

1991

## The relationship of pre-admissions testing and completion of an associate degree or one year certificate in data processing

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THE RELATIONSHIP OF PRE-ADMISSIONS  
TESTING AND COMPLETION OF AN  
ASSOCIATE DEGREE OR  
ONE YEAR CERTIFICATE IN  
DATA PROCESSING

RESEARCH PROJECT

Submitted to the Graduate Committee of the  
School of Education  
University of Dayton  
in partial fulfillment of the  
Requirements for the Degree  
Master of Science in Education

by  
Gretchen S. Higgins

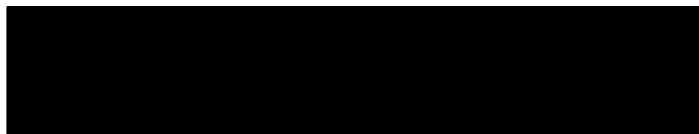
The School of Education

UNIVERSITY OF DAYTON

Dayton, Ohio

December 13, 1991

Approved by:



OFFICIAL ADVISOR

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## CHAPTER I

### INTRODUCTION

#### STATEMENT OF THE PROBLEM OR RESEARCH QUESTION:

Students at Jefferson Technical College are tested prior to admission to the college. Based on the test results, students may be forced to enroll in remedial or refresher courses in English, reading, study skills, or mathematics. No tracking mechanism exists to determine if the remedial and refresher courses enable students to complete an Associate degree or one-year certificate.

#### PURPOSE OF THE PROJECT:

This research examines the pre-admission test scores on the ASSET form B test (American College Testing Program, Inc., 1989) to determine if they are an accurate predictor of graduation for degree-seeking data processing students. If the remedial and refresher courses are effective, no relationship between pre-admission test scores and graduation should exist.

SCOPE OF THE PROJECT:

The study involves degree-seeking data processing majors who enrolled at Jefferson Technical College in Eastern Ohio in the Fall quarters of 1988 and 1989. Fifty-eight (58) students are studied.

DEFINITION OF IMPORTANT TERMS:

Pre-admission testing - the ASSET form B test (American College Testing Program, Inc., 1989) given to all applicants at the technical college.

Pre-admission test scores - the scores on the pre-admission tests as graded and recorded by the testing officials at Jefferson Technical College.

Remedial courses - those courses designated as "pre-tech" in the college catalog. Remedial course credit is not applicable to graduation requirements.

Refresher courses - those courses designated as "introductory" in the college catalog.

Degree-seeking students - those students who stated on their initial registration form that they were seeking an Associate degree in data processing or to students who completed the degree, regardless of original stated intent.

Graduation (completion of degree) - successful completion of the 97 quarter credit hour requirement for an Associate degree in data processing as outlined in the college catalog.

One-year certificate - successful completion of the 38 credit hour requirement for a one-year certificate in computer technology as outlined in the college catalog.

GENERAL HYPOTHESIS:

Due to compulsory enrollment in remedial or refresher courses, students with low pre-admission test scores should be as able to complete an Associate degree or one-year certificate in data processing as students with average or high pre-admission test scores.



CHAPTER II  
REVIEW OF THE LITERATURE

The literature indicates that there interest in testing as a predictor of success. However, studies tend to be institution-specific, or so broad in scope that no real correlations can garnered. It appears that those interested in discerning the efficacy of a particular test procedure must study that procedure specifically.

Francis (1990) examined pre-admission ACT test scores as a predictor of student success on the American Registry of Radiologic Technologists (ARRT) test taken by students after earning an Associate degree at a technical college. He found a positive correlation between the two scores and altered the admissions requirements of his program so that much greater emphasis was placed on ACT scores. Once the new admissions requirements were in place, student failure on the ARRT test decreased from 19 percent to 6 percent.

Francis' work is relevant to this research because it deals with students at the same institution. The two studies are similar in purpose, but differ somewhat in scope, since Francis' program has an admissions requirement and this study group is admitted through an "open door" policy. One of the limitations of Francis' study was that he used ACT scores as a composite whereas this research deals with a pre-admission test and enrollment in remediation or refresher courses in specific content areas.

Noble and Sawyer (1989) examined ACT score validity in predicting student success in selected college freshman English and mathematics courses. They determined that ACT scores are a better predictor of success than self-reported high school grades, but that a combination of the two is most accurate. In a second phase of the study, predictor validity statistics were examined to determine if they varied significantly in institutions with diverse selectivity levels and degree offerings. No significant correlation was reported.

Noble and Sawyer described an extensive range of data (277 institutions are surveyed) that may serve as a useful comparison of validity and reliability of the tests examined in this research. The recommendation that local tests be maintained lends support to the existing pre-admission testing procedures of the institution. However, no designation is made between liberal and conservative admission policies in the institutions studied, so more specific research is indicated.

Rogers and Steinhoff (1991) reported that Florida has expanded the Educational Accountability Act to include college-level competency standards. This program involved development of a standardized entry-level basic skills assessment mechanism and a quality assurance program to insure that college sophomores possess the basic skills necessary for upper-division study. Most institutions had English courses in place that served the purpose, but several new mathematics courses were developed.

The most common procedural change reported was the creation of non-credit preparatory courses offered to applicants before the onset of the regular academic quarter.

The educational changes in Florida were due to legislative mandate, but many of the same procedures are being followed voluntarily at this institution. Many of the conclusions and recommendations are germane to this research. Interestingly, faculty belief in the system increased in the first seven years of the program. As does this institution, Florida's community colleges operate under an "open-door" admissions program. Even though two-year colleges often deal with ill-prepared and sometimes unmotivated students, many community college students in Florida are posting scores above those earned by their counterparts at universities.

Hendel (1991), while studying college outcomes, found that pre admission test data such as the ACT-composite and PSAT are more accurate predictors of college outcome than are college experiences such as student life satisfaction and grade point average. From a group of 1820 students approached at a midwestern university, 118 actually participated in the project. The study participants were 95.7 % Caucasian and 56.7 % female. The research found no significant correlation between student life satisfaction and college outcomes, and only low significance between grade point averages and college outcome.

College outcome research is applicable to this study. Though Hendel examined outcomes in terms of specific test scores, and this study examines only graduation as success, it is interesting to note that he found pre-college test scores a more accurate predictor of student success in terms of grades and testable abilities than college experiences and grades.

Educational goals have been shown to strongly correlate with student success, according to Nolan (1989). He cites research showing that 70% of community college students are undecided as to major field of study when applying, but stresses that these are students without clear goals. Such students, however, have the advantage of exploration in several content areas. Nolan claims that 21% of the students he studied did not complete their stated major, 15% completed the major with advising, 28% followed the stated major, and 36% were undecided. He suggests that institutions need to help students who have decided on a major by assisting them in formulating written educational goals. All students should be provided current catalogs that define how educational goals can be achieved.

Goal recognition and goal change are taken into account in this research. Students who claim to be seeking a data processing degree at initial enrollment will be studied along with those students who actually completed the degree, regardless of the originally stated goal.

Casual observation of student major changes at the institution in question led to this design consideration. Some technical college students seem to enroll in school with no clear goal and decide on a major after sampling several courses.

## CHAPTER III

## METHODOLOGY

TYPE OF DESIGN:

This research is a non-experimental, two-groups design.

PARTICIPANTS:

Fifty-eight students were studied. The students either claimed to be seeking an Associate degree or one-year certificate at the time of admission, or actually did receive the degree or certificate, regardless of stated major. They range in age from 18 to 65 years with an average age of 31. Approximately 60 % are female, 40% male, 3% minority. Most are high school graduates, others have earned a General Educational Development (GED) certificate, a few have some postsecondary education.



APPARATUS:

The only apparatus used was the ASSET form B test (American College Testing Program, Inc., 1989) administered at the institution prior to admission. All students are tested for writing, reading, and numerical skills. Depending on major, some students are tested in elementary algebra. The intermediate and college algebra and geometry portions of the test are unused. The coefficient of reliability for the writing section is .87, for reading, .78, for numerical skills, .86, and for algebra, .66 (ASSET Technical Manual, 1990).

PROCEDURE:

A computerized search was performed to count the number of degree or one-year certificate-seeking data processing students entering the college in the Fall of 1988 and 1989. A second computerized search determined how many of those students graduated or received a certificate as of the Spring 1991. The results of the two searches were plotted to see if a correlation exists between the pre-admission test scores and graduation.

Student outcomes are divided into eight categories as shown in Chapter IV. Students may have dropped out while failing, dropped out while passing, earned a degree or certificate, or still be attending. These possibilities are true for students who took remedial or refresher courses, and for those who did not.

It is assumed that the participants are randomized since the data processing program maintains approximately level numbers of students from year to year. Attrition from the program is high, but nearly constant. No maturation or testing affects should impact the results since the participants test scores and success in graduating are being examined retroactively. Ethical standards are easily maintained since the research does not involve any student by name or other identification. Students are therefore at minimal risk.

OPERATIONALLY DEFINED HYPOTHESIS OR RESEARCH QUESTION:

This research provides information to the data processing faculty and the college as to whether or not compulsory remedial or refresher course enrollment enables ill-prepared students (i.e., those scoring so low on the ASSET form B pre-admission test that remedial or refresher course enrollment is required) to successfully complete the course work necessary to obtain an Associate degree or one-year certificate in data processing.

CHAPTER IV

FINDINGS

RESULTS OF THE RESEARCH:

Though there were some differences in outcome for students who enrolled in refresher or remedial courses and those who did not, the differences are statistically insignificant. The table below shows numbers of students admitted to the data processing program in the Fall quarter of 1988 or 1989, their status as of the spring of 1991, and whether or not they enrolled in remedial or refresher courses.

Student status as of Spr. '91	dropped out failing WITH R/R	dropped out failing WITHOUT R/R	dropped out passing WITH R/R	dropped out passing WITHOUT R/R	AAB or one year cert. WITH R/R	AAB or one year cert. WITHOUT R/R	still attending WITHOUT R/R	still attending WITHOUT R/R	check total
Fall '87	3	2	9	5	3	6	0	0	28
Fall '88	2	2	5	8	4	2	2	5	30
TOTAL	5	4	14	13	7	8	2	5	58

\*NOTE\* R/R means student enrolled in remedial or refresher course(s)

The results of this research will be presented to the data processing faculty and the applicable administrative staff of the Jefferson Technical College. The results of the research show that no statistical differentiation in outcome exists for students enrolled in remedial or refresher courses and students not enrolled in such courses. The current testing and forced enrollment in remedial or refresher courses is not questioned. Individual student records should be tracked to determine if student attrition is attributable to other than academic reasons.

STATISTICAL METHOD USED:

Chi-Square statistics were used to compare students in eight categories (drop-out while failing, drop-out while passing, receipt of degree or certificate, or still attending) for students enrolled in remedial or refresher courses and students not enrolled in such courses.

All  $X^2$  figures were statistically insignificant. For students receiving an Associate degree or one-year certificate,  $P < .2049$ . Comparison of students who dropped out while passing establishes  $P < .1796$ ; contrasting students who dropped out while failing shows  $P < .7642$ . No statistics could be calculated for students still attending, as there are zero frequencies in some of the categories.

These figures indicate that there is no difference in drop-out or completion rate for students who enroll in remedial or refresher courses and those who do not.

## CHAPTER V

## CONCLUSIONS \ RECOMMENDATIONS

CONCLUSIONS ABOUT THE HYPOTHESIS:

The hypothesis appears to be correct, indicating that students with low scores on the pre-admission test receive the necessary skills in the compulsory remedial or refresher courses to complete an Associate degree or one-year certificate in data processing.

INTERPRETATION OF THE RESULTS:

The results of this study are probably directly useful only in the data processing program and some administrative personnel of Jefferson Technical College. Others may find the results interesting as a comparison to other testing programs.

RECOMMENDATIONS:

Since the hypothesis appears to be true, it is recommended that incoming data processing students continue to be tested and placed in remedial or refresher courses as they have been in the past. Non-academic reasons for non-continuation of course work are not in evidence on the available student records, so it is recommended that the tracking procedures be examined for possible areas to be considered for future inclusion.

LIMITATIONS OF THE PROJECT:

This study is limited to specific students in specific years at one small institution. It is purposely very narrow in scope, and the results are intended for a very small audience. Full-time enrollment, part-time enrollment, financial situation, or other personal concerns of the student are not taken into account when examining attrition from the data processing program.



Another serious limitation to this research is that the only source of student intent is the registration form that the student submits. Some students receive degrees without ever having declared a major in that field. Others declare a major when their actual intent is to enroll in a single course or limited number of courses for personal enrichment or job skill updating. These students show in the statistics as drop-outs (usually while passing course work). Nearly half (46.5 %) of the students in the study are categorized as dropping out while passing. This category alone could severely skew results.

## APPENDIX A

JEFFERSON TECHNICAL COLLEGE  
ASSET TESTING CUTOFF SCORES AND EFFECTS

TEST	TESTED STUDENTS	SCORE	COURSE REQUIREMENTS	EFFECTS ON ENROLLMENT IN OTHER CREDIT COURSES
LANGUAGE USAGE	ALL	0-10	REMEDIAL NON-CREDIT LANGUAGE	NO CREDIT COURSE
		11-29	REFRESHER COLLEGE ENGLISH	NO COURSE W/ ENGLISH PREREQUISITE
		30-37	REGULAR COURSES	NONE
READING SKILLS	ALL	0-8	REMEDIAL NON-CREDIT READING	NO CREDIT COURSE EXCEPT MATH W/ PASSING TEST SCORE
		9-13	REFRESHER COLLEGE READING	MUST BE CONCURRENT WITH OTHER COURSES
		14-24	REGULAR COURSES	NONE
NUMERICAL SKILLS	ALL	0-8	REMEDIAL NON-CREDIT MATHEMATICS	NO CREDIT COURSE WITH MATHEMATICS PREREQUISITE
		9-25	REFRESHER BUSINESS MATH	NO COURSE W/ MATHEMATICS PREREQUISITE
		26-32	REGULAR COURSES	NONE
ELEMENTARY ALGEBRA	ENGINEERING DATA PROCESSING GERIATRICS EARLY CHILDHOOD DEVELOPMENT ALL HEALTH	0-8	REFRESHER ALGEBRA I	NO CREDIT COURSE WITH ALGEBRA PREREQUISITE
		9-12	REFRESHER ALGEBRA II	NO CREDIT COURSE WITH ALGEBRA II REQUIREMENT
		13-25	REGULAR COURSES	NONE

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