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Evaluating the relationship between THEA scores and graduation rates among college students

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Abstract

The purpose of this study was to investigate the relationship between the Texas Higher Education Assessment (THEA) scores and the Graduation rate of college students attending a Historically Black College or University (HBCU). Using a Regressional analysis that tested the predictability of the Reading, Writing, and Mathematics scores on the THEA to the Graduation rates 4 and 5 years later, it was found that non of these scores were strong predictors of graduation (strongest standardized beta weight =.034).

Evaluating the relationship between THEA scores and graduation rates among college students

In 1987, the Texas Legislature passed House Bill 2182 (HB 2182), which mandated the development of the TASP test, also requiring that all students who entered higher educational institutions in Texas be required to take the Texas Higher Education Assessment (THEA) Test (http://texinfo.library.unt.edu/sessionlaws/78thsession/bills/SB286.pdf). Students who did not pass the test, were given a mandate to enroll in remediation courses in the subject area. The test did allow exemptions for students who had already earned semester credit hours of college course work. The THEA Test replaced the TASP test in 2003, in that the skills and mastery objectives were more comprehensive to determine needed areas of support for test takers.

Created in 2003, the Texas Higher Education Assessment (THEA) test has been used in Texas public colleges and universities to assess students in the area of Reading, Mathematics, and Writing. The THEA Test was approved by the Texas Higher Education Coordinating Board, under Senate Bill 286, Texas Education Code, Section 51.3062: Texas Success Initiative, for use by Texas institutions of higher education as an assessment instrument to evaluated incoming students (Texas Higher Education Assessment, 2009). Being the only test to specifically evaluate the readiness of students for college-level coursework in Texas, THEA was developed through a rigorous review and approval process supported by Texas educators.

The Reading section of the test contains 40 multiple-choice questions to seven or more reading selections that span from 300-750 each. The reading selections represent a variety of subject areas and are similar to reading materials that students are likely to encounter during their first year of college (Texas Higher Education Assessment, 2009). The Mathematics section contains 50 multiple-choice questions that cover fundamental mathematics, algebra, geometry,

and problem solving; these questions target the students' ability to perform mathematical operations and response appropriately to mathematical formulas and functions. The Writing selection contains two subsections: a writing sample requiring students to demonstrate their communication ability through writing on a specified topic and a multiple-choice subsection (40 questions) that assesses a student's ability to recognize the various elements of effective writing.

Throughout its initiatives to aid and support students who have entered college lacking fundamental academic skills, it has also served as a hindrance for those who eagerly await or anticipate graduation from college. In order to successfully pass the THEA, students need to score at least a 230 (score range of 100-300) on the mathematics and reading portion, and at least a 220 on the writing section of the test. Students who score below passing are placed in college courses that are equivalent to their skill or ability per subject area in mathematics, reading, and English courses. If students do not meet the set grade requirement at the end of the course period, students must retake the course and are not permitted to advance to any other courses in that subject area until the delegated course is passed, according to set standards by the governing university. More specifically, by measuring students who have met THEA reading and writing passing standards and those who have had to take alternative courses to reach set standards, this research will analyze the graduation rates for a university population of THEA test takers.

Review of Related Literature

About 9 of 10 recent high school graduates expect to have jobs that will require education and training beyond high school, but only between one-third and one-half complete high school courses that give them the best chance of being successful in education and training programs after high school (Creech & Southern Education Regional Board, 1996). These researchers

furthermore asserted that core curriculum courses in high school need to be more conducive to expectations in a college setting. To reflect these perspectives, research was conducted and evaluated on the average scores of standardized testing (ACT and SAT) percentiles. Hadley & Vitale (1985) noted that while traditional admission criteria into colleges and universities generally include some combination of college entrance examination scores, high school grade point average or rank in class, and specific type and number of high school courses, most institutions require high school class rank or standardized test scores (ACT and SAT). These tests are put in place for counseling and placement purposes, but do not serve as the primary indicator in assessing a students' academic areas of strengths and weaknesses nor do they truly reflect the intellect and diligence that would be put forth in college. For this reason, proficiency based examinations were created in order to specify the needs of students entering college.

Similar to the THEA test, in 1995, the Proficiency-Based Admission Standards System (PASS) was developed as a result of curriculum changes in Oregon high schools. School legislation required students to demonstrate mastery of "rigorous academic content standards" in order to complete their secondary education (Oregon State System of Higher Education, 1996). Another predicator of the PASS assessment was evaluate the quality of students being admitted as a result of many students entering college at the freshman level and not completing their degree program in a timely manner. The PASS test identified skills needed to be successful in higher education. For this examination, there are six content (mathematics, science, social sciences, second language, humanities and literature, and visual and performing arts) and nine process proficiency areas (reading, writing, listening and speaking, analytical thinking, integrative thinking, problem-solving, technology as a learning tool, teamwork, and quality of work). Proficiency was assessed in three ways: criterion-referenced tests, common assessment

tasks (such as research paper, science project, and speech), and teacher verifications of student proficiency. Proficiencies were scored on a scale from 1-5, 5 being the highest attained score. It was asserted that this test proved to serve the needs of students who needed more academic support in their subject areas.

More recently, according to the Arkansas State Department of Education (2006), 76 percent of employers in Arkansas state that less than half of the recent high school graduates who apply for jobs in their company lack the necessary quality writing skills and the ability to do basic math, and additionally, More than 60 percent of the employers are not satisfied with the ability of recent high school graduates to read and understand written instructions and materials. The study went on to illustrate information about students who attended college and revealed that sixty-six percent of all professors (in Arkansas) believed that remedial or development courses are needed by over half of the freshman level students they taught. The study also illustrated that there is a need for a stricter curriculum and stricter supervision in order to provide students with a defined competitive academic load (Arkansas State Department of Education, 2006). This particular study also revealed that college professors felt high school seniors are somewhat prepared to take freshman level courses, if at all ready.

On a national scale, about 67 percent of U.S. students who graduated from high school in 2004 went on to enroll in college – a higher proportion than in any previous year (National Center for Education Statistics, 2005). The most recent data available shows that only 35 percent of students who entered four-year colleges seeking a bachelor's degree in 1998 had earned their degree four years later, and only 56 percent had graduated six years later (Knapp, Kelly-Reid, & Whitmore, 2006). This study can be interpretative of many factors that may have delayed or derailed educational pursuits, but the predominant factor in the study was academic achievement.

Students displayed persistent difficulty in passing freshman level courses that delayed their progress in their respective fields of study.

Conley (2008) asserted that colleges can take steps to ensure that more students are college ready, by adopting readiness standards that specify cognitive strategies and content knowledge that incoming students are assumed to know. Additionally, the colleges should clearly focus on enabling students to develop content knowledge and self-management skills necessary for college students.

Research Question

The purpose of this study is to investigate: How well do the THEA score in reading, writing, and mathematics predict student graduation?

Methodology

Participants

The 6074 participants in this study were college students from a 4 year University located in the northwest area of Houston, TX. These students all attend a Historically Black College or University (HBCU) with the sample consisting of approximately 70% African-American.

Instrument

The Texas Higher Education Assessment (THEA) was used as the measuring instrument. The content validity is superior, since the items developed for the assessment are selected from a large test bank developed by teachers and curriculum experts. This effort is coordinated by Evaluation Systems Group of Pearson in cooperation with the Texas Higher Education Coordinating Board and the State Board for Education Certification (http://www.thea.nesinc.com/index.asp). The reliability of the scores of state standardized tests is assumed high when given to the proper audience and therefore not much of a focus for this

study, specifically since the evaluation of individual students is not the gain.

Design

The design used for this study was Correlational. This design was selected because the focus of the research question was to investigate the relationship between THEA test scores and graduation rates.

Procedure

The 2002 and 2003 scores from the THEA were used to see how well they predicted the 2007 student matriculation. Pre-existing confidential data files of student scores were gathered of student information of the 2002 and 2003. The data sets included information concerning students Test Dates, Reading Score, Mathematics Score, and Writing Score for 1232 students on the THEA. However the data set for the 2007 student file contained information concerning student Cumulative Grade Point Average (CumGPA), Cumulative Attempted Hours (CumAhrs), Cumulative Earned Hours (CumEhrs), Current Attempting Hours (CurrEhrs), Current Semester Grade Point Average (CurrGPA), and Classification (Class) on 6075 students.

The data sets were then organized in the following manner before analysis:

1. THEA Scores from 2002 and 2003 were combined on one Excel sheet.

2. All scores that contained a 0 in either category for Reading, Writing, or Mathematics were removed. *This was done because sometimes scores of 0 are given on test parts when a student retakes the THEA in order to pass one particular part. It was assumed that all students would be taking the test and would score something for the purpose of this study.

3. Those scores were moved and made new columns in the 2007 student file.

4. Those 1232 scores were then replicated to duplicate the 6074 students. *This was

done because normality of scores was assumed.

5.   Re label Classification (Class) as a numerical ordinal value where 1 would be

freshman (0-30 Earned Hours) thru 5 being a college graduate (120+ Earned Hours)

After the data file was complete, a Linear Regression in SPSS was done using the Reading,

Writing, and Mathematics Scores as the independent variables and the student Classification as

the dependent variable.

Results

Table 1. Multiple Regression Output Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.049(a)	.002	.002	1.360

a Predictors: (Constant), WRT, MTH, RDN

The multiple regression summary output of our example for predicting Graduation in table

1 yields an R value of .089, which is a calculation by SPSS from the multiple regression

equation. This R value is miniscule and when squared it provides the percentage of variance of

the criterion or dependent variable explained by the predictor variables. Therefore, the data

supports that the predictors explain 0.2% of the variance in the recorded Classification data.

Clearly there are other factors that contribute to Class, but this sample shows THEA scores

explain or predict little of the matriculation through Class levels.

Table 2. Multiple Regression: Analysis of variance and coeeficients

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	26.822	3	8.941	4.832	.002(a)
	Residual	11210.241	6058	1.850		
	Total	11237.063	6061			

a Predictors: (Constant), WRT, MTH, RDN
b Dependent Variable: Class

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Const)	1.977	.147		13.443	.000	1.688	2.265
	RDN	.001	.001	.028	1.828	.068	.000	.002
	MTH	.000	.001	-.008	-.522	.602	-.001	.001
	WRT	.001	.001	.034	2.343	.019	.000	.003

a Dependent Variable: Class

In an understanding of which variables are the best predictors, Table 2 gives the SPSS Regression procedure. The SPSS output shows the F ratio (F = 4.832) and the level of statistical significance of the whole model tested (Sig. = .002). The second table explains which variables are the best predictors and the t value (showing individual effect of each variable) and the level of significance. In this data set WRT (t = 2.343; Sig. = 0.019) seems to be the strongest predictor. Additionally, the standardized beta weights (which accounts for standard error) given for each predictor also shows WRT the strongest predictor (.034).

Conclusion

Data from tests scores in this study indicate that the THEA is not a very strong predictor of Graduation of college students. Although there was statistical significance this can easily be explained by the high number of participants (N=6074).

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