

**THE PREDICTIVE VALUE OF PLACEMENT AND REMEDIATION ON
STUDENT PERSISTENCE AND ACHIEVEMENT OF FIRST-TIME
FRESHMEN AT A POST-SECONDARY
INSTITUTION IN PUERTO RICO**

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ABSTRACT

The purpose of this research was to conduct a cohort study with freshmen on placement and its predictive value on persistence and academic achievement. It examined (a) the percentage of students with placement scores who enrolled in, and passed, English 100; and explored the relationships between (b) placement test scores and persistence in English 100; (c) persistence in remedial English and achievement in the college-level course; (d) the placement test scores of English 100 persisters vs. non-persisters; and (e) the placement test scores and achievement in English 151. Data was obtained from official institutional records. Participants had a placement test score, needed remediation, enrolled in the remedial English course and passed, and continued to the subsequent college-level course. The cohort was followed for 12 months. The principal findings revealed that: (a) 1,403 students took the English placement test; (b) of these, 602 students were referred for placement in English 100; (c) the remaining 801 students were recommended for placement in one of the 3 college-level entry English courses; (d) 307 students enrolled in the English 100 day and evening sections; (e) of these, 234 enrolled in the remedial English 100 day sections; (f) 23 students enrolled in the remedial English day sections did not have placement test scores and were excluded from the analyses; (g) of the 211 students with placement test scores enrolled in the day sections of English 100, 71% earned passing grades; (h) 127 persisters and 8 non-persisters enrolled in English 151 the following semester, and of these, 61% passed the course. The statistical results revealed that (a) the placement test score showed no significance, ($r = .063$, $p = < .365$), as a predictor of persistence in English 100; (b) the correlation between persistence in English 100 and academic achievement in English 151, ($r = .248$, $p = < .01$), showed a positive relationship; (c) a t Test revealed no significant differences between the placement score of persisters and non-persisters in English 100, $m = 1.36$; and, (d) no significant correlation was found between the placement test scores and achievement in the college-level course ($r = .024$).

Key words: persistence, retention, academic achievement, remedial courses, developmental education, underprepared college students, etc.

RESUMEN ABSTRACTO

El propósito de esta investigación fue llevar a cabo un estudio con pruebas de ubicación en un grupo de estudiantes de primer año para medir su valor predictivo en persistencia y logro académico. Se examinó (a) el porcentaje de estudiantes con calificaciones de ubicación que se matricularon y aprobaron Inglés 100; y se exploró la relación entre (b) calificaciones en pruebas de ubicación y persistencia en Inglés 100; (c) persistencia en Inglés remedial y desempeño en cursos a nivel colegial; (d) la calificación en exámenes de ubicación en Inglés 100 estudiantes persistentes vs. no persistentes; y (e) las calificaciones en pruebas de ubicación y desempeño en Inglés 151. Los datos fueron obtenidos de los archivos institucionales oficiales. Los participantes tuvieron una puntuación en exámenes de ubicación, necesitaron remediación, se matricularon en el curso remedial de Inglés y pasaron, y continuaron al subsiguiente curso a nivel colegial. El grupo fue seguido por 12 meses. Los datos principales revelan que: (a) 1,403 estudiantes tomaron el examen de ubicación de Inglés; (b) de éstos, 602 fueron referidos a reubicarse en Inglés 100; (c) los 801 estudiantes restantes fueron recomendados a ser ubicados en uno de los tres cursos de Inglés a nivel de colegial; (d) 307 estudiantes se matricularon en secciones de Inglés 100 de día y de noche; (e) de éstos 234 se matricularon en el curso de Inglés remedial 100, el 71% obtuvo nota de aprobación; (h) 127 persistentes y 8 no persistentes se matricularon en Inglés 151 el siguiente semestre, de éstos el 61% pasó el curso. Los resultados estadísticos revelan que (a) la prueba de ubicación no es significativa, ($r = .063$, $p = < .365$), como para predecir persistencia en Inglés 100; (b) la correlación entre persistencia en Inglés 100 y logro académico en Inglés 151, ($r = .248$, $p = < .01$) mostró una relación positiva; (c) una prueba T revela que no hay diferencias significativas entre las puntuaciones para ubicación de los persistentes y los no persistentes en Inglés 100, $m = 1.36$; y (d) no se halló correlación significativa entre las puntuaciones de pruebas de ubicación y logro en el curso a nivel colegial ($r = .024$).

Palabras clave: *persistencia, retención, logro académico, cursos remediales, educación del desarrollo, estudiantes colegiales no preparados, etc.*

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Introduction

Student persistence and student retention are terms utilized by researchers to identify a student's continued enrollment at an institution from one semester to another. Student attrition and student dropout refer to a student's failure to re-enroll. *Universidad del Turabo*, i.e., the University of Turabo (UT) is concerned about the problem of student attrition and accountability in the use of its resources. Student retention is a challenge and a major concern for the university's fiscal survival. Annually, the institution applies early intervention strategies through mandatory placement testing that contribute to the reduction of student attrition by identifying students who are underprepared or who might be at-risk and likely to drop out. Underprepared and at-risk students are tested into the remedial English course. However, there is no data that measures the effect that the remedial English course has on the academic performance and retention of students. Boylan, Bonham, and Tafari (2005) proffer that colleges that regularly evaluate their remedial course outcomes often have higher rates of retention for students in remedial courses.

In the light of this, the current study documented (a) the percentage of students with placement scores at UT who enrolled and persisted in English 100; and explored the relationships between (b) students' English placement test scores and persistence in English 100; (c) student persistence in the remedial English 100 course and achievement in the college-level English 151 course; (d) English 100 persisters vs. non-persisters and the English placement test scores; and (e) students' English placement test scores and achievement in English 151. This research is important and groundbreaking because it

provides insight into the impact of placement testing on new enrollees and current tertiary educational practices and policies.

Background

Remedial education provides opportunities for entering freshmen students who lack the academic skills to succeed in postsecondary education. Public and private institutions of higher education in the United States mandate remedial courses in reading, writing and mathematics for college work at the level required by the institution. The results of low achievement scores on state or territorial exams have led universities and colleges to require placement exams for underprepared first-time entering students prior to registration. Data provided by the National Center for Educational Statistics (NCES), 2003 showed that in fall 2000, the most common approach to select students for remedial coursework was to give placement tests to all entering students. Survey results confirmed “57 to 61% of institutions used this approach for remedial reading, writing, and mathematics courses” (p. 2). Another national report released by the NCES on postsecondary institution enrollment showed that from 1970 to 2005, enrollment in all degree-granting institutions “rose from 8.5 million to about 17.1 million students” (Synder, Dillow, & Hoffman, 2007, p. 261). At the same time that enrollment increased in colleges and universities, there was a significant increase in remedial / developmental skills programs in response to the large number of entering underprepared first-time college students.

Poor academic preparation for college work has prevailed as a feature of American education during the past three hundred years. In the 17th century, Latin and

Greek were the languages of postsecondary education and unprepared entering students who could not read the languages of the scholarly works were provided tutoring classes (Boylan, 1988). In the early 19th century, underprepared students attended college without prior academic preparation and it was necessary to provide individual tutoring (Boylan & White, 1988). As college enrollments increased, the University of Wisconsin established, in 1849, the first college preparatory department to attend the needs of underprepared students to do college-level work. It provided remedial coursework in reading, writing, and mathematics to improve the basic skills of first-time freshmen to do college-level work (Phipps, 1998). In 1869, Charles W. Eliot's inaugural address as president of Harvard University sustained the importance of supplementing the academic deficiencies that students brought from the American school. He believed that "whatever elementary instruction the schools fail to give, the college must supply" (Spann, 2000, p. 2).

In 1907, over 50% of students admitted to Ivy League institutions such as Harvard, Yale, Columbia, and Princeton did not have the minimum admissions requirements to do successful college work and were offered remedial courses in reading and study skills (Barnett, 2003; Wyatt, 1992). Soon after, 80% of universities and other colleges in the U.S. offered remedial education (Boylan & White, 1988; Breneman & Haarlow, 1998; Ignash, 1997; Payne & Lyman, 1996; Pintozzi, 1987).

During the mid 20th century, remedial education became part of the purpose and meaning of junior colleges. Currently, most community colleges, 4-year colleges and universities offer remedial courses to new enrollees, but the greatest numbers of

underprepared students in remedial courses are enrolled in community colleges (NCES, 2003).

Remedial education has become a major concern of higher education since the 1970s. National estimates on the prevalence of remedial courses in degree-granting 2-year and 4-year postsecondary institutions show that, in 2000, “75 to 82 percent of the institutions required students who were determined to need remediation” (Parsad & Lewis, 2003, p. v) to enroll in the required remedial course.

Remedial course work is established by state or institutional mandatory placement testing. Mandatory placement tests and mandatory cut-off scores help postsecondary institutions place less academically prepared students in classes at levels appropriate to their skills; classes that have been developed to provide the required skills to help students succeed in college-level courses (Prince, 2005).

Mandatory placement obligates first-time entering students to comply with this admissions criterion prior to enrollment. Some institutions will detain enrollment if the placement test is not taken. (California State University, 2008; John Jay College of Criminal Justice-City University of New York, 2008; Long Island University, 2008; Rutgers University, 2008).

The literature shows that placement and achievement have been major concerns affecting academic outcomes at community colleges (Boylan & Saxon, 1998; Campbell & Blakey, 1996; Kreysa, 2006; Long & Amey, 1993; Parsad & Lewis, 2003; Zhao, 1999). In the early nineties, Long and Amey (1993) found that little research had been conducted related to the successful outcomes of underprepared students. To assess institutional effectiveness on community college underprepared students, they measured

the assessment and placement of 313 underprepared students in a developmental reading or English course. The study identified successful and unsuccessful groups of underprepared students. Findings showed that students who completed the developmental reading or English course increased their chances for success and completed other college-level courses. The study affirmed that more institutional policies were needed to enforce placement during the first semester of enrollment. It also stressed the importance of testing, and affirmed that “mandatory placement in developmental courses... seems vital as a key to helping underprepared students succeed in meeting their educational goals” (p. 14).

Mandatory testing for placement in appropriate remedial or college-level courses is a significant concern for postsecondary institutions serving underprepared students. With large numbers of these students seeking admission to postsecondary institutions, Campbell and Blakey (1996) researched the impact of early remediation on the persistence and / or performance of underprepared students at a community college. The results confirmed the success of first year remedial course-taking and its significant impact on student persistence. Zhao (1999) investigated the impact of remediation on the achievement of degree-seeking students. Through this study, *Factors Affecting Academic Outcomes of Underprepared Community College Students*, issues that affected the academic performance and outcomes of 1,249 underprepared students at Prince George’s Community College in Maryland were investigated to determine if remediation completion and developmental course-taking were significant predictors of academic achievement. Results showed that completion of remedial courses was one of the predictors of achievement. The study also posited that the new millennium would bring

an increase in enrollment, more open-admission policies at community colleges and an increase among the underprepared student population. The trend would encourage institutional researchers to take new initiatives to improve the academic progress rates of underprepared students and to evaluate developmental education programs in response to accountability demands.

According to Boylan and Saxon (1998), the purpose of remedial courses is to teach students the basic skills that are required by the institution to pass college-level courses. They posit that if remedial courses are successful, “some increased retention might, indeed, be an expected result” (p. 16). To demonstrate the causal relationship between remediation and retention, Boylan and Saxon (1998) reported survey results from the NCES, which “indicated that students who participate in remediation are likely to be retained at rates at least as high as and frequently higher than those who do not: a finding that has been fairly consistent in all studies conducted since 1983” (p. 20).

The new millennium has seen an increase in remediation programs among community colleges, colleges, and universities. Kreysa (2006) posits in *The Impact of Remediation on Persistence of Undergraduate College Students* that many institutions advise students to enroll in remedial courses that provide underprepared students the academic preparation for college-level courses. He states that the “purpose of these programs is to help students from deprived - often economically or socially disadvantaged - backgrounds to catch up academically with their peers” (p. 252), compete effectively, and complete their entire course of study.

National reports on the number of institutions of higher education offering remedial courses support the dire need to help underprepared students develop the

adequate skills to do college entry work. A study released by the NCES' Postsecondary Education Quick Information System (PEQIS) provided national estimates on the prevalence and characteristics of remedial courses and enrollment in two-year and four-year postsecondary institutions in the fall of 2000. The study revealed that "virtually, 98 percent of public two-year colleges and 80 percent of public four-year institutions offered at least one remedial reading, writing or mathematics course in fall 2000" (Thomas, 2003, p. 1). Concerned with the rising numbers of students requiring remedial coursework, U.S. Education Secretary, Rod Paige, stated, "in today's world remediation is necessary" (Thomas, 2003, p. 1). Paige expressed hope that through 'No Child Left Behind', primary and secondary education can be strengthened "so that all students enter the postsecondary world as prepared as possible" (as cited in Thomas, 2003, p. 1).

Remediation is not circumscribed to universities and colleges in the U.S. Many universities throughout the world provide remedial education "to bring new students to a level in basic subjects that will serve as a proper foundation" (Urashima & Ito, 2005, p. 83). Scotland offers remedial courses in Basic English and grammar. Nearly half of Scotland's universities have been forced to provide remedial fast-track classes because of plunging literacy levels in schools. Scottish undergraduates are not ready for the linguistic and literary demands of degrees after leaving school. "Some students could not write, spell, or punctuate simple sentences" (BBC News, 2004, p. 1). Similarly, Japan offers remedial courses in math (Urashima & Ito, 2005), Canada provides remedial courses in English (University of Victoria, 2008), and India offers remedial courses to academically weak students in colleges affiliated to Panjab University (Bariana, 2001). The United Nations Educational, Scientific, and Cultural Organization (UNESCO)

included in its *1998 Framework for Priority Action for Change and Development in Higher Education at National Level* that institutions of higher education “provide, where appropriate, guidance and counseling, remedial courses, training in how to study and other forms of student support, including measures to improve student living conditions” (UNESCO, 1998, p. 6).

Remedial education has been an issue of debate among university presidents and public policy makers. While some promote the need to educate the underrepresented, others criticize remediation for its cost and the failure of the public schools to prepare students for college work. Opponents and proponents still continue, as they did in the past, to blame the public school system for the deficiencies of its high school graduates and their unpreparedness for college work. It seems that the historical debate over the role of higher education in the 19th century continues to be a major concern among universities and colleges in the 21st century. As long as the K-12 system fails to academically prepare students for college-level entry work, institutions of higher education should bear in mind Elliot’s inaugural address as president of Harvard University that postsecondary institutions must teach the skills that schools have failed to provide (Spann, 2000).

The literature affirms that remedial education is a concern of postsecondary institutions and that it provides the academic support for underprepared students to meet college requirements. Remedial education is interchangeably identified in many academic programs as developmental, basic, compensatory, learning assistance, or prerequisites. Regardless of the terms, all share a similar purpose and have similar outcomes: they

provide the adequate skills that will help underprepared students do college-level work (Bettinger & Long, 2005; Boylan, 1988; Calcagno, 2007).

Statement of the Problem

Universities and colleges in Puerto Rico are concerned about the poor proficiency levels in English of new enrollees. While some institutions have implemented placement requirements for entering students who score below the required minimum criteria, other universities / colleges require pre-basic courses that in purpose and outcomes, share the same features as those provided by remedial, developmental or prerequisite courses. They teach the skills that allow students to do college entry work.

In 2008, College Board of Puerto Rico presented *A Comparative Study of First Year Curricula in English at 12 Universities / Campuses in Puerto Rico and the College Board Advanced Level Course in English*. This study showed that most of the participating institutions require the College Entrance Examination Board (CEEB) scores in English for placement in an achievement level course (Buhring, 2007). Of the twelve institutions, four required only one achievement level, six universities / campuses offered at least three achievement levels and seven of the twelve institutions required students, who scored below the minimum admissions criteria on the CEEB exam, to take a pre-basic English course. Only one of the twelve institutions required the CEEB scores in English and an institutional placement test for one of the four-level English courses for entering students (Buhring, 2007).

Although the declining tendency in CEEB scores in English is a concern among some institutions of higher education on the island that mandate remedial or pre-college

courses as part of their admission requirements, accountability reports that assess the outcomes of remedial courses on persistence and achievement are scant.

The College Board (CB) 2007 Admission Testing Program scores on college admissions' tests during the past decade reveal that overall scores on the English as a Second Language Achievement Test (ESLAT) increased from 431 in 1997 to 446 in 2007. The trend in Spanish shows a significant decrease from 450 in 1997 to 437 in 2007. Although CB data reports a slight improvement on tests scores in English, these results must be carefully evaluated when one looks at the score range that fluctuates from 200 to 800 points on each test. A CB report released in 2005 showed that students from the private school sector obtained higher scores in English than in Spanish, and students from the public school system obtained higher scores in Spanish but lower scores in English (Academia, 2005). The lack of freshmen unpreparedness in English has led public and private institutions of higher education on the island to require non-degree remedial or pre-basic courses in English before students are permitted to take college-level entry English courses (Inter-American University-Bayamon Campus, 1996; Inter-American University-Fajardo Campus, 2002; Polytechnic University, 2008; Pontifical Catholic University, 2008; University of Puerto Rico-Mayaguez, 2004; University of the Sacred Heart, 2008; Universidad del Turabo, 2004). The granting of credit for remedial or pre-basic courses is regulated by each institution.

The literature suggests that the lack of proficiency in English may be a combination of poor academic delivery and / or strong political affiliation. The teaching of English in Puerto Rico has an element that binds it to "a history typified by conflict and chaotic change" (Pousada, 1999, p. 1). In 1902, the Official Language Act (OLA)

gave official status to both English and Spanish. The status of both languages was not debated until 1991 when the pro-commonwealth governor revoked the OLA and declared Spanish, in Law No. 4, as the only official language on the island. Two years later, the pro-statehood party won and the pro-statehood governor revoked Law No. 4 and re-established the 1902 Official Language Act. Under the pro-statehood party, the Secretary of Education implemented, in 1997, a seven-point plan that proposed to create a bilingual citizen. Among the seven points, the project would provide “an English immersion program for high school students, along with writing clinics in Spanish for seniors” (Pousada, 1999, p. 10). The results of this project have not been published.

English language instruction in the public school curriculum has been academically deficient. New entering college students have poor English skills, which are reflected on their CB score in English. Pousada (1999) asserts that limited English proficiency is attributed to “the negative experiences and fossilized errors in English brought from elementary and secondary levels to college learning” (p. 15). Pousada argues that Puerto Ricans have prevented the penetration of English into the home and that language planning has been viewed with suspicion: “the spread of English may lead to language shift, which may then lead to language loss” (Resnick, 1993, as cited in Pousada, 1999, p. 17). According to Torruellas (1990), (as cited in Alvarez, 2000) “high motivation to acquire English was only present among economic, social, and intellectual elites, while peer pressure not to speak the second language was present in all other communities examined, including the middle class” (p. 22). According to Pousada (1999), the use of English in Puerto Rico will be understood and become more effective when teachers “elevate Spanish and proclaim its beauty and utility” (p. 18). The author

posits that when students take pride and feel secure in their native language, they will “not see the learning of a foreign language (even that of a perceived oppressor) as a threat” (p.18).

Research conducted among college students provides evidence on the multiple factors that influence the teaching and learning of English. Rosa’s (1997) ethnographic study, *Personal Narratives of Learning English as a Second Language as Experienced by Four College Students in Puerto Rico*, examines how students see themselves and the teaching and learning of English as a second language in Puerto Rico. It focused on curriculum, affect and the learning of English, experiences with family and peers, English for recreational purposes, and student views of English in their future. Findings revealed that the participants felt frustrated because they knew that it was important for them to learn English, but the school system provided very few effective opportunities to do so. The study also showed that the socio-political context in which the participants studied English did not support them in learning the language. In this context, another ethnographic study conducted by Caratini (1997), *Learning English as a Second Language in Puerto Rico: The Experiences of a Small Number of College-Level Adults*, discussed the political, social, and cultural issues related to the teaching and learning of English in Puerto Rico. It found three significant areas that seem to have particular importance for the teaching of English in Puerto Rico:

The most significant finding is in regard to English-language learning and cultural identity. The views of these participants regarding Spanish language maintenance and the shift toward English in Puerto Rico appear tied to their political affiliations. The second topic touches on the importance of affect in learning. Participants felt teachers influenced them greatly, either positively or negatively. The data document many instances of ridicule and mockery from peers in English classes. The final topic presents the impact of traditional, sometimes outdated, teaching methods

and their effect on the participants' learning. (Caratini, 1997, Abstract Summary)

“Although Puerto Rico is profoundly Hispanic in terms of both language and culture, its people understand the need to be proficient in English” (Maldonado, 2000, p. 1). Studies conducted on bilingualism among university students and professionals showed that respondents wanted to improve their oral communication skills in English. Lopez (2006) conducted research to determine what factors interfere with the oral proficiency of students at the college-level in Puerto Rico. The study, *Self-Efficacy and University ESL Learner's Participation in Oral Communication Activities*, found that the level of students' self-efficiency is correlated to their oral participation in classroom activities. The research suggested that ESL educators must find ways to help students develop skills to become more proficient in their oral communicative skills.

Research on bilingualism among professionals in the areas of business administration, education, health, industry, and social services also presents concerns on the poor proficiency levels of oral communication skills. According to a survey conducted by Pousada (1999), most respondents in professional fields felt that their oral English was poor. The study indicated that there was a correlation in every professional area between the percentage of English speakers and the salary earned. Many of these investigations challenge not only the teaching of English in Puerto Rico, but the essential outcomes of learning the English language, both receptively and productively, to succeed in the professional world.

Limited English language proficiency in the 21st century poses a serious academic problem with its consequences on graduation completion, academic mobility to postsecondary institutions in the U.S., and employment and success in the labor market.

It is clearly known that resistance to learning English limits the possibilities of academic and financial prosperity in the global community in which English is used as the language of diplomatic and global communication, and scientific and technological knowledge. As a territory of the U.S., diplomatic summits, business transactions, and U.S. Department of Education policies are conducted in English. Pousada (1999) found that professionals from the east-central part of the island regarded English as important and necessary for “job opportunities, professional and personal improvement, the political relationship between Puerto Rico and the U.S., the role of English as the world’s commercial and technical language, the utility of English in the tourist’s industry, and general cultural enrichment” (p. 15).

In today’s global economy, the knowledge of English and Spanish remunerates employees at significant rates higher than wages paid to monolingual employees. “Studies show that bilingual pay differentials range between 5 and 20 percent per hour more than the position’s base rate, and that employees in ‘bilingual positions’ who spend 15-20 percent of their time in regular and frequent use of their bilingual skills earn an extra \$30 per pay period” (Morsch, 2008, p. 1).

Concerns over students’ limited proficiency in English have led institutions of higher education in Puerto Rico to attend the needs of new entering students by providing the skills that will prepare them for college-level work. Placement and remediation, persistence, achievement, and course retention are important and must be addressed.

This study proposes to examine if there is a relationship between: (a) placement test scores and persistence in remedial English; (b) persistence in remedial English and achievement in English 151; (c) English 100 persisters vs. non-persisters and the English

placement test scores; and (d) English placement test scores and achievement in English 151. Persistence will be measured through course completion and retention in remedial English. Achievement will be measured through course completion in the credit-granting college-level course.

Purpose of the Study

Retention of students is a significant issue for colleges and universities in the U.S. According to the American College Testing (ACT) 2004 Policy Report, institutions of higher education must devise ways to identify students who need academic help and evaluate the kinds of help they need. Thoroughly integrated and coordinated approaches must be developed to assure student success, especially at the entry levels.

During the past two decades, major emphasis has been placed on the attrition and retention rates of freshmen and sophomores. ACT surveys conducted among 2,500 two-year and four-year postsecondary institutions showed that over half of all students who leave college do so before their second year, thus disclosing a dropout rate of 47% among freshmen and sophomores (McClanahan, 2004).

Placing and assessing student achievement is a difficult task for institutions of higher education. At UT, the English placement test is part of the admissions criteria. The institution looks for ways to make student retention a priority and implements practices that can be effective in reducing student attrition. Entering students must meet admissions criteria that require the CEEB scores in English, Spanish, and mathematics, a diploma from an accredited high school, a 2.00 GPA and the institution's placement test. Students are referred to the English lab for a one-on-one placement test, and test scores are used to

assign students to one of four English level courses: remedial English, basic English, intermediate English, or advanced English.

The institution has not been able to assess whether the placement test scores can be correlated with student persistence in remedial English or with achievement in English 151. It would be significantly productive to carry out research that could sustain the predictive value of placement on student persistence and achievement and course retention.

The English placement test measures auditory discrimination, reading comprehension and writing skills that are aligned with the first year course level requirements. Through assessment and instruction, the institution seeks to insure that students are placed in the appropriate course level that will develop the skills they need to do well in their college courses. The institution is concerned about student attrition and retention and identifies factors, strategies, programs and services that can help freshmen adjust to the academic demands during their first year.

Although testing for placement has been part of the admissions requirements, there is no data on the relationship between the English placement test scores and remediation, persistence in the remedial English course, and academic achievement in the college-level English course. The institution places 45% of first-time freshmen in remedial English, but it is important to determine whether placement in remedial English for underprepared students is a predictor of persistence and achievement.

Definitions

For the purpose of this study, there were several terms that required clarification.

Persistence. A term used to identify students who enrolled in and passed the remedial English course in the fall.

Academic Achievement. A term used to identify English 100 persisters who enrolled in, and earned a C or better in the college-level English course in the spring term.

Remedial courses. A term used to identify pre-college-level courses that develop the required skills for underprepared and at-risk students to do college-level work.

Developmental education. A term used to provide programs and services for underprepared and at-risk students that commonly address academic preparedness, diagnostic assessment and placement.

Underprepared college students. A term used to identify students with basic deficiencies in academic skills, which are necessary for the satisfactory completion of college-level course work.

College-level course. This refers to a credit-granting course that applies toward the requirements of an associate's or bachelor's degree.

Overview of the Study

The purpose of the study was to document (a) the percentage of students with placement scores at UT who enrolled in, and passed, English 100; and to explore the relationships between (b) students' English placement test scores and persistence in English 100; (c) student persistence in the remedial English 100 course and achievement in the college-level English 151 course; (d) English 100 persisters vs. non-persisters and the English placement test scores; and (e) students' English placement test scores and

achievement in English 151. It was theorized by the researcher that the academic achievement of underprepared students in the college-level English 151 course was determined by persistence in remedial English 100. The hypotheses were formulated and tested using a mixed descriptive / predictive quantitative paradigm. This model was used to illustrate placement score distribution, frequency, persistence in English 100, and achievement in English 151, and relied on statistical analyses of existing data as the core method. The direct output consisted of equations that described how variables interrelated statistically. One of the strengths of this model is that such statistical analyses are not subject to falsification. The literature review included contextual and background information regarding (a) the need for remediation, (b) an overview of developmental studies and remediation, (c) mandatory assessment for course placement, (d) placement scores, remedial courses, and student success, (e) by-passing remedial courses, (f) persistence and achievement, and (g) the need for research.

The principal findings revealed that: (a) there were 1,403 students who took the English placement test; (b) of these, 602 students were recommended and referred for placement in English 100; (c) the remaining 801 students were recommended for placement in one of the 3 college-level entry English courses; (d) 307 students enrolled in the English 100 day and evening sections; (e) of these, 234 enrolled in the remedial English 100 day sections; (f) 23 students enrolled in the remedial English day sections did not have placement test scores; (g) of the 211 students with placement test scores enrolled in the day sections of English 100, there were 30 withdrawals (Ws), 31 no pass (NP) grades, and 150 pass (P) grades; (8) of the 150 students who passed English 100,

127 were persisters and 8 were non-persisters who enrolled in English 151 the following semester, and of these, there were 24 Ws, 29 NP grades, and 82 P grades.

Conclusions

Upon analyses of the findings the following null hypotheses in this study were not rejected:

H1₀ There is no statistically significant relationship between students' English placement test scores and persistence in English 100.

H3₀ There is no statistically significant relationship between English 100 persisters vs. non-persisters and the English placement test scores.

H4₀ There is no statistically significant relationship between students' English placement test scores and achievement in English 151.

The following H₀ was rejected:

H2₀ There is no statistically significant relationship between student persistence in the remedial English 100 course and achievement in the college-level English 151 course.

Having tested the hypotheses, conclusions in response to each research question are presented below. These conclusions are based upon statistical analyses that are not subject to falsification.

Research Question 1

What percentage of students who are required to take remedial English 100 actually enrolled and persisted?

Six hundred and two students were referred for placement in remedial English. Three hundred and seven students enrolled in the remedial English 100 day and evening sections. The data for the study population of 234 students showed that 10% of the students (23) who enrolled in English 100 did not have placement test scores. These were excluded from the analyses. Four percent of the students who enrolled in the remedial English course had placement test scores that exceeded the 70-point cut-off. These nine students were misplaced, and should have been enrolled in either the basic, intermediate or advanced-level college course.

The results of the descriptive analysis showed that: (a) 71%, or 150 of the 211 students enrolled in English 100, persisted, i.e., they earned passing grades; (b) 96% of persister, i.e., 144 students had placement scores that fluctuated between 40 and 69 on a 0-70-point scale for remediation; (c) 4 persisters had placement scores over the 70-point cut-off; (d) 2 persisters had placement scores that ranged between 22 and 39; (e) of the 150 persisters, 127 enrolled in English 151; and (f) 8 non-persisters enrolled in, and passed English 151 the following semester. This analysis is consistent with Seidman's (1996) proposal regarding early identification and effective course placement to measure retention and attrition. It should be noted that national studies on placement and remediation showed that 82 - 86% of students placed in remedial courses persisted and enrolled in the subsequent college-level course (McClenney, 2006).

Research Question 2

What is the relationship between students' English placement test scores and persistence in English 100?

The correlation used to measure the placement test score as a predictor of persistence in English 100 showed no significance ($r = .063$, $p = < .365$). Ninety-six percent of persisters had placement scores within the 40-69 score range; 3% of persisters were outliers with scores that fluctuated between 72 - 84; and 1% of persisters had scores in the 22 - 34 score range. Twenty-five percent of non-persisters also had placement scores within the 40 - 69 score range.

Spady's (1970) model of student attrition and Tinto's (1975) model of student integration proffer a multiplicity of variables that affect retention and attrition (Pascarella & Terenzini, 1991). Test scores are only one factor. Other academic and social integration variables significantly determine whether a student decides to remain or depart during the first year of college (McCubbin, 2003; Pascarella & Terenzini, 1991; Tinto & Cullen, 1973).

Research Question 3

What was the relationship between student persistence in the remedial English 100 course and achievement in the college-level English 151 course?

This study found a degree of correlation between persistence in English 100 and academic achievement in English 151 ($r = .248$). When the initial multiple regression

analysis was performed, the remedial English course showed significance as a predictor of academic success in the college-level course ($p = < .01$).

Data generated from various studies uphold the relationship between persistence in remedial courses and achievement in college-level courses (Anjewierden, 1996; Severson, 1994). Studies conducted at the national level revealed higher first term and cumulative GPAs, and retention rates among students who participated in remedial courses (NCPI, 1999). Findings on an institutional initiative among 82 institutions of higher education in remediation revealed that between 82.9% and 86.2% of students who passed a remedial course in the fall semester persisted to the spring semester. The conclusions in these investigations confer with this study and suggest that successful completion of a remedial course in the first semester is an important indicator of achievement in the following semester (McClenney, 2006). Other research studies on developmental / remedial courses measured remedial course effects by student success in subsequent college-level courses (Anjewierden, 1996; Long & Amey, 1993; Zhao, 1999).

Research Question 4

What is the comparison between English 100 persisters and non-persisters' English placement exam scores?

This study found that 68% of persisters in English 100, i.e., 144 of 211 and 25% of non-persisters, i.e., 52 of 211 had placement scores within the 40-69 pre-established score range for remediation. An independent t Test to determine differences in the mean scores between persisters and non-persisters in the remedial course revealed no

significant differences between the placement score of the persisters and non-persisters, $m = 1.36$. National studies show that there is no significant difference between students in remedial courses who persist, i.e., who pass, and those who do not persist, i.e., those who fail or withdraw (Calcagno, 2007).

Research Question 5

What was the relationship between students' English placement test scores and achievement in English 151?

The findings for this question did not reveal a correlation between placement test scores and achievement in the college-level course ($r = .024$). Research, however, affirms that the placement exam serves as a predictor of the initial college-level course through direct intervention in remediation. The intent of placement testing is to predict whether or not a student will be successful in credit-level coursework, and to determine whether proper placement will successfully impact achievement in the target credit-level course rather than the remedial course (Behrman & Street, 2005; Boylan, 2002; McCabe, 2002).

Table 1

Placement Score Distribution of Students Enrolled in Remedial English 100

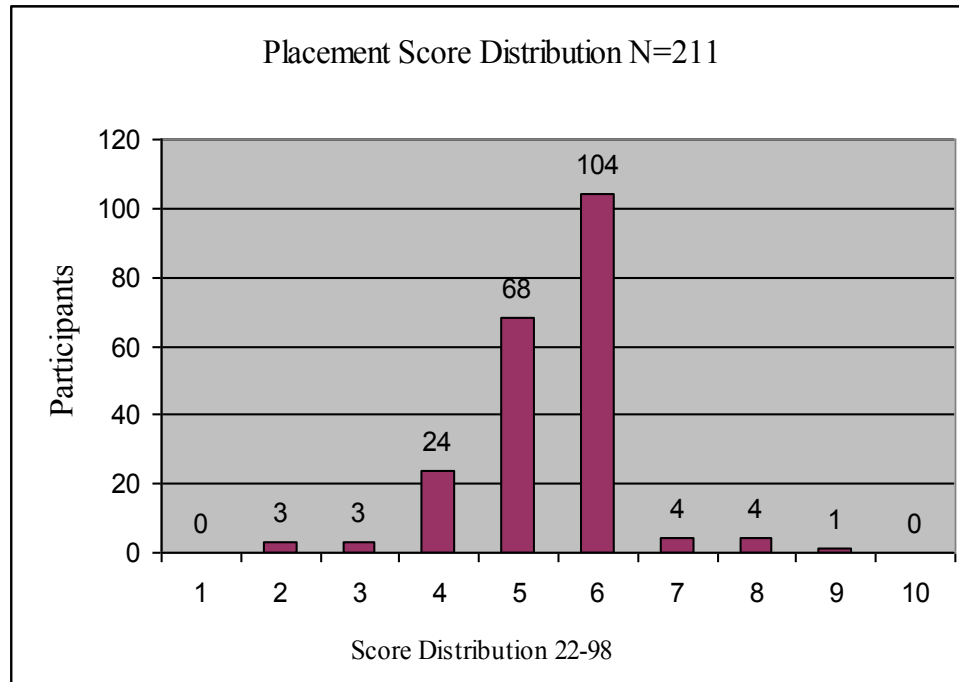


Table 2

Enrollment and Persistence in English 100

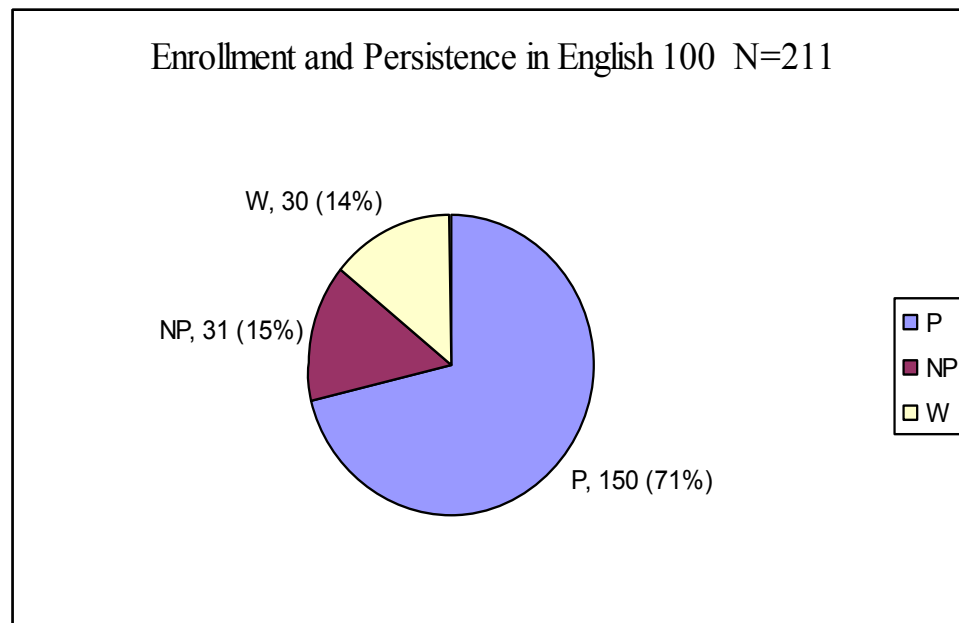


Table 3

Correlation between English Placement Scores and English 100 Persistence

Statistical results ($r = .063$ $p = < .365$) showed no correlation between the two variables

Variables		English 100 Persistence
Placement Test Score	Pearson Correlation (r)	.063
	Sig. (2-tailed)	.365
	N	211

Table 4

Relationship between Student Persistence and Achievement in College-level English 151

The correlation coefficient between persistence and achievement ($r = .248$, $p < .01$) showed a positive relationship.

□

		English 151 Achievement
English 100 Persistence	Pearson Correlation	.248**
	Sig. (2-tailed)	.004
	N	135

** Correlation is significant at the 0.01 level (2-tailed).

Table 5

Persistence in English 100 and Achievement in English 151

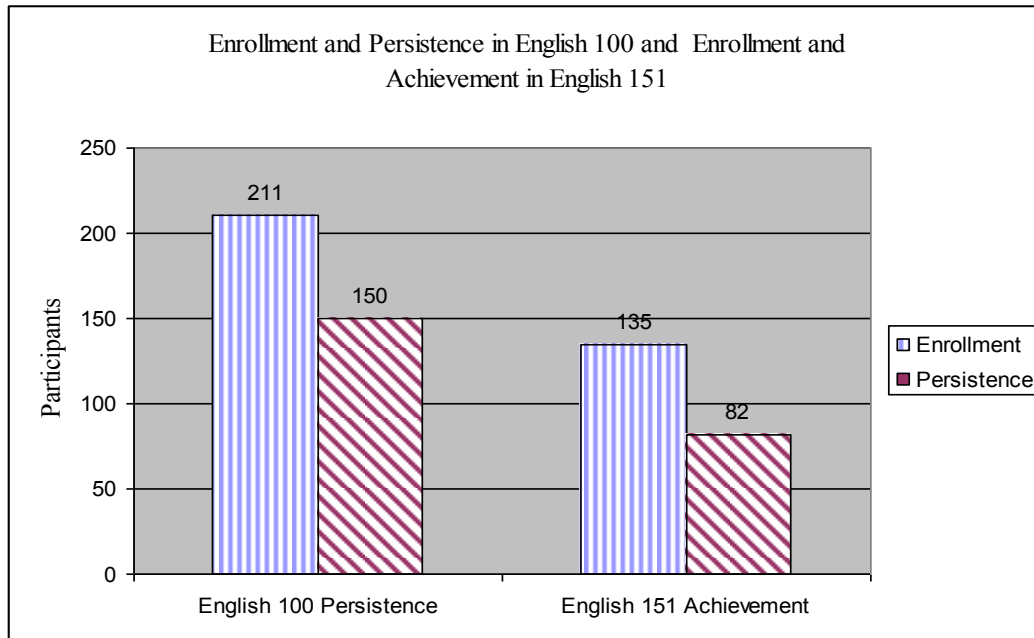


Table 6

Conclusions Related to Research Question 5

No significance in correlation was found between these two variables \square ($r = .024$, $p = .781$).

\square

Variables		English 151 Achievement
Placement Test Score	Pearson Correlation (r)	.024
	Sig. (2-tailed)	.781
	N	135

Implications

The findings in this study indicate that the placement test is not a predictor of persistence in English 100. The placement test has flaws and is in need of a radical revision. Although the test presupposes a homogeneous distribution for placement in the remedial English course, the score distribution of the 211 participants showed extreme differentials. This study demonstrates a need to redesign and develop the English placement test to identify the remediation needs of very low scorers.

It should be noted that persistence in English 100 is correlated to academic achievement in English 151. Both persistence (71%) of first-time freshmen enrolled in the remedial English course and their achievement (61%) in the subsequent college-level course may have had an effect on course retention and overall institutional retention.

This research has shown that even inadequate efforts to help underprepared students can be effective and correlate with academic achievement, which in turn, may affect student retention. Nevertheless, placement testing and enrollment in remedial English are not universal remedies or panaceas.

Limitations

There are limitations to this study, especially in regard to generalizability. An obvious limitation is related to the participant population. The participants belonged to one specific ethnic and cultural group, and therefore the findings may differ if the study were to be undertaken with another ethnic or cultural population. Additionally, it should be noted that the participants lived and studied in a relatively confined geographical area on the island of Puerto Rico, and it is possible that the results would vary if participants were selected from another geographical region.

Recommendations

Recommendations are offered in the following areas (a) English placement test cut-off scores, (b) mandatory enrollment in remedial courses, and (c) establishment of a remedial education program. These recommendations are addressed below.

English placement cut-off scores

Cut-off scores for placement in one of the four English courses were based on pre-determined ranges for enrollment in each course. These score ranges need to be re-assessed and additional research is recommended on the effectiveness of cut-off scores in accurately placing students in remedial and college-level courses. The goal of this research would be to redesign the placement test to ensure that the items respond to the recent curricular modifications in English generated by the revision of the general education component. Because all tests have measurement errors, other evaluation measures can be considered for placement scores on the margin of the cut-off.

Mandatory enrollment in remedial courses

This study found that 43% of first time UT freshmen were recommended for placement in the remedial English course in the fall of 2006. Approximately 47 % of students referred for placement in remedial English enrolled in the day and evening sections. Theoretical models on student persistence and retention postulate that the rising numbers of at-risk students enrolling in postsecondary institutions call for early intervention services to help them achieve academic success. Underprepared students

must be enrolled in remedial courses during their first semester at the institution (Spady, 1970; Tinto, 1975). A significant percentage of students requiring remediation did not enroll in English 100 during the fall of 2006. More remedial English course sections are required to service the academic needs of the underprepared students at the entering stages of their university life, and institutional policies are required that mandate remediation.

Establishment of a remedial education program

The typical remedial student brings not only inadequate knowledge and skills, but also attitudes toward learning and schooling that may prevent success. With an increasingly underprepared student population in English-as-a-second-language, postsecondary institutions must look for ways to provide programs and services to support successful integration and academic retention (NCES, 2003). This study found that early remediation is essential and can be effective. The findings revealed that 71% of the 211 students who enrolled in the remedial English course passed. This had a positive impact on course retention in the fall. Ninety percent of students who passed the remedial course in the fall enrolled in the subsequent college-level course in the spring. Sixty-one percent of these passed that course.

The creation of a Remedial Education Program is proposed. The program would have a vision, mission, institutional policies and strategies, explicit goals and objectives that specifically address the needs of underprepared students. It would set standards for faculty and staff selection and training, including workshops that (a) address the background and personal characteristics of remedial education students, (b) develop

student-centered approaches to teaching, (c) address teaching techniques, classroom management skills, and best instructional practices to enhance the academic and life skills of the underprepared students. The following would also be required: (a) faculty and student gatherings in collaborative learning communities to develop mutual assistance and encouragement, and to help build social and institutional integration (Pascarella & Terenzini, 1991; Spady, 1970; Tinto, 1975); (b) effective communication between counselors and staff (Schulender, 2007); (c) the inclusion of coordinators assigned to academic units to address specific disciplines and to provide administrative support to students and faculty; (d) mandatory placement and enrollment in a remedial course during the first semester at the institution (Boylan, 2000; Tinto, 1975); (e) pre-testing, post-testing, and departmental examinations to measure and assess course effectiveness; (f) the training of students (and staff) in methods of critical thinking and effective study habits; and (g) yearly assessment of courses to measure program effectiveness.

The Remedial Education Program staff would (a) monitor student progress and departure through a tracking system, (b) evaluate the types of services that were offered, (c) provide statistics on course retention, and (d) monitor student development and progress until degree completion. The database would store information relevant to the student's profile, course entry levels, course completion, academic progress and standing, academic and student support interventions provided by the program and / or other student support units, and degree completion. It would also keep records of the types and frequencies of services provided to at-risk students such as faculty assistance beyond the

classroom, tutoring services, counseling services, health care interventions, and psychological assistance.

At the end of each semester, qualitative and quantitative evaluations would be administered. The qualitative evaluations would measure the level of student satisfaction, faculty and staff perceptions and recommendations to improve the quality of the program. Quantitative reports would include (a) the percentage of enrollment in the remedial education program, (b) the number of remedial courses that were offered, (c) the number of students who passed remedial courses, (d) enrollment in subsequent college-level courses, and (e) statistics on the percentage of remedial education students retained from fall to fall.

Universities are independently developing policies to improve student performance by placing students in the appropriate college-level course, providing the academic skills and services that improve retention, and encouraging students to pursue higher educational attainments. By identifying underprepared students at the early stages of college life, and providing the academic and student support skills required for academic success, greater course and institutional retention may be expected (Anjewierden, 1996; Polk-Conley, 2006). Underprepared and at-risk students not only demonstrate academic deficiencies, but also are affected by a number of other factors that influence their possibilities of success. Institutions of higher education must adapt their missions and set priorities that are in line with community expectations and needs. They must make a commitment without apology to help students overcome academic deficiencies and acquire the skills that they need to become effective, independent learners (McCabe, n.d., as cited in Boylan & Saxson; Zeiss, 1999). Remediating

academic deficiencies and other functional literacy skills is essential to success in college and even more important to success in life. Research and good practice have shown that this can be accomplished.

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