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ABSTRACT

To answer several questions about the Ohio statewide high school proficiency testing program, correlations of student performance on the ninth-grade proficiency test with other measures of reading and mathematics were studied for approximately 4,600 students in the Cleveland (Ohio) City School District. The performance of students from higher versus lower poverty level school districts on the Ohio proficiency test was also studied. Measures of reading and mathematics achievement were the norm-referenced and criterion-referenced tests obtained as local achievement measures in Cleveland (California Achievement Test and Cleveland Competency Test). The rates of Ohio proficiency test passage for ninth graders were compared for 31 Ohio school districts including Cleveland. Both analyses supported the idea that the Ohio Ninth Grade Proficiency Test does represent a valid measure of the competencies of students in the Cleveland district. The comparison of tested proficiency skills with the district's stated competency objectives in reading and mathematics indicates a valid skill assessment. However, correlations between the district's measures and the Ohio proficiency test, while significant, were not strong. A strong positive relationship was found between the economic status of a district's students and their performance on the test. The Ohio proficiency te may not be adequate for all the state's students. Additional questions of the appropriateness of the test and its use await further analysis. Three references are listed. (SLD)

Statewide Proficiency Testing: Establishing Standards or Barriers?

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Statewide Proficiency Testing: Establishing Standards or Barriers?

Introduction

In 1987, the Ohio Legislature passed Substitute House Bill 231 which established a statewide high school proficiency testing program for Ohio's high school students. The program specified that, commencing in 1990, ninth grade students would be tested in the areas of reading, mathematics, citizenship, and writing. Each student's performance on this test would be one of the criteria that determine the certificate or diploma awarded to the student at the completion of grade twelve. During the period of time between 1987 and fall, 1990 test development proceeded in the four subject areas. Learning outcomes were adopted, item development and finalization commenced, and the standard setting and scoring procedures were completed. The ninth grade class of 1990-91 (which would graduate in spring, 1994) was tested in November, 1990 and again in March, 1991 (if necessary) as the first participants in the proficiency program. All public school students in the ninth grade in the state were designated to participate with exemptions and waivers available under certain circumstances. (Private school pupils could participate optionally.) During the spring session (1991) tenth through twelfth grade students also participated.

During the preparation period, numerous discussions and debates arose concerning the intended use of the test results. Students would be required to pass all four parts of the test in order to obtain a diploma at graduation. Two opportunities per year would be given to each student to retake any part of the test not passed to date. However, the perceived difficulty level of the tests and the pass/fail standard setting process raised many questions about the intended practice of withholding diplomas of failing students. On one hand, the testing program could be regarded as an attempt to maintain minimum standards and 'guarantee' that certain skills be evident among Ohio's graduates, while on the other hand the awarding of a certificate of attendance (for those not passing) versus a diploma was raised as a discriminatory move against educationally deprived students in the state's urban (inner city) and rural districts.

Questions

This study was proposed in order to address the following questions concerning the above mentioned issues related to the testing program.

1. Are the tests a valid measure of ninth grade skills in the specific subject areas?

2. Do the results of the first year of testing indicate any disparate results between districts of varying socioeconomic constituencies?

Purpose

The purpose of this study was to explore correlations of the performance of students on the state ninth grade proficiency test with other measures of achievement in the areas of reading and mathematics. Secondly, an inquiry into the performance of students from higher versus lower poverty level school districts was conducted to address the socioeconomic status question.

Background

The Cleveland City School District numbers approximately 70,000 students in grades kindergarten through twelve. The district student population is 70 percent black, 25 percent white, and five percent Hispanic, Asian, and others. Seventy percent of the enrollment qualifies for the free or reduced lunch program indicating the economic status of the student population.

Approximately 6,000 students were enrolled in the ninth grade in the Cleveland City School District for the 1990-91 school year. About 4,200 of these students were tested during the first session in November (retesting added about 400 student records in March, 1991). Likewise, students in the district were tested in the areas of reading and mathematics during the current and preceeding academic years. Both norm referenced and criterion referenced scores in reading and mathematics were obtained as local achievement measures through the district's annual testing program while the students were either ninth or eighth graders.

Methodology

Both questions were addressed utilizing a correlation design. Initially, the published learning outcomes (upon which the Ohio Ninth Grade Proficiency test is based) were reviewed and compared to the published pupil performance objectives and skill categories covered by the criterion referenced and norm referenced tests utilized in the district. The degree of comparability would support the validity of the correlations obtained from analyzing the test results. State proficiency test results (reported as pass-fail) were correlated with norm referenced indices (stanine scores) and criterion referenced indices (skill mastery rates) for students with complete results on file.

Additionally, to address the second question, selected district performances reported by the state were correlated with the respective districts' published poverty rate (compiled by the Council of Economic Opportunity of Greater Cleveland).

Results

Learning Outcomes, Pupil Performance Objectives and Category Objectives

The Cleveland City School District conducts an annual testing program which includes the assessment of pupil achievement in the area of reading for pupils in all grades. The Cleveland Reading Test was developed by CTB/McGraw-Hill in conjunction with the school district in order to utilize one testing instrument which simultaneously addressed the district's norm referenced test (NRT) requirements and the district's own competency objectives (PPO's) via a criterion referenced test (CRT). In order to review the objectives addressed by the three instruments mentioned above, a direct comparison of the three published sets of objectives/outcomes was made. Specifically, the outcomes addressed by the ninth grade proficiency test were cross referenced with the category objectives addressed by the California Achievement Test (CAT Form E/F, Level 18) and the eighth and ninth grade PPO's. Twenty four reading outcomes were specified by the state for proficiency testing purposes. The district specifies 15 eighth grade and 16 ninth grade reading objectives for competency assessment while the CAT tests classify items by 11 major and 18 subskill categories for eighth grade achievement testing. The comparison found that 20 of the state's 24 outcomes were matched by either the CAT objectives or the PPO's tested for competency purposes. The cross-referenced table follows (Table 1).

TABLE 1

Reading Objectives Cross-referenced Chart

Ohio Proficiency Test Skill Objective	California Achievement Test (Level,objective)	Cleveland Competency Test (Grade,objective)
Fiction:		
Unfamialiar word meaning	(18,28)	(8,3)
Multi-meaning words	(18,24)	(8,3)
Details	(18,32)	(8,12)
Sequences	(18,32)	(8,13)
Main ideas	(18,36)	(8,7)(9,8)
Most probable outcome	(18,37)	(8,15)
Cause-effect	(18,37)	(8,5)(9,11)
Statements of fact/ opinion	(n/a)	(8,4)
Predeictions	(18,37)	(8,15)
Comprehension of main idea & details	(18,36)	(9,8)
Non-Fiction:		
Details	(18,32)	(9,8)
Main idea	(18,36)	(8,7)(9,8)
Fact-inference	(18,37)	(8,4)(9,11)
Fact or opinion	(18,38)	(9,15)
Predictions	(18,37)	(8,15)
Details wrt main idea	(18,32)	(9,14)
Author's purpose	(18,36)	(n/a)
Summary for audience	(18,39)	(9,9)
Author's attitude	(18,36)	(n/a)
Directions	(n/a)	(n/a)
Reference materials	(n/a)	(n/a)
Skills--charts,maps,etc.	(n/a)	(n/a)
Vocabulary on applications	(n/a)	(n/a)
Propaganda	(n/a)	(8,14)

Similarly, the state has specified 16 mathematics learning outcomes for proficiency testing. In the case of mathematics, all 16 outcomes are matched by either CAT objectives or Competency objectives specified for eighth grade testing.

TABLE 2
Mathematics Objectives Cross-referenced Chart

Ohio Proficiency Test Skill Objective	California Achievement Test (Level,objective)	Cleveland Competency Test (Grade,objective)
Compute, whole, decimal, fractions	(18,59-70)	(8,1 7 11)
Compare, order, equivalence	(18,59-70)	(8,04)
Solve, use proportions	(18,74)	(8,25)
Rounding	(18,73)	(8,08)
Percentages	(18,71)	(8,26)
Measurement, standard and metric	(18,77)	(8,18)
Measurement, conversion	(18,77)	(8,18)
Scales, interpolations	(18,77)	(8,18)
Lines and figures	(18,78)	(8,13)
Perimeters	(18,78)	(8,20)
Area, Volume	(18,78)	(8,21)
Tables, charts, maps	(n/a)	(8,31)
Probability	(18,76)	(8,32)
Compute Averages	(18,76)	(8,32)
Number sentences, formulas	(18,74)	(8,29)
Evaluate algebraic expressions	(18,73)	(n/a)

Based upon the assumptions that the CAT was originally selected and the Cleveland Reading Test was subsequently developed (appended to the CAT) because of the preferred match to the reading/English-language arts and mathematics curricula adopted by the district, one would feel confident that tested learning outcomes on the ninth grade proficiency test were quite thoroughly addressed in Cleveland's reading and mathematics curricula.

Performance Comparisons

In order to correlate the results of the ninth grade proficiency testing completed in the 1990-91 academic year with the achievement testing implemented in the district during the previous academic year, available proficiency test results (by student) were matched with the district's test results files in order to obtain each students CAT scores and CRT scores for reading and mathematics. The following file characteristics illustrate the sample utilized for this study.

Ninth grade students in the Cleveland City School District (n = 6207) were tested in November, 1990 for the first administration of the Ohio Ninth Grade Proficiency Test. A

second administration of the test (an alternate form) was undertaken in March, 1991 for those students who failed any part of the test in the fall. Records for the two administrations during the academic year were merged to create the basis of the data for this study. A total of 4,611 records (74% of the enrollment) containing pass-fail information for each subject tested were posted onto the proficiency test file. Next, the file was matched with the District's testing files to obtain the most recent norm referenced and criterion referenced test scores in reading and mathematics. Matched records were obtained in 66% of the cases (n = 3071) for norm referenced reading, 88% (n = 4080 of the cases for norm referenced math, and in 86% (n = 3973) and in 88% (n = 4085) of the cases for criterion referenced reading and math respectively.

The analysis was conducted to obtain Spearman Rank order correlations for the norm referenced stanine scores and the criterion referenced mastery rates with the Ninth Grade Proficiency test pass-fail designations. The following table illustrates the correlation coefficients obtained from the analysis.

TABLE 3
Correlation Coefficients of Student Performance on Assessment Instruments

	Ohio Rdg	Ohio Math	CAT Rdg	CAT Math	Cleve Rdg	Cleve Math
Ohio Rdg	1.00	0.32	0.55	0.44	0.49	0.45
Ohio Math		1.00	0.47	0.54	0.45	0.59
CAT Rdg			1.00	0.56	0.76	0.61
CAT Math				1.00	0.55	0.83
Cleve Rdg					1.00	0.59
Cleve Math						1.00

The coefficients obtained through the analysis of variable pairs for each case on the file are illustrated in Table 3 above. All relationships tested were positive and significant ($p < .01$), although varying degrees of relationship strength were evident. The coefficients obtained between the Ohio Reading test performance and those of the California Reading Test and the Cleveland Reading test were not strong (0.55 and 0.49 respectively). Mathematics comparisons were similar, however, slightly stronger. The coefficients calculated for the Ohio Math and California Math and the Cleveland Math tests showed positive and significant relationships (0.54 and 0.59 respectively) like reading.

The comparisons studied yield indices of relationship which were weaker than anticipated based upon the relatively thorough match of objectives cited above.

Socioeconomic Analysis

Finally, a selected sample ($n = 31$) of geographically contiguous districts within Cuyahoga County (including Cleveland) were analyzed by correlating their rate of Ohio Proficiency test passage (among ninth graders) with their poverty rank. The rates are based upon data compiled by the Council for Economic Opportunity in Greater Cleveland.

The comparisons yielded a strong positive correlation (rho=.7315) between overall performance among pupils and the district's poverty rank. That is, the lower the poverty rank (or the greater percentage of the population below the poverty level), the lower the passage rate. The results were significant ($p < .01$) for the sample utilized for the analysis.

Discussion and Conclusions

The two phase analysis reported above supports the notion that the Ohio Ninth Grade Proficiency Test does represent a valid measure of ninth grade competencies of students within the Cleveland City School District. The comparison of tested proficiency skills with the district's stated competency objectives in the areas of reading and mathematics yields a comprehensive match which would indicate a valid skill assessment. However, correlations between the district's measures (both norm referenced and criterion referenced) of student performance with Ohio Proficiency Test measures of reading and mathematics performance are not strong. While all comparisons rendered significant results, the coefficients ranging from 0.49 to 0.59 do not represent the strong relationship which had been expected and do not support the observations mentioned above. Stated simply, if curricular objectives are thoroughly matched on all testing instruments, why is the performance not comparable on the three measures of the 'same material'? The issue of item (and total test) difficulty must be explored.

The comparison of district level performance on the Ohio Proficiency test as a function of each district's poverty rates indicates a strong positive relationship exists between the economic status of the district's pupils and their performance on the test. This factor also contributes to the question of disparate impact of the stated uses of test results.

The evidence compiled in this study indicates that the issues identified in the introduction remain unresolved. The Ohio Proficiency test (and its resultant graded diploma system) may very well be a discriminatory practice within the state. The question remains, how can a test which appears to measure appropriate skills among the state's ninth grade students render such disparate results from other valid measures of the same skills? Also, the issue of vastly disproportionate results from the state's economically deprived student population continues to pose the issue of test adequacy for all of the state's pupils.

While the results lead to the inconclusive discussion above, further analysis remains appropriate. Discriminant analysis is the next strategy useful to investigate the relationship between the measures reviewed in this study. The ability to use district obtained measures to predict the student's performance on the state proficiency test may very well serve the district's curricular and instructional objectives of increased pupil performance as indicated by better graduation rates.

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