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Student demographic characteristics and how they relate to student achievement

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Abstract

In higher education, student performance in many classes still is not at the expected level. Numerous research has been conducted on how test scores and demographic characteristics correlate to academic performance. The purpose of this study is to determine what factors are predictors of success. Therefore the study will look at college COMPASS placement and exit scores, SAT scores, and high school GPA. A demographic inventory will be used to depict the background education of the students. The study will aim to establish correlations between the test scores, the demographic characteristics of the students, and end of semester grades.
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1. Background of Study

In higher education, our expectancy is that our students will demonstrate high levels of success; however, more often than not, student performance in classes falls short of meeting our expectancies. Hence, it has become apparent that there is an imminent need to go to look carefully at the problem.

As we shall be looking for the reasons why Learning Support students perform poorly on the English placement exam they take during their initial registration, and sometimes continue to perform poorly in their remedial writing classes, it has become essential to look at their prior education and demographic characteristics to be able to better understand the problem. The population of this study is comprised of students attending the Department of Learning Support at Macon State College (an open access college), and a close look into the link between remedial education outcomes in two college English classes. The students' high school education will constitute a part of this study. Hoyt & Sorensen (1999) state that the admission process at open access institutions, that give underprepared students a second chance at a college education, should be structured to ensure that students (in need of remediation) should be prepared for college level course work. This basic philosophy construes that a standardized placement test such as the COMPASS will give the students the chance to be exposed to an intensive remedial program where they will have the opportunity to correct their deficiencies.

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Students gaining admission into Macon State College (MSC) do not necessarily submit SAT scores. However, if they do submit scores, an applicant whose SAT critical reading score is 470 or below is required to take the COMPASS Placement Exam, a State of Georgia requirement. The ACT Computer-Adaptive Placement Assessment and Support System (COMPASS) is a comprehensive assessment, advising, retention, and outcomes oriented system of services. The COMPASS system communicates information to assist the institution in the advising and placement of students into appropriate course levels.

Furthermore, students in the MSC Learning Support Program are administered the Nelson-Denny Reading Tests to ascertain their reading grade level. As reading ability is a predictor of achievement (Burns, 1963), MCS Learning Support has been requiring this test since Spring 2010 and keeping record of all the scores to see if there is a correlation between the COMPASS placement and exit scores and the Nelson-Denny test scores.

It is worthwhile mentioning at this point that a demographic inventory had to be prepared so as to elicit background information from the students who constituted the population of this study. Numerous research has been conducted on how demographic characteristics impact college success.

The focus of the study will be to determine if there is a correlation between college placement and exit test scores, SAT, HSGPA (high school grade point average), demographic characteristics, and end of semester grades of the students currently taking two writing classes offered by the Department of Learning Support at Macon State College. Thirty-nine Learning Support students who had registered for an English 0099 remedial writing class were randomly divided into two classes so that the students in the smaller classes would receive more individual instructor attention. Of those students, 8 withdrew from their classes by Midterm and 31 remained in the two classes. The sample of remaining students was composed of students from various educational, social, and cultural backgrounds studying remedial English with two different instructors.

2. Problem Statement

Whether it be the SAT test, or even the COMPASS placement or exit tests, students are required to choose the correct answer. While some students respond conscientiously, the others get good scores merely because of luck. Does the COMPASS placement test accurately place students? Does the exit test reflect what students have learned during the semester? Can the Nelson Denny test results predict success? Admission to MSC is not limited to SAT scores, or a students' high school achievement, but are high school scores as powerful a predictor of success as S. Bowen, Chingos, & McPherson (2009) say in their most recent work, *Crossing the Finish Line?* How do student demographics affect student success? This study will focus on these issues. .

3. Literature Review

The present study will focus on college entry, placement and exit test scores and how they correlate to high school GPA and the final semester grades. Hence, the authors of this paper looked into the related literature to find out what studies were carried out and whether the outcomes of these studies were similar. Variables chosen were also used by other researchers who worked on similar cases in colleges/universities across the United States.

Students are placed in the Department of Learning Support based on their COMPASS placement scores. One of our assumptions when we embarked on this research was the possibility of a weak correlation between the COMPASS placement and exit scores and academic performance. In their study, Hoyt & Sorensen (1999) state that, "a prior study of the COMPASS English test at the college found a weak correlation between the COMPASS test scores and subsequent success in college writing."

Furthermore, the analysis stated that the level of high school preparation and grades were significantly related to placement in remedial education (Hoyt & Sorensen, 1999). In a study conducted by Fernald (2001), he suggests that HSGPA is a considerably better predictor of future success than is "aptitude" as measured by SAT scores. Bowen, Chingos, & McPherson (2009) say in the study they carried among the 50 state flagship universities in the USA, that HSGPA remained a highly significant predictor. And surprisingly, the study showed that regardless of the high school attended, the results were coherent among 50 institutions of higher learning.

Having SAT scores does not pose a precondition for entry to Macon State College, an open access institution. Based on the performances of our students and the interviews we conducted with them, the findings of research carried out by eminent scholars either verify or refute these observations or remarks. Jenkins (1992) claims at best SAT can be used as a supplement to high school GPA and that it should be used cautiously in predicting academic success (1992). SAT scores are indicators of developed abilities that are important in a wide range of academic programs…they are not subject to differences across schools in grading standards or in overall levels of academic ability of their students (Hanford, 1985). The study also states SAT allows "the demonstration of individual ability in a manner not reflective of the educational background of the student." Strongest opponents of the SAT maintain that it lacks validity, and is biased culturally, socioeconomically, and also by gender (Natala, 1990). Chissom & Lanier (1975) found that SAT scores ranked behind HSGPA as the most valid predictor of freshman success. The courses students take in high school reflect the breadth and depth of the course offerings at their school and the opportunities or challenges of which students can take advantage (Camara & Schmidt, 1999). Hoover (2007) therefore very rightfully advises colleges and universities (to) continue to conduct research that determines how or whether test scores, as well as other admission criteria, predict student performance at their institutions (2007). A very recent study carried out by the University of South Florida assessed the usefulness of the SAT and showed, "standardized tests failed to relate with academic progress" (Micceri, 2009).

The demographic inventory prepared and used in this study included questions concerning the students' backgrounds because it was imperative to see whether ethnicity and academic achievement were interrelated. According to Bowen, Chingos & McPherson (2009), the socio-economic status and race are closely related to the disparities in outcomes that affect academic achievement. The works referred to in the Literature Review are mostly supportive of our study, yet we found it appropriate to also cite works that refuted the assumptions we had that formed the basis for this study

4. Methodology

This research study is primarily based on correlational research (Fraenkel & Wallen, 2008) since the researchers will be looking for and describing the relationships without in any way trying to alter them.

Since student demographics form a part of the study, a demographic inventory consisting of 16 questions was administered in both groups to elicit information on the personal and educational background of students. A consent form was given to the students and approval was also obtained from the college's Institutional Review Board. While doing the background research, general, primary and secondary sources were consulted and these helped the researchers to see what results were obtained in similar studies and how they supported or refuted the current study.

The inventory was not the only instrument used in the study. Students' COMPASS placement and exit test scores, Nelson-Denny Test Scores, SAT scores (if applicable), high school GPAs and end of term grades comprise the data collected which helped establish the correlation with the demographic instrument.

Last of all, individual interviews were conducted with students who volunteered to participate in the process.

5. Findings and Analysis

The data collected will be analyzed both qualitatively and quantitatively. Fraenkel & Wallen (2008) state that to establish relationships between variables and to explain the causes of such relationships, quantitative data analysis is inevitable. On the other hand, qualitative data analysis, concerned with understanding situations from the viewpoint of participants (Fraenkel & Wallen, 2008), will also be used in this study.

The research population of this study consisted of 31 students enrolled in ENGL 0099, sections 08 and 17, taking the same course from two different instructors. In the 2 groups, there were 5 male and 14 female Afro-American students, 3 male and 1 female Asian students, and 3 male and 5 female Caucasian students.

Socio-economic status is as reported by the students in the inventory. All except 3 reported to have average socio-economic status. It is worth noting at this point that almost 83% of the Learning Support students at Macon State College are on some type of financial aid.

Students taking ENGL 0099 were mostly traditional students. Seventeen were below the age of 20.

Twelve students who gained admission to MSC in 2010 Fall submitted SAT scores while 21 submitted a HSGPA. However, there were 10 students whose admission documents did not fall into this category. Two of them (1 male &1 female) submitted their GED, 1 female student was home-schooled, 6 students were non-traditional and had no records to submit, and 1 male student was an international applicant.

Table 1: The following table shows the breakdown of the students based on their COMPASS Entry-Exit Scores, Nelson-Denny Test Scores, HSGPA, SAT, and Final Grades. The grid shows the final grades ranging from the highest to the lowest. (For the sake of anonymity, each student is identified by a number.)

NUMBER	CMPP	CMP-EX-1	SAT	HSGPA	N/D (G)	FINAL GR
1.	26	89	290	3.4	10.1	93/A
2.	67	89	450	3.2	6.4	84/B
3.	26	76		2.8	5.1	83/B
4.	67	99		Home Schooled	14.2	80/B
5.	56	84		GED	15.0	80/B
6.	45	90		2.3	8.9	80/B
7.	51	98		Non-traditional	9.2	79/C
8.	17	67		2.6	6.9	76/C
9.	50	82		GED	10.1	76/C
10.	61	84		Non-traditional	6.4	75/C
11.	56	90	330	2.9	9.5	75/C
12.	65	76		2.3	10.3	75/C
13.	65	82		2.5	12.7	74/C
14.	30	84	310	2.0	4.9	73/C
15.	59	74	380	2.5	12.5	70/C
16.	45	86				70/C
17.	56	84	390	3.0	10.8	68/IP*
18.	34	76	350	2.2	6.6	68/IP
19.	66	76		2.1	7.5	66/IP
20.	30	34		2.9	8.9	IP
21.	34	34	380	2.0	6.1	IP
22.	56	67		Non-traditional	6.9	IP
23.	50	61	370	2.4		IP
24.	35	56		Non-traditional	8.9	IP
25.	34	67	330	2.4	5.8	IP
26.	35	67	270	2.4	6.4	IP
27.	11	67		Non-traditional	4.3	IP
28.	17	10		2.0	4.1	IP
29.	25	67	270	2.7	4.5	IP
30.	54			2.5		F
31.	67	92		International		F

Literature says it is the quality of the high school experience as measured by SAT scores and high school averages that seems to make the most significant contribution to subsequent success in college (Hamilton). When we look at the scores obtained by the top 6 students (Table 1), we see that COMPASS exit scores align better than the COMPASS placement scores. Surprisingly, the top two students are international students.

When we look at the students who received an IP (In-progress) grade because of not having succeeded in the COMPASS Exit test, we see that 50% of these students ranked 3 points below the passing score. Their HSGPAs were average. Yet the remaining 50% again had a similar HSGPA. There was a poor correlation between English placement test scores, HSGPA, and subsequent success in college courses.

Ting & Bryant's 2001 study found that high school GPA was the most important predictor for the first-year Caucasian students. SAT scores were either weak or not an indicator, especially when high school GPA was included in the prediction models. The findings in Table 1 actually do not support this statement. Since all students do not have SAT scores, this statement does not support the results shown in Table 1. Chissom & Lanier (1975)

agree on the fact that SAT added only marginal predictive validity to the HSGPA and, "SAT is a third rate predictor of college performance."

Hoyt & Sorensen (1999) state that, "a prior study of the COMPASS English test at the college found a weak correlation between test scores and subsequent success in College Writing." Their analysis confirmed that the level of high school preparation and grades were significantly related to placement in remedial education (Hoyt & Sorensen, 1999). They also found out that delayed entry to college was not significant. All of these statements are supportive of the results this study found. Furthermore, in the interviews held by students who were randomly chosen on a voluntary basis, they openly stated the same views.

The Nelson Denny Scores do not align well with the total passing score of even the top 6 students. This could imply the test was not taken seriously, or due to its fast pace, students could not cope with the time barrier.

All except 3 of the LS students come from families of average socio-economic status (SES). Therefore, the results obtained cannot be correlated to different income groups. However, two of the three students who reported to have low socio-economic status passed, while one failed.

6. Conclusion

The research was conducted to find out the relationship between various test scores and demographic characteristics of students in two Learning Support classes at MSC and how they relate to academic achievement. The inventory was used to pull information regarding the personal information, educational background and socio-economic status of the population used in this study. The figures in Table 1 are supported by the student interviews, as all the students unanimously agreed on the issue that neither HSGPA nor SAT nor any other score can predict future academic success. They all said college was the institution where they demonstrated their true potential and really discovered their skills and abilities. Tertiary education would prepare them for the future. We can say that 53% of COMPASS exit scores, 48% of HSGPA's, and 74% of Nelson Denny scores correlated with final grades.

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