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ABSTRACT

In 1972, the board of regents of the university system of Georgia directed that a testing program be established to provide information on the status of student competence in the areas of reading and writing. In addition, the program was to provide a uniform means of identifying those students who fail to attain minimum levels of competence expected of graduates in these areas. This paper describes the instrument and the grading procedure; reviews the related literature; examines the relationship between student background characteristics, college variables, and performance on the examination; explores predictability of student performance; and presents the implications for higher education. A list of references and tables of findings are included. (JM)

SYSTEM-WIDE LANGUAGE SKILLS EXAMINATION: A LOOK AT THE UNDERLYING FACTORS

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SYSTEM-WIDE LANGUAGE SKILLS EXAMINATION: A LOOK AT THE UNDERLYING FACTORS

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The trend toward universal availability of higher education has increased public focus upon the question of the basic competency in English language skills of contemporary college students. Higher education systems in California, Michigan, North Carolina, and Illinois are reported to be undertaking assessment of the language skills of their students.

The University System of Georgia in 1972 developed an evaluation procedure to assess the success of academic programs and to provide the needed information for decision-making about program development and improvement. The lack of an adequate and suitable testing instrument resulted in the development of a measurement instrument for the University System. A Board of Regents' policy adopted in 1972 decreed that this examination be instituted. It is a goal of the Regents "that students obtaining a degree...possess the basic competence of academic literacy, that is, certain minimum skills of reading and writing" (p. 174B). The objectives of the Regents' Testing Program are:

1. To provide System-wide information on the status of student competence in the areas of reading and writing; and
2. To provide a uniform means of identifying those students who fail to attain minimum levels of competence expected of graduates in the areas of reading or writing. (p. 174B)

Since the establishment of the program 75,735 examinations have been administered as of Spring, 1975, to students in the University System of Georgia which is comprised of 32 institutions ranging from small junior colleges to large universities.

This paper describes the instrument and grading procedure, reviews the related literature, examines the relationship between the student background characteristics, college variables and performance on the examination, explores predictability of student performance, and presents the implications for higher education.

Regents' Test and Grading Procedure

Officially, the Regents' Test is administered to all students during the first quarter of enrollment after they have received 45 credit hours. The test is divided into two parts--reading and essay. The reading part consists of a vocabulary portion which tests word usage and a reading comprehension portion. The essay part requires a student to write an essay on one of two topics given. Both parts of the test must be passed at the same administration.

The reading section of the test is scored based on the normative data from the original group tested. To pass, students must score higher than the tenth percentile. Teachers of English in the University System of Georgia score the essay on a criterion basis following a holistic procedure. Raters judge the essay on predetermined criteria of writing ability: (1) organization (limiting the subject; evidence of a thesis; and unity, logical development, coherence, and evidence of the development of the thesis); (2) rhetoric (diction, sentence structure, and point of view); and (3) mechanics (spelling, punctuation, and usage). The rating scheme is a four-point scale indicating essay quality: 1 (substandard); 2 (weak); 3 (good); and 4 (superior). Both the identity of the student and his institution are unknown to the rater. Each essay is scored independently by three faculty members. A score of "1" or "not acceptable" must have been assigned to the essay by at least two of the three raters.

Review of Related Literature

The so-called "deprived student" or the low achieving student has been widely studied in recent years. The problem of low achievers in an "open door" college environment was explored by Roueche and Hurlburt (1968), Holstrom (1973), and Schoenfeldt et al. (1970). The rise of community junior colleges in Georgia has tended to accelerate the number of transfer students. The Committee on Transfer of Credit (1969) of the University System of Georgia dealt with transfer problems and developed a "core curriculum" to facilitate transfers. It should be noted that Regents' policy does not make passing the test a condition for transfer. Some relevant studies on the performance of transfer students compared with native students include Hills (1965), Panos et al. (1968), Walker (1969), Buckley (1970), and Melnick et al. (1970).

Since the implementation of the Regents' Test, experimental and research activities have dealt with many aspects of the test. Much of this research has been concerned with the essay since it largely accounts for failure on the total examination. Wells (1973) examined how well essay performance could be predicted using reading and writing objective tests and two different prediction models. Ravan (1973) made a validity check of the procedure used to evaluate the essay and found that while the scores from the analytic evaluation were somewhat lower than those from the holistic evaluation, the results established the same four ranks of essay quality. Thompson and Rentz (cited in French, 1974) addressed the question of reliability of each rater using an accuracy percentage, defined as the percent of essays on which at least one other rater agreed with the score assigned. They found that during six administrations of the Regents' Test, there was perfect rater agreement in 30.9 percent of the cases, partial agreement in 60.2 percent of the cases, and total disagreement in 8.9 percent of the cases. The work of French (1974) reported that "a small but statistically significant degree of relationship

was found between biographical factors and essay score, and between subgroup membership and essay score" (p. 24). However, she concluded that "it is not possible to identify, with any degree of certainty, subgroups of students who would be likely to experience difficulty with writing at the college level" (p. 24).

Litaker (1974) investigated item bias in the Regents' reading comprehensive testing instrument for homogeneous groups of institutions and concluded that "based on average item difficulty, the LSE [Regents' Test] was differentially difficult for the four groups of institutions studied. The Universities, the Senior Colleges, the Junior Colleges, and then the Black Colleges found the test progressively more difficult" (p. 83).

Case Studies

This section of the paper presents the findings of two studies, one conducted in 1972 by Hickman and the other in 1975 by Prather and Smith. Both of these efforts sought to measure relationships between the Regents' Test and exogenous and endogenous factors. Exogenous factors include such variables as academic and family background, race, sex, and cognitive skills, while endogenous factors include those acquired in the student's higher education experience.

The 1972 study population was a university, two senior colleges and two junior colleges. The college variables included HSA, SAT-V, SAT-M, GPA and grades in core curriculum courses; the biographical variables consisted of sex, race, age, marital status, transfer status, and educational background of parents. The principal factors influencing student performance were sex and minority status, indicating that females and non-minorities perform better on the test after controlling for the ability level of the study population. Surprisingly, grades in English composition were not found to be correlated to performance on the test. It was concluded that school type was not a factor in performance on the Regents' Test.

In 1975 a follow-up study was undertaken, with the population limited to the university. Although a number of procedural and policy changes had transpired during the intervening years, a comparison in Table 1 shows very little difference between the two studies.

Insert Table 1 about here

Analysis Procedure

The least squares analysis of the test scores was performed in the 1975 study using a stepwise procedure which is a mathematical algorithm ranking the regressors according to how much of the variance in the regressand is accounted for when controlling for the other variables previously entered into the analysis. This technique was used to locate those variables which had the strongest empirical association with the regressand. To aid in interpreting the regression analysis, the regression coefficient is given along with its standard error. The standardized regression coefficient (β) is included so that relative impact of that regressor can be readily noted. The simple bivariate correlation between each regressor and the regressand is also supplied. One data problem encountered in the original report (1975) was the large amounts of missing data for certain key variables such as SAT's, GPA's, etc. To permit inclusion of these variables the mean value was substituted for missing values. A re-analysis of the data was performed incorporating a procedure recommended by Cohen (1968). This method allows for an objective measure of the impact of the missing data.

The data base was a weighted sample of those taking the test during Fall 1974, and Winter 1975, quarters. It represented the total of those students who failed or who had previously failed and were repeating the test, and a 34 percent sample of those who passed the first time. The unweighted sample N

was 1011 while the total population equaled 1910. (The slight variations from the study population number and those shown on the subsequent tables for the weighted N are due to rounding errors in the analysis).

Results

The first test score analyzed was with the regressand of the reading scores. The analysis is given in Table 2 and the multiple correlation squared was .530. The first regressors entered into the analysis were the SAT-Verbal test score and the cumulative GPA obtained at the university followed by non-minority status. The implication of these coefficients was that, all other regressors remaining unchanged, a verbal score of 600 would mean 14 points on the reading test over a verbal score of 300; that a 3.5 GPA was five points over a GPA of 2.0; and that non-minorities scored 6 points higher when compared to minorities of similar characteristics. Of the strongest endogenous regressors, being an English major added 3.8 points, while being a business major subtracted one point. Having taken English composition after 1971--at this university or other institutions--showed a negative impact on the reading score of about two points. The other endogenous variables showed little systematic impact on the reading score.

Insert Table 2 about here

The analysis with the essay score as the regressand is presented in Table 3. The multiple correlation squared (R^2) was .194 and the standard error of estimate (SEE) was .534 relative to the scoring system of 1, 2, 3 or 4. Similar to the reading test analysis, among the first variables entered were cumulative GPA (at this university), SAT-Verbal, and Freshman GPA. Being female and non-minority was found to have positive influence on the essay score; being a male minority and taking English composition since 1972 to have a negative impact; and being a social science major to be a positive coefficient.

Insert Table 3 about here

The analysis of success or failure on the total test is given in Table 4. The R^2 was found to be .155 and a SEE was shown to be .390 on the scale of one for a pass and zero for a fail. The weak R^2 and the large SEE made it difficult for the equation to have practical import. It was illustrative to interpret the coefficients as indicating an increase or decrease in the probability of passing the total test. For instance, a student with a 600 on the SAT-Verbal had a 15 percent higher chance of passing than with an SAT-Verbal of 300; a student with a 3.0 GPA had a 5.5 percent higher probability than the student with a 2.0 GPA; female and non-minority status students had a 14 percent higher chance; male and minority status students had a 13.5 percent decreased chance of passing; and students having had English composition since 1972 had a decreased probability of passing by about seven percent.

Insert Table 4 about here

Predictability of Student Performance

The weak R^2's were further researched using a variant of least squares--multiple discriminant analysis which is a technique of statistically distinguishing among two or more groups. For one analysis the grouping characteristic was the essay score and for the other the pass-fail score. The regressors used in Tables 2 through 4 were the discriminant variables which were used to measure how the grouping differed. The purpose of using the discriminant analysis was to determine how well the essay scores category could be predicted and whether the same could be applied to the pass or fail grouping. Table 5 contains the summary of how well the essay score could be predicted using these criteria. The predictions were quite weak, with 35 percent of the failure group being predicted to pass. Of those who actually passed, 27 percent were predicted to fail. Note that five of the failure students would have been predicted to score four on the essay.

Insert Table 5 about here

The discriminant analysis in Table 6 is of the total test result. The analysis indicated that 71 percent of those who passed would have been predicted to pass, and 68 percent of those who actually failed were predicted to fail. Since the techniques are functionally equivalent, the strongest discriminating variable for both the essay and the final results were the same as those found in the regression.

Insert Table 6 about here

The low level of prediction found in this study is due to a number of possibilities, the first of which is the possible presence of measurement error in the regressor. But also there exist questions relative to the reliability of the essay (French, 1974) and its external validity. Unanswered questions affecting the predictability of the essay score are those of student attitudes toward the test and the effect of remedial training.

Summary and Implications

This paper has attempted to address the underlying factors influencing student performance on a system-wide language skills examination. The principal factors influencing language skills of college students, as measured by the Regents' Test, appear to be exogenous or external to an institution. One is left to wonder if what is taught is being tested and if what is tested is being taught. It can only be conjectured as to whether or not the massive testing program is doing more than just focusing attention on the problem. The establishment of remedial programs at each institution is a further attempt by the Regents to find a solution. But the problem remains: these writing skills, somewhat mysteriously acquired, appear elusive to measure. Test constructers and researchers have a continuing responsibility to apprise policy-makers of the limitations and implications of measurement tools.

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Table 1

Comparative Data on Regents' Test
1972 and 1975

Variables	ESSAY			READING		
	1972 Study		1975 Study	1972 Study		1975 Study
	Total Sample	Univ Sub-Sample	Univ	Total Sample	Univ Sub-Sample	Univ
Female	.15	.18	.12	.03	.13	.03
Non-Minority	.15	-.11	.17	.48	.32	.42
Veteran	-.09	-.06	-.03	.05	.04	-.01
Native Student	.04	.03	.03	.15	.01	.005
HS GPA	.23	.18	.11	.21	.17	.09
SAT - Verbal	.37	.32	.29	.75	.70	.59
SAT - Math	.21	.17	.24	.57	.39	.37
English Comp. GPA	.20	.30	.13	.21	.39	.17
Freshman GPA	.21	.20	.23	.28	.42	.27
Cumulative GPA	.26	.26	.30	.34	.44	.47

Table 2
Regression Analysis of Regent's Test
Component: Reading Score

Regressors	Regressor Estimators	Standard Error of Estimators	β	Simple r
SAT-Verbal	.045	.002	.407	.586
GPA-Univ	3.247	.262	.254	.468
Non-Minority	5.903	.703	.235	.421
Entered Higher Educ After 1971	-.590	.452	-.031	-.094
Other Eng. Indicator	.308	.125	.046	.210
English Major	3.764	1.066	.060	.139
Business Major	-.722	.476	-.035	-.111
Eng. Comp. After 1971-Other	-2.344	.501	-.111	-.130
Mother's Educ	.602	.297	.038	.142
Eng. Comp. After 1971-Univ	-1.522	.482	-.076	-.003
Eng. Comp. GPA	.590	.163	.079	.165
Para-Medical Major	-1.749	.597	-.059	.002
Science Major	-.527	.165	-.071	.168
Freshman GPA	.713	.237	.073	.272
Education Major	-1.073	.567	-.037	-.092
Senior Col. Transfer	1.070	.767	.046	-.113
Business Indicator	-.247	.125	-.038	-.019
Missing Data:Year Grad H.S.	3.163	1.389	.051	.017
Missing Data:SAT-Verbal	-.929	.416	-.046	-.081
Univ Level Transfer	2.453	.753	.110	.181
Female	1.262	.797	.068	.033
H.S. GPA	-1.083	.449	-.064	.087
Missing Data:H.S. GPA	-1.269	.596	-.066	-.021
Junior Col. Transfer	1.539	.873	.076	-.072
Transfer GPA Indicator	-.408	.213	-.059	-.009
Humanities Indicator	-.176	.115	-.028	.128
Missing Data:Father's Educ	-.624	.522	-.025	-.113
Year Grad H.S.	-.129	.079	-.078	-.071
Year of Birth	.091	.076	.058	-.059
Non-System Community Col.	.574	.612	.026	-.040
Social Science Indicator	.554	.531	.021	.036
Hours Transferred	.004	.005	.021	.022
Female-Non-Minority	-.694	.838	-.037	.220
Father's Educ	.189	.251	.014	.169
SAT-Math	-.002	.002	-.016	.371
Humanities Indicator	.316	.547	.011	.070
Missing Data:GPA Univ	-.464	.717	-.011	-.049
Missing Data:Year of Birth	1.026	1.880	.012	-.011
Non-Repeat	.284	.533	.009	.125
H.S. Located in County A	.181	.392	.008	-.058
Full-Time Employed	-.169	.340	-.009	.007
Veteran	.209	.531	.008	-.014
Social Science Indicator	-.025	.170	-.003	.252
Missing Data:Mother's Educ	.079	.587	.003	-.103
Constant	38.479			
R^2	.530			
Standard Error of Estimate	6.443			
Weighted N	1916			

Table 3
Regression Analysis of Regent's Test
Component: Essay
(Pass=2, 3 or 4; Fail=0)

Regressors	Regressor Estimators	Standard Error of Estimators	β	Simple r
GPA-Univ	.127	.022	.156	.299
SAT-Verbal	.0006	.0002	.090	.289
Female-Non-Minority	.064	.047	.054	.177
Freshman GPA	.065	.020	.106	.228
Non-Repeat	.149	.044	.073	.128
Eng. Comp. After 1971-Other	-.074	.041	-.056	-.086
Social Science Major	.123	.041	.072	.065
Other Eng. Indicator	.027	.010	.063	.162
SAT-Math	.0006	.0002	.089	.237
Male-Minority	-.158	.066	-.064	-.140
Social Science Indicator	-.032	.014	-.063	.147
Year of Birth	-.013	.006	-.126	-.052
Missing Data:GPA Univ	.106	.059	.040	-.011
Missing Data:SAT Math	-.071	.319	-.055	-.036
Missing Data:H.S. GPA	.145	.049	.119	.002
H.S. GPA	.068	.037	.064	.106
Mother's Educ	.048	.025	.048	.075
H.S. Located in County A	-.089	.035	-.063	-.066
Transfer GPA Indicator	-.010	.018	-.024	-.016
Business Indicator	.026	.010	.062	.030
Business Major	-.056	.036	-.043	-.104
Eng. Comp. After 1971-GSU	-.073	.040	-.057	.020
Hours Transferred	-.0008	.0004	-.056	-.009
Transferred from Univ. Level	.043	.040	.030	.102
Humanities Indicator	.010	.010	.025	.119
H.S. Located in County B	-.036	.034	-.027	.004
Eng. Indicator	.013	.014	.027	.128
Year Grad. from H.S.	.008	.007	.079	-.051
Missing Data:Year Grad. H.S.	-.142	.115	-.036	-.024
Native Student	.054	.063	.041	.031
Missing Data:Father's Educ	.022	.043	.014	-.035
Male-Non-Minority	-.040	.050	-.034	-.050
Education Major	-.021	.043	-.011	-.028
Father's Educ	.013	.021	.016	.073
Science Indicator	-.008	.014	-.016	.163
Veteran	.020	.044	.012	-.031
Missing Data:Year Birth	.056	.155	.011	-.023
Year Entered Higher Educ	-.012	.037	-.010	-.025
Humanities Indicator	.012	.042	.007	.030
Missing Data:Mother's Educ	.008	.048	.004	-.030
Junior Coll. Transfer	-.006	.039	-.005	-.086
Missing Data:SAT-Verbal	-.032	.319	-.025	-.035
Constant	.326			
R^2	.194			
Standard Error of Estimate	.534			
Weighted N	1916			

Table 4
Regression Analysis of Regent's Test
Component: Results
(Pass=1, Fail=0)

Regressors	Regressor Estimators	Standard Error of Estimators	β	Simple r
SAT-Verbal	.0005	.0002	.098	.263
GPA-Univ	.055	.016	.096	.229
Female-Non-Minority	.136	.035	.159	.189
Missing Data:SAT-Math	-.218	.234	-.238	-.082
SAT-Math	.0004	.0002	.073	.214
Male-Minority	-.135	.042	-.077	-.152
Social Science Major	.079	.034	.065	.052
Freshman GPA	.028	.014	.064	.176
Non-Repeat	.069	.032	.048	.112
Eng. Comp. After 1971-Other	-.069	.026	-.072	-.052
Eng. Comp. After 1971-Univ	-.082	.029	-.091	.013
Missing Data-Year Birth	-.082	.114	-.022	-.074
Hours Transferred to Univ	-.0009	.0003	-.093	-.028
Missing Data-H.S. GPA	.085	.036	.098	-.018
H.S. Located County A	-.057	.026	-.056	-.059
Other Eng. Indicator	.007	.008	.024	.116
Missing Data-Father's Educ	.064	.031	.058	-.034
Veteran	.040	.032	.033	-.023
Mother's Educ	.031	.018	.044	.069
Business Indicator	.011	.008	.036	.009
Native Student	.074	.044	.079	.032
Transfer GPA Indicator	.020	.013	.064	.009
Missing Data-Year Grad H.S.	-.170	.084	-.061	-.065
Business Major	-.014	.031	-.015	-.076
Para-Medical Major	-.050	.041	-.037	.013
Missing Data-GPA	.035	.043	.019	-.004
Eng. Comp. GPA	.015	.010	.045	.106
Social Science Indicator	-.010	.010	-.028	.125
H.S. GPA	.032	.027	.042	.094
Male	-.039	.037	-.038	.106
Science Indicator	-.017	.010	-.017	.123
H.S. Located-County B	-.011	.026	-.011	.037
Missing Data-SAT Verbal	.137	.233	.150	-.080
Missing Data-Mother's Educ	-.020	.036	-.015	-.056
Science Major	.031	.037	.029	.024
Junior Col. Transfer	-.006	.038	-.007	-.044
Year of Birth	-.009	.005	-.121	-.011
Year Graduated H.S.	.009	.005	.121	-.006
Humanities Major	.025	.035	.020	.028
Education Major	.024	.036	.018	-.003
Full-Time Employed	.009	.021	.010	.004
Father's Educ	.006	.016	.010	.072
Non-System Community Col.	-.009	.038	-.009	-.028
Humanities Indicator	.008	.007	.003	.074
Senior Col. Transfer	-.003	.029	-.003	-.041
Constant	-.334			
R^2	.155			
Standard Error of Estimate	.390			
Weighted N	1916			

Table 5

Summary of Multiple Discriminant Analysis
Based Upon Results of the Essay

Actual Scores	Predicted Scores on Essay				Total
	1	2	3	4	
1	273	103	38	5	419
2	387	504	353	17	1261
3	18	49	151	6	224
4				9	9
TOTAL	678	656	542	37	1913

Table 6

Summary of Multiple Discriminant Analysis
Based Upon Results of Total Test

Actual Performance	Predicted Performance		
	Fail	Pass	Total
Fail	296	138	434
Pass	426	1053	1479
TOTAL	722	1191	1913