PREDICTING GRADE POINT AVERAGES OF MAJORS IN BUSINESS, ENGINEERING, AND SCIENCE/MATH THROUGH THE USE OF READING COMPREHENSION TEST SCORES

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The reading program of LeTourneau College, though an important part of the college curriculum, does not serve every student on campus. The College's reading program focuses on entering freshmen students whose reading skills fall below the 13.0 grade level on the Nelson-Denny Reading Test A. The Department of English administers the test each fall and assigns students reading below 13.0 to the one-semester reading lab. Students scoring slightly above 13.0 are encouraged to take the reading course; some stronger students even volunteer to take the course primarily to improve their reading speed and vocabulary. Some of the students who are required to take the reading lab are also enrolled in a remedial English course on the basis of their ACT scores. Implied within the process of this testing and course assignment on the basis of reading scores is the basic philosophy of the Department of English that reading skills are important to a student's college career.

Situated in Longview, Texas, LeTourneau College is primarily a non-denominational Christian engineering college, with electrical, welding, and mechanical engineering options

accredited by the Accreditation Board for Engineering and Technology. Science and math programs support this engineering emphasis as well as training their own majors in biology, chemistry, physics, and medical technology. The division of business is newer to the college curriculum than engineering, but it is growing rapidly in popularity with majors in accounting, industrial management and business administration.

As one might expect, the student body represents a great geographical diversity among its predominately male population. In the Spring 1981, every state except Nevada and Hawaii was represented in 899 students (131 from Texas, 87 from Pennsylvania, 64 from California, 59 from Illinois, and even 39 from Florida). Another 61 students came from 27 foreign countries (22 from Canada, 9 from Central America, 8 from South America, 6 from Africa, and 6 from Europe among the larger groupings). The total Spring 1981 enrollment consisted of 960 students, 856 male and 104 female.

Most of the students receive some economic aid in the form of National Defense loans, individual state loans, BEOG grants, and private scholarship funds. About 70 percent of the students work either through the campus work-study program or off-campus in a variety of Longview area businesses and industries. Most of the students are highly motivated, carrying an average of 15 credit hours in the Spring 1981, and involved in both campus and community programs and service projects. Over half of the students participate in the highly competitive campus intramural sports program.

The purpose of this research is to determine the predictive value of the Nelson-Denny reading scores in relation to the grade point averages (GPA) in the divisions of engineering, science/math, and business at LeTourneau College. The Nelson-Denny total scores were taken from Test A between the years 1977 and 1980. The Spring 1981 GPAs of declared majors in each division, predominately junior and senior students, were used.

Using extant scores, sixty-five students (2 female) in engineering, 45 students (6 females) in business, and 31 students (14 females) in science/math had available Nelson-Denny scores as entering freshmen and "declared major" status in Spring 1981. Because of the low percentage of females in each division, it was decided that sex was not a variable. Also, since all students who made below 13.0 grade level were required to take reading lab, it was not practical to do a correlation between those taking reading lab and those not taking it. In fact, only two students in engineering, two in science/math, and none in business who scored above the 13.0 grade level took reading lab on their own initiative. Nor was any correlation run between the divisions, since the results of such a comparison would be too ambiguous to be scientifically meaningful.

The basic assumptions which form the conceptual framework of the study are as follows:

1. The Nelson-Denny reading test accurately and reliably measures reading skills.
2. GPA accurately measures academic success.
3. Reading skill has a significant relationship to academic success.
4. Verbal skills are equally important in each of the three divisions (business, engineering, science/math).

On the basis of these assumptions, the following hypotheses were formulated:

Hypothesis I. The higher the total percentile Nelson-Denny reading score, the higher the corresponding GPA for each student.

Hypothesis II. The Nelson-Denny reading test significantly predicts academic success (GPA).

To ensure as much standardization as possible in the research, all of the students took strictly timed Nelson-Denny reading tests their first semester at LeTourneau College. The percentile total score was chosen for this research project rather than the grade level as a more accurate measurement of reading skill because the grade levels included too great a diversity of percentile rankings, especially at the 14+ grade level (67 to 99+ percentiles).

To measure the relationship between the Nelson-Denny total percentile reading score and the subsequent GPA for each student, a simple linear regression was run for each of the three divisions.

The results of a *t* test (see Table 1) indicate that this correlation between the Nelson-Denny total comprehension score and the GPA is significant in each division at the .01 level.

Hypothesis I. When one reviews the actual distribution of the individual scores, one discovers that there are individual exceptions to the actual norm. In other words, there are some students in each division who have scored above the Nelson-Denny mean precentile for each group, but whose GPA's have fallen below the group mean. Nevertheless, the hypothesis is accepted because engineering is .37; science/math is .66; business is .60. Surprisingly, business majors have the lowest mean percentile on the Nelson-Denny. One might have expected business students to have better developed verbal skills than engineering or science/math students. It may be, however, that they are merely less observant or less accurate readers on the whole. The proof of this notion, nevertheless, will be left to another study.

Hypothesis II. Because of the wide scattering of the data points ("noise"), one must exercise caution in using the Nelson-Denny reading test alone to predict academic success in terms of GPA. The Nelson-Denny is a significant tool, however, in predicting GPA. Because the test was timed, the predictive value may have been distorted. The timed test cannot account for the slow reader who is diligent in his studies nor for a fast, accurate reader who lacks either motivation or study skills. Yet the strength of the overall results indicates that the hypothesis is acceptable.

In conclusion, a word of caution must be given. Students are not highly predictive; psychological, emotional, and physical factors play as much a part in college success as do the mental factors of intelligence, knowledge retention, and literacy. Also, it is easy for the researcher to forget that each reading score represents a new student far from home, in a new environment, among strangers, who might have done better, or even worse in some cases, on another day, at a different time, or under other circumstances. For these reasons, perhaps, one finds a student with a mere 20 percentile Nelson-Denny total score making a 2.8 GPA. It is more difficult to account for the aberrant behavior of the student who scored in the 70 percentile on the Nelson-Denny, but who made a 1.7 GPA. For this reason, other tools may be better predictors. Nevertheless, these exceptions do not diminish the fact that the correlation between the Nelson-Denny total reading score and the subsequent GPA is highly significant, indicating that the test predicts, with reasonable accuracy, the potential academic success of an entering student at LeTourneau College.

	N	$\bar{X}$	$\bar{Y}$	r
Business	45	59.33	2.72	.60
Engineering	65	64.22	2.82	.37
Science/Math	31	67.45	3.12	.66

N=Number of students
$\bar{X}$=Nelson-Denny %-tile
$\bar{Y}$=GPA