, knowledge of the entering level of basic skills was useful, but only secondary to, and independent of, knowledge of minority membership. Recall, too, that this study was based on students who completed 60-credits and could therefore be judged "successful" based on grades and course completion. Perhaps this is another indication that classroom performance, rather than test performance, better evaluates minority students. By default, therefore, CLAST performance is not a good way to evaluate institutions with many minority students.

The State has recognized the special problems of minorities and the CLAST. A task force was formed, recommendations were made, and institutions have responded with specific plans. If the next step is to allocate dollars for special instructional support for minority students, then this study shows that the best way to do it is to base distribution of dollars on the number and percentage of minority students at the institution.

Table 1

Variables Used in Analysis

Variable	Mean	Standard Deviation	Minimum	Maximum
All Colleges (N=28)				
Number Writing CLAST	204.0	236.6	17.0	1,207.0
Percent Passing CLAST	69.4	7.5	46.0	83.0
Percent Minority	15.9	12.6	5.4	73.0
Percent Below on Basic Skills	44.1	11.0	22.8	64.7
Percent CLAST Writers to Enrollees	2.1	0.7	0.6	4.0
Percent CLAST Writers to A.A. seekers	3.2	1.0	1.5	6.6
Percent College Preparatory to A & P FTE	9.5	3.7	4.2	19.0
Small Colleges (N=11)				
Number Writing CLAST	47.0	25.1	17.0	89.0
Percent Passing CLAST	70.3	8.6	53.0	83.0
Percent Minority	12.4	6.9	5.4	27.8
Percent Below on Basic Skills	40.6	11.1	22.8	62.0
Percent CLAST Writers to Enrollees	1.6	0.7	0.6	2.6
Percent CLAST Writers to A.A. seekers	2.7	0.8	1.5	4.0
Percent College Preparatory to A & P FTE	8.5	3.8	4.2	14.2
Large Colleges (N=17)				
Number Writing CLAST	305.6	257.1	109.0	1,207.0
Percent Passing CLAST	68.9	6.8	46.0	78.0
Percent Minority	18.2	15.0	6.4	73.0
Percent Below on Basic Skills	46.4	10.7	33.0	64.7
Percent CLAST Writers to Enrollees	2.3	0.6	1.6	4.0
Percent CLAST Writers to A.A. seekers	3.5	1.0	1.8	6.6
Percent College Preparatory to A & P FTE	10.2	3.5	5.9	19.0

Table 2

Correlations Among Variables Used in Stepwise Regression

	Percent Minority (PCT MINOR)	Percent Below on Basic Skills (PCT BSA)	Percent of CLAST Writers to Enrollees (WRT/ENR)	Percent of CLAST Writers to A.A. Seekers (WRT/A.A.)	Percent of College Preparatory to A&P FTE (CP FTE)
			All Colleges		
Percent Passing CLAST	-.78*	-.33	-.02	-.39*	-.41*
PCT Minor	—	.33	.23	.58*	.52*
PCT BSA		—	.10	.36	.55*
WRT/ENR			—	.53*	.28
WRT/A.A.				—	.30
			Small Colleges		
Percent Passing CLAST	-.82*	.03	.38	.17	-.07
PCT Minor	—	-.28	-.28	-.29	-.07
PCT BSA		—	-.33	-.20	.40
WRT/ENR			—	.64*	.34
WRT/A.A.				—	-.03
			Large Colleges		
Percent Passing CLAST	-.88*	-.61*	-.31	-.74*	-.70*
PCT Minor	—	.48*	.30	.74*	.71*
PCT BSA		—	.21	.52*	.62*
WRT/ENR			—	.30	.05
WRT/A.A.				—	.36

*Statistically significant at the .05 level.

Table 3a

Results of Stepwise Regression

All Colleges

	DF	Sum of Squares	Mean Square	F	Probability
Regression	1	906.2	906.2	39.6	.0001
Error	26	594.6	22.9		
Total	27	1,500.8			

R^2 = .60
Adjusted R^2 = .59

CLSTPASS = 76.75 - .46(PCT MINOR)

Community Colleges	Actual Value	Predicted Value	Standard Error of the Prediction
Brevard Community College	71	71.7	0.98
Broward Community College	66	67.6	0.95
Central Florida Community College	71	71.9	0.98
Chipola Junior College	75	69.2	0.90
Daytona Beach Community College	70	70.2	0.91
Edison Community College	71	73.8	1.14
Florida Community College at Jax	73	66.9	0.99
Florida Keys Community College	67	71.1	0.94
Gulf Coast Community College	70	71.3	0.95
Hillsborough Community College	70	67.4	0.96
Indian River Community College	83	73.9	1.15
Lake City Community College	72	70.7	0.93
Lake-Sumter Community College	73	73.7	1.13
Manatee Community College	75	73.5	1.11
Miami-Dade Community College	46	43.2	4.27
North Florida Junior College	53	64.0	1.25
Okaloosa-Walton Community College	76	72.0	0.99
Palm Beach Community College	71	69.3	0.90
Pasco-Hernando Community College	70	74.3	1.19
Pensacola Junior College	67	69.2	0.90
Polk Community College	74	71.7	0.98
Santa Fe Community College	70	68.5	0.92
Seminole Community College	78	71.1	0.94
South Florida Community College	57	67.4	0.96
St. Johns River Community College	76	73.3	1.09
St. Petersburg Junior College	65	72.7	1.04
Tallahassee Community College	66	66.2	1.04
Valencia Community College	68	68.2	0.92

Table 3b

Results of Stepwise Regression

Small Colleges

	DF	Sum of Squares	Mean Square	F	Probability
Regression	1	499.7	499.7	18.3	.0021**
Error	9	246.4	27.4		
Total	10	746.1			

R^2 =.67
Adjusted R^2 =.63

CLSTPASS = 83.11 - 1.03(PCT MINOR)

Community Colleges	Actual Value	Predicted Value	Standard Error of the Prediction
Central Florida Community College	71	72.2	1.64
Chipola Junior College	75	66.1	1.86
Florida Keys Community College	67	70.3	1.58
Indian River Community College	83	76.8	2.20
Lake City Community College	72	69.5	1.59
Lake-Sumter Community College	73	76.3	2.12
North Florida Junior College	53	54.4	4.03
Okaloosa-Walton Community College	76	72.4	1.65
Pasco-Hernando Community College	70	77.5	2.32
South Florida Community College	57	62.2	.47
St. Johns River Community College	76	75.3	1.96

Note: Small colleges were defined as those with fewer than 100 test-takers for the October, 1989, CLAST.

Table 3c

Results of Stepwise Regression

Large Colleges

	DF	Sum of Squares	Mean Square	F	Probability
Regression	2	604.7	302.4	30.9	.0001
Error	14	137.1	9.8		
Total	16	741.8			

	Variable Entered	Partial R^2	Model R^2	F	Probability
Step 1:	PCT MINOR	.77	.77	50.2	.0001
Step 2:	PCT BSA	.05	.82	3.4	.0848

R^2 =.82
Adjusted R^2 =.79

CLSTPASS = 82.36 - .34(PCT MINOR) -.16(PCT BSA)

Community Colleges	Actual Value	Predicted Value	Standard Error of the Prediction
Brevard Community College	71	73.5	1.25
Broward Community College	66	66.5	1.22
Daytona Beach Community College	70	71.8	1.09
Edison Community College	71	74.3	1.05
Florida Community College at Jax	73	69.6	1.33
Gulf Coast Community College	70	69.3	1.39
Hillsborough Community College	70	68.6	0.82
Manatee Community College	75	74.4	1.11
Miami-Dade Community College	46	47.1	2.96
Palm Beach Community College	71	69.1	0.83
Pensacola Junior College	67	68.3	1.03
Polk Community College	74	73.3	1.17
Santa Fe Community College	70	69.4	0.79
Seminole Community College	78	70.8	0.8
St. Petersburg Junior College	65	70.9	1.28
Tallahassee Community College	66	68.1	0.98
Valencia Community College	68	66.1	1.61

Note: Large colleges were defined as those with 100 or more test-takers for the October, 1989, CLAST.

Appendix A

Raw Data Used in the Analysis
(Explanation Provided in Text)

Num	School	(60 Cred) Oct '89 Tested	'89 Pass Rate	(All Cred) '87 EF-2 Min %	87-88 Pub FTIC Below Cut	CLAST/ EF2 Ratio	'87-88 AA Enroll (AA-1)	CLAST/ AA Ratio	(All Cred) EF2 Number	87-88 CP/A&P Ratio	87-88 C Prep FTE	87-88 A&P FTE
1	Brevard	315	71	10.9%	33.0%	2.6%	9708	3.2%	12146	5.9%	208	3520
2	Broward	369	66	19.8%	58.4%	1.7%	99[illegible]	3.7%	21621	12.5%	744	5952
3	Central Florida	89	71	10.6%	43.0%	2.4%	3319	2.7%	3645	14.2%	173	1220
4	Chipola	44	75	16.5%	30.0%	2.6%	1341	3.3%	1674	5.3%	32	599
5	Daytona Beach	219	70	14.3%	36.1%	1.9%	5261	4.2%	11263	5.8%	156	2694
6	Edison	109	71	6.4%	37.8%	1.6%	3507	3.1%	7008	9.8%	190	1941
7	Fla JC at Jax	248	73	21.4%	34.7%	2.1%	8110	3.1%	11979	9.1%	397	4374
8	Fla Keys	21	67	12.4%	50.0%	1.0%	684	3.1%	2122	4.2%	17	403
9	Gulf Coast	121	70	11.8%	57.6%	2.7%	3268	3.7%	4404	7.3%	106	1439
10	Hillsborough	342	70	20.3%	43.7%	2.4%	9990	3.4%	14155	13.8%	620	4482
11	Indian River	65	83	6.1%	43.2%	0.6%	3398	1.9%	10231	4.5%	79	1734
12	Lake City	25	72	13.2%	50.2%	1.3%	1662	1.5%	1937	11.7%	67	574
13	Lake Sumter	41	73	8.6%	62.0%	1.9%	1157	3.5%	2119	13.9%	69	498
14	Manatee	133	75	7.1%	35.7%	1.6%	7571	1.8%	8123	8.6%	213	2465
15	Miami-Dade	1207	46	73.0%	64.7%	2.8%	18348	6.6%	426[illegible]	19.0%	2933	15398
16	North Florida	17	53	27.8%	31.4%	1.1%	671	2.5%	[illegible]	10.6%	38	358
17	Okaloosa-Walton	83	76	10.4%	32.6%	2.0%	3716	2.2%	415[illegible]	9.3%	103	1102
18	Palm Beach	318	71	16.2%	49.5%	2.4%	7600	4.2%	13079	9.2%	348	3790
19	Pasco-Hernando	56	70	5.4%	40.6%	1.7%	1839	3.0%	3370	9.3%	77	835
20	Pensacola	204	67	16.4%	54.1%	1.9%	5438	3.8%	10618	9.4%	286	3036
21	Polk	110	74	10.9%	34.2%	2.1%	3647	3.0%	5197	7.5%	108	1454
22	Santa Fe	187	70	17.9%	43.6%	2.1%	8350	2.2%	8953	14.6%	485	3314
23	Seminole	183	78	12.3%	47.2%	2.6%	4542	4.0%	6909	8.3%	149	1792
24	South Florida	21	57	20.3%	41.2%	0.6%	1165	1.8%	3509	4.5%	20	451
25	St Johns River	55	76	7.6%	22.8%	2.4%	1377	4.0%	2332	5.5%	38	700
26	St. Petersburg	520	65	8.9%	54.1%	2.8%	13015	4.0%	18764	11.3%	613	5401
27	Tallahassee	269	66	22.9%	41.2%	4.0%	8083	3.3%	6655	8.3%	220	2664
28	Valencia	342	68	18.6%	63.5%	2.5%	12180	2.8%	13760	13.4%	581	4330

Miami-Dade Community College

MIAMI-DADE IS AN EQUAL ACCESS/EQUAL OPPORTUNITY COMMUNITY COLLEGE
AND DOES NOT DISCRIMINATE ON THE BASIS OF HANDICAP. 4/88