

A CORRELATIONAL STUDY REGARDING COMPASS' ABILITY TO PREDICT
GPA AT A WESTERN WISCONSIN TECHNICAL COLLEGE

By

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ABSTRACT

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WESTERN WISCONSIN TECHNICAL COLLEGE

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From a historical perspective, college admissions testing has been utilized since the 14th century. Preparation and entrance requirements for a particular college has changed over the subsequent centuries. In the United States, college admissions began regulations in response to the growing aversion to diverse methods of college preparation. College admission boards were established and standardized testing for student academic success has been utilized at most colleges and universities since the 21st century (Promfret,1975).

The Computerized-Adaptive Placement Assessment and Support System (COMPASS) is a comprehensive software and operational support package developed by the American College Testing program (ACT) to help post-secondary institutions place students into appropriate entry level courses and to diagnose specific strengths and weaknesses in potential students.

Wisconsin Indianhead Technical College (WITC) is a public, post-secondary educational institution that offers associate degrees, technical diplomas, certificates and non- credit courses to residents of northwestern and eastern Minnesota. Admissions into WITC involves meeting for an interview with a counselor and examining factors such as ACT scores, previous grades, and other

standardized tests such as COMPASS to assess potential students for admissions.

The purpose of this correlational study is to determine if COMPASS assessment scores accurately predict first-year student success or GPA. The hypothesis in the study is: no significant relationship exists between the COMPASS scores and GPA of first-year technical college students at Wisconsin Indianhead Technical College. The subjects will consist of first-year students with full COMPASS scores (i.e. reading, writing, and math). COMPASS scores and GPA data will be analyzed using the Statistical Package of Social Sciences (SPSS) by way of linear regression.

A variety of research has been conducted focusing on college admissions testing, but none of the studies looked specifically at the use of COMPASS reading, writing, and math components in the Wisconsin Technical College System. An unstructured research project reviewed archival records of students and it appeared that a lack of correlation exists between COMPASS scores and GPA, (Grade Point Average) of first-year technical college students at Wisconsin Indianhead Technical College. To determine if this assessment accurately predicts the academic success (AKA: Grade Point Average or GPA) of first-year students, this research will compare COMPASS scores of first-year students with their GPA.

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CHAPTER 1

Introduction

Since the 14th century, colleges and universities have utilized entrance exams as a method to assess the abilities and knowledge of students coming to them from diverse backgrounds (Linn, 1993). Throughout the years, a variety of tests have been administered to potential students. According to research by Broome (1963), Harvard, the first college to be built in the United States in 1638, began admissions regulations in 1642:

When any Schollar is able to read Tully or such like classical Latin Author *ex tempore*, and make and speake true Latin in verse and prose, *suo (ut aiunt) Marte*, and decline perfectly the paradigms of nounes and verbes in ye Greeke tongue, then may hee bee admitted into ye College, nor shall any claime admission before such qualifications. (p.18)

Harvard's regulations set the standard for other newly developing colleges in the United States in the 17th century. Generally, it was the colleges' presidents that administered the tests to the potential students (Pomfret, 1975). The diversity of entrance requirements has remained a source of perplexity and annoyance to secondary schools to date. In the 1800s a student's entire curriculum revolved around the material that would be covered in the entrance test made by the university he wanted to attend. It was not until the middle of the 19th century that faculty became involved in the admissions process out of concern for the quality of their students. Faculty often admitted preferred students or those suggested by other prominent scholars (Linn, 1993).

The 20th century saw great changes in the college admissions process. For example, in November 1900, a grass roots organization known as the College Entrance Examination Board formed. The board, consisting of twelve colleges, was established to provide committees and review processes to oversee major factors in college entrance functions (Fuess, 1950). Some of

the first tests utilized by the college board for admissions were designed to determine a student's understanding of a certain subject and were not trying to determine his/her scholastic aptitude.

Essay examinations were common during the early 1900s.

During World War I and World War II, the need for expedience and cost-control lead to objective tests (Encarta Learning Zone, 2000). Objective testing entered the American educational arena via the need to classify soldiers during World War I. This resulted in the development of two-group intelligence tests- - Army Alpha and Army Beta. During World War II the need for improved methods of personnel selection led to the expansion of large-scale programs involving multiple methods of personality assessment. "The use of these tests to evaluate draftees did much to popularize objective tests in the United States"(Linn, 1993, p. 8). The quick convenience factor of objective testing originally utilized for soldier classification was here to stay. Despite ongoing controversy of essay verses objective testing, from 1926, multiple-choice tests were well on their way to becoming the standard in college admission requirements.

In educational settings today, a variety of intelligence and achievement tests are administered routinely to assess individual's accomplishments, abilities, and aptitudes. These assessments are also utilized to improve instruction and curriculum planning. Many colleges and universities use standardized tests. A variety of such tests have been designed to assess whether students are ready to succeed in college level courses. In a recent study, more than one in four students needed remedial coursework upon entering college (Creech, 1997). College admission assessments identify students needing remedial classes to ensure success in college. The usefulness of any type of tests depends on their accuracy in predicting behavior. Standardized tests, which measure all students by a single standard, are one way of predicting how a student might perform in a given college.

Since 1993, Wisconsin Indianhead Technical College (WITC), one of Wisconsin's sixteen technical colleges, has utilized admission entrance assessments to ensure students' readiness and success in its programs. According to the WITC 1999-2000 Catalog & Student Handbook (1999):

The college uses assessment, along with high school and other post-secondary transcripts, to measure your skill levels and to help place you in courses and programs where you will succeed academically. If your assessment scores fall below established ranges, and your prior academic records support those scores, you will need to enroll in developmental course work (remediation) or do self-study to meet your program's entrance standards. (p. 14)

According to Ballinger-Hellerud, Dean of Student Services for the New Richmond Campus of WITC, the college began using ASSET in 1993. Until then, each of the four campuses chose their own entrance requirements. Ballinger-Hellerud stated, "We were putting students behind the eight ball" (personal communication, June 26, 2000). Prior to entrance exams, anyone could sign up for any program major of their choice. No method existed to ensure preparation in basic skills. In many cases, students would borrow money to pay for an education they would never complete, leaving them unable to pay back the loans. Based on a college-wide committee's research, the whole college began administering ASSET. The ASSET assessment, published by the American College Testing Program, is a pencil and paper exam that is scored on site.

Today, WITC, like several of the sixteen colleges in the Wisconsin Technical College System, uses an admissions assessment called Computer-Adaptive Placement Assessment and Support System or COMPASS. This computer software package, developed by ACT, allows both two- and four-year colleges to place students into appropriate course levels by administering and scoring adaptive tests, reports test results, and provides diagnostic testing in mathematics,

reading, and writing skills (ACT Publications, 1997). WITC chose to use COMPASS instead of ASSET for the majority of students in 1997 due to its affordability, efficiency, and flexibility. Like the ASSET, COMPASS requires students to obtain certain scores to gain admittance into programs. The assumption is that students obtaining the cut-off scores are adequately prepared for the rigor of the courses required in their program major and will be academically successful based on GPA.

The problem studied in this paper is simple: is the current admissions assessment, COMPASS, an accurate predictor of student success (GPA) at WITC?

Statement of the Problem

A variety of research has been conducted focusing on college admissions testing, but none of the studies looked specifically at the use of COMPASS reading, writing, and math components in the Wisconsin Technical College System. An unstructured research project reviewed archival records of students and it appeared that a lack of correlation exists between COMPASS scores and GPA (Grade Point Average) of first-year technical college students in 1999-2000 at Wisconsin Indianhead Technical College. To determine if this assessment accurately predicts the academic as measured by (GPA) of first-year technical college students, this research compares COMPASS scores of first year students with their GPA.

Purpose of the Study

The purpose of this correlation study is to determine if COMPASS assessment scores accurately predict first-year student success or GPA at Wisconsin Indianhead Technical College.

Hypothesis

It is the opinion of this researcher that limited correlation and/or predictive ability exists between COMPASS scores and grade point average. Thus, no statistically significant relationship exists between the COMPASS scores and GPA of first-year technical college students at

Wisconsin Indianhead Technical College via regression analysis.

Definition of Terms

Ability test: A test designed to measure maximum performance and reveals the level of a person's ability to perform a task.

Achievement test: A test designed to reveal how much an individual has learned.

ACT: The ACT (American College Testing) assessment is published and administered by the American College Testing Program. Most colleges and universities fulfill entrance requirements by utilizing the exam. WITC does not administer the ACT, but accepts ACT scores in lieu of COMPASS scores if a student's ACT composite score is 18 or higher.

Admissions assessment: Assessments designed to help the student and WITC work together to maximize opportunities for success in college. All applicants planning to enroll full-time at WITC must complete an assessment of their reading, writing and math skills or submit ACT scores for evaluation. If a prospective full-time or part-time student has taken the ACT within the last 12 months and has adequately met a certain level in math, reading and writing per each program, the admissions assessment may be waived by a WITC- counselor.

Aptitude test: A test designed to reveal a person's probable future level of ability to perform a task (Sharf, 1997).

ASSET: The ASSET assessment is published by the American College Testing Program and is administered at WITC. It is a pencil and paper exam that is scored on site. ASSET can be used to fulfill the entrance requirements in cases requiring special accommodations.

AS400 System: The IBM database used in obtaining and storing student information at all four of WITC's campuses.

COMPASS (Computer-Adaptive Placement Assessment and Support System): A comprehensive adaptive testing system that helps place students in appropriate courses in two-year and four-year institutions of higher education. COMPASS is a course placement and diagnostic assessment system. It includes assessment in three major areas: mathematics, reading, and writing.

Core Student: Students who have passed the admissions requirements at WITC who have declared majors, and who are enrolled in at least one or more credit courses at WITC. (S. M. Gingras, personal communication, June 13, 2000).

Declared major: Students who have met the admission requirements at WITC and who are enrolled in a program at WITC (S. M. Gingras, personal communication, June 13, 2000).

First-year student: Students who have passed the admissions requirements at WITC, who are enrolled full-time in a program and, who are in their first year at WITC- New Richmond.

GPA: Grade point average for individual first year students at WITC- New Richmond. According to the WITC 1999-2000 Catalog & Student Handbook (1999), GPA is computed by multiplying the point value assigned to each letter grade by each course's credit value. The totaled point values divided by the total number of credits per semester equals a student's GPA .

SAT: The SAT (Scholastic Aptitude Test) was originally established by the College Entrance Examination Board in June 1926 as a grading system utilizing standard deviation (Fuess 1950). Today this aptitude assessment is published and administered by Educational Testing Service. Most colleges and universities needing to fulfill entrance requirements accept the exam

similar to accepting the ACT. WITC does not administer the SAT.

WITC: Wisconsin Indianhead Technical College is a public post-secondary educational institution offering associate degrees, technical diplomas, certificates, and non-credit courses to residents of Northwestern Wisconsin and Eastern Minnesota. The college consists of four campus located in Ashland, Superior, Rice Lake, and New Richmond, Wisconsin.

Assumptions

The assumptions delineated in the COMPASS manual (ACT Publications, 1997) identify:

. . . inferences made from correctional and linear regression results assume that the conditional distribution of grades is normal. They also assume that the conditional distribution of grades is normal. They also assume that conditional variances are equal and that the strength of the relationship between test scores and course grades is constant throughout the score range (i.e., the relationship is linear). One or more of these assumptions is usually violated, particularly the assumption of normality. (p. 51)

Limitations

Some of the major limitations of this study include a limited sample size of college students. The study was restricted to first-year technical college students attending WITC-New Richmond in school year 1999-2000. This is not necessarily representative of other technical colleges. Also, because the COMPASS test is a relatively new instrument, few correlational studies can be found in the psychometric literature outlining its validity, reliability, and analysis. Furthermore, not all first-year students are required to take COMPASS. This requirement may be waived based on high ACT scores, completion of the ASSET test, or prior college coursework.

Finally, not all certificates and diplomas earned at WITC require an admissions assessment.

Summary

Wisconsin Indianhead Technical College prides itself on being a learner-focused post-secondary institution. To better serve its students, research must be conducted to determine what methods of assessment are indicative of college success. This study was an attempt to conduct such research so that ultimately programs and services would serve the needs of first-year students more effectively.

CHAPTER 2

Review of Related Literature

Introduction

The review of the literature provides key information regarding college entrance assessments. The following research outlines the history and development of college entrance requirements leading up to WITC- New Richmond's use of COMPASS. Growing concerns for the continued use of standardized testing and its connection to grade point average will also be covered in this review.

United States History of College Entrance Exams

"There is probably no aspect of higher education discussed as much, but understood as little as college entrance exams" (Linn, 1993, p. 7). Since the 14th Century, colleges have required entrance assessments for new students. What constitutes appropriate preparation and entrance for a particular college has drastically varied and changed over the subsequent centuries. The roots of college examinations in the United States evolved from a diverse and chaotic process to a more structured educational reform in evidence today. Prior to the establishment of college admission boards, admission decisions appeared to be left to instructors of programs or to colleges who merely "held entrance examinations to suit their conveniences . . ." (Fuess, 1950, p. 9).

Seventeenth and Eighteenth Century's College Entrance Requirements

In colonial times, university presidents usually tested all applicants for admissions (Pomfret, 1975). Because no other college was established before 1700, the terms for entrance in 1638 really began with Harvard University, where requirements for admission in 1642 made sure to include strict moral and religious adherence. "Regulations as to the religious and moral conduct of the students and academic forms similar to what obtained in English universities" were observed

(Broome, 1963, p. 36).

Applicants for admissions in the colonial period were typically white, wealthy boys (Thut, 1957). These boys were prepared either by private tutors or by the grammar of Latin schools. The tutors were almost always the parish ministers. "The aim of the grammar school of the seventeenth century was to prepare for college; the aim of the college was to supply the people with an enlightened clergy" (Broome, 1963, p. 24). As theology battles broke out among the first colleges, the need for some uniformity among college preparatory functions became greater. Potential students encountered chaotic entrance expectations driven by a college's own particular flavor of theology. For example, the strong Puritanism of Harvard that was adopted by Yale was later rejected by a new strong Presbyterian influence at Princeton in 1746. Harvard had been the norm for all the first American universities to model, but strict adherence to Puritan doctrine would not be maintained by all other schools. Each college had its own set of rules regarding what was appropriate for admissions for their college and heated theological differences resulted in isolation from each other.

Since the rise of universities in the 11th century, Latin was considered the common language of scholars. The prominent subject of Latin mastery in the 1700-century was no different. All higher institutions of learning, both in England and in the colonies of North America were expected to be well versed in Greek and Latin. Knowledge of Latin remained a big part of the admissions process in the United States wearing out its validity and purpose somewhere in the late eighteenth century (Broome, 1963). Entrance examinations had oral as well as written components, demanding extensive knowledge in Latin and Greek.

It was also customary at Harvard and later at other colleges such as Yale to include a rigorous exercise of transcribing a copy of the college rules and regulations for personal guidance.

These transcriptions were also utilized as a part of the admissions process into Harvard and Yale. A 1655 transcription presented to the Massachusetts Historical Society in 1799 outlines the terms of admissions:

When any Scholler is able to read and understand Tully, Virgill or any such Ordinary classical authors, and can readily make speake, or write true latine In prose, and hath skill making verse, and is completely grounded in the Greek language, so as to be able to construe and grammatically to resolve ordinary greek, as the greek testament, Isocrates, and the Minor Poets or such like, having withall meet testimony of his towardness, he shall be capable of his admission into College. (Broome, 1957, p. 27)

During the 18th century increased colonization, sectional pride, and sectarian differences led to the foundation of 21 colleges within the 13 original states. The requirements into Harvard and other colleges remained amazingly without much change well into the middle of the 18th century (Broome, 1963). Advancement of higher education was considerably discouraged during the period due to economic and social conditions that were in too crude a state, and too poorly organized. Constant "Indian warfare" and tireless battles of religious dominance between colleges resulted in very little changes in admissions standards (Linn, 1993).

Knowledge of math, one of today's most essential college requirements, was not even deemed worthwhile in the 1800s. The most significant addition to college admissions in the colonial period was the addition of "vulgar arithmetic" which consisted of a very simplistic strain of basic arithmetic (Linn, 1993). Knowledge of Latin and Greek were viewed as more important than even elementary math. This subject of math appeared for the first time among the subjects for entrance to Yale College established by a revised code of 1745 (Broome, 1963). The existence of a math

portion to any examination was not even considered at Harvard until after the 19th century.

By the late 1800s, faculty members who were concerned about the quality of their students, became directly involved in the requirements of admissions. The continued lack of unity between colleges persisted, allowing each college to set its own set of admission requirements for its own circle of preparatory schools. Knowledge of Latin, Greek, and math were now universally required to some extent, but agreements among colleges as to what standards or guidelines to use were not established (Linn, 1993). Faculty or other prominent members of the scholarly community would often admit their preferred students.

The Evolution of the SAT (Scholastic Aptitude Test) and the ACT (American College Testing) Program

In the early 1900s, higher education in the United States could afford some major changes. Religion and the State had drawn clearer boundaries and matters of war between Anglo white America and Native American tribes had resulted in many treaty agreements (Broome, 1963). America took the time to reevaluate the process of admissions. Thut (1957) outlined America's educational chronology:

Reviewing briefly the educational consequences that followed from the widespread acceptance of the philosophy of the sense empiricists, we find that a rather comprehensive educational reform had been brought about in Europe and America by the end of the nineteenth century. By this time, the sectarian domination of education, which had been so much in evidence among the earlier classical schools, had been replaced, especially in America, by public control and supportThe extension of knowledge and the stimulation of scientific discovery had been made matters of public concern and had resulted in the establishment of state universities and research agencies. (p. 251)

A low tolerance for the chaotic variety of admissions exams was one common feeling among American educators in the 1900s. Major admission requirements from the past became obsolete and meaningless. America's college admissions dropped the 1900s focus of Latin, religious dominance, and verbal memorization as major components for admission. But there was still much diversity in entrance requirements. In the 1890s, educators such as Nicholas Murray Butler tried to stifle the "anarchy that prevailed" (Fuess, 1950, p. 12). Butler was instrumental in forming the grass roots organization now known as the College Entrance Examination Board:

On November 17, 1900, twelve colleges and universities joined the College Entrance Examination Board a subdivision of the Association of Colleges and Preparatory Schools of the Middle States and Maryland. The charter members of the Board were Barnard College, Bryn Mawr College, Columbia University, Cornell University, John Hopkins University, New York University, Rutgers College, University of Pennsylvania, Vassar College, and the Women's College of Baltimore. (p. 37-38)

The board that was established by these colleges provided committees and review processes to oversee major factors in college entrance functions.

Essay Versus Multiple Choice Tests

Some of the first tests utilized by the college board for admissions were designed to determine a student's understanding of a certain subject and were not trying to determine his/her scholastic aptitude. These tests were graded on a 100-point basis. No test was given a mark below 60 until it had been graded by two readers (Fuess, 1950).

United States has strong historical connections to essay type examinations and the first examinations given by the College Entrance Examination Board were of essay type. "In June 1901,

973 students wrote 7,889 essays for the first examinations sponsored by the College Board” (Fuess, 1950, p. 47). Objective scoring, interpretation ease, expedience, and affordability initiated the change from essay testing to objective testing in America.

In reviewing psychometric literature, history conveys ambiguity regarding how Americans arrived at the adoption and dominant use of standardized, objective admissions testing. The primary impetus for the development of the major tests used today was the need for practical guidelines for solving social problems (Encarta Learning Zone, 2000). However, the popularized objective tests used in the United States were originally created as a quick means for screening soldiers for war efforts. Objective testing entered the American educational arena via the need to classify soldiers during World War I. This resulted in the development of two-group intelligence tests- - Army Alpha and Army Beta. During World War II, the need for improved methods of personnel selection led to the expansion of large-scale programs involving multiple methods of personality assessment. The use of these tests to evaluate draftees did much to popularize objective tests in the United States (Linn, 1993). The quick convenience factor of objective testing originally utilized for soldier classification was here to stay. Despite ongoing controversy of essay verses objective testing, from 1926, multiple-choice tests were well on their way to becoming the standard in college admission requirements.

Debates persist to date in American education regarding the reliability and validity of essay testing verses multiple choice testing. Some proponents argued for the use of the multiple choice tests include:

- 1) Multiple choice tests are thought to be friendlier and more convenient for scoring.
- 2) Multiple Choice tests are less expensive than essays.
- 3) One hundred or more questions can be asked instead of ten or twelve; therefore, a

student can miss several items and still not seriously affect his/her grade.

4) Questions can be more easily distributed per each area tested.

5) Multiple choice tests can lend themselves readily to systematic study using preliminary test questions that test for ambiguity.

SAT

In 1920 the college Entrance Examination Board appointed a committee to investigate the possible value of an objective test for entrance examinations. The group recommended developing an aptitude test designed to measure a student's probable future level of ability to perform in colleges and to offer this examination to the public in June 1926 (Fuess, 1950). Thus, the SAT (Scholastic Aptitude Test) was born. Since the grading system used in marking the Scholastic Aptitude Test was quite different from the 0-100 system used in grading the written tests, a standard score system based on standard deviation units was adopted for college use. When the results for the first group of test takers came in 1926 only one total score was provided. An analysis of the tests showed, however, that the verbal test scores did not correlate highly with the mathematics test scores. This discovery convinced the board that the results of this test should be presented in two scores: verbal and math (College Entrance Examination Board, 1992).

ACT

In 1959 ACT (American College Testing Program), today's second major developer of college entrance examinations, was founded. While the SAT was designed to test aptitudes, the ACT was designed to measure students' educational progress in a number of academic fields. The new ACT test was derived from tests that had been used across the United States for some time. ACT publications claims that "both tests have demonstrated that they can assist colleges in predicting how students will perform in their colleges courses" (ACT Publications, 1973, p. 57).

Standardized testing

Standardized tests measure all students by a single standard and are one way of predicting how a student might do in a given college (College COMPASS, 2000). Standardized tests are not a measure of intelligence. The SAT and the ACT are standardized tests that test verbal and math ability. Most colleges and universities in the United States now utilize them for college admissions. Each student's score is compared with a pool of other students' scores from across the country. Students can then be ranked on a national level. Even though most of the world uses essay exams as a big part of the admissions process, to date, the United States still prefers the so-called objective tests such as ACT and SAT (Linn, 1993).

COMPASS Testing at WITC

Educational professionals generally agree that standardized test scores do not predict success in later life. However, there does seem to be some relationship between standardized test scores and college grades, especially first year grades (College COMPASS, 2000). Most colleges use the scores as one indication of a student's abilities but only as one among many indicators. Most of Wisconsin's sixteen technical colleges utilize standardized testing. Wisconsin Indianhead Technical College admission process looks at various components for admissions into their schools, including using the standardized COMPASS assessment.

Wisconsin Indianhead Technical College is a public postsecondary educational institution that offers associate degrees, technical diplomas, certificates and non-credit courses to residents of northwestern Wisconsin and eastern Minnesota. Admissions into WITC involves meeting for an interview with a counselor and examining factors such as ACT scores, previous grades, and standardized testing such as COMPASS to assess potential students for admission.

The Computerized-Adaptive Placement Assessment and Support System (COMPASS) is

a comprehensive software and operational support package developed by ACT to help post secondary institutions place students into appropriate entry level courses and to diagnose specific areas of strengths and weaknesses in potential students (ACT Publications, 1997). COMPASS software administers, scores, and reports the results of adaptive placement and diagnostic test in the areas of mathematics, reading, and writing skills. The system can administer a test to a student on demand, and the results can be printed or presented on a computer screen immediately after the testing session.

According to ACT Publications COMPASS Manual (1997), three measures produce up to seven possible placement scores (one each in writing skills and reading and up to five in mathematics);

A. Mathematics Placement Measures

(Up to 5 scores)

1. Numerical Skills/Prealgebra
2. Algebra
3. College Algebra
4. Geometry
5. Trigonometry

B. Reading Placement Measure

C. Writing Skills Placement Measure

(Usage/Mechanics and Rhetorical Skills)

Each school can adjust the level of math. WITC utilizes the Numerical Skills/Prealgebra level for Mathematics Placement Measures. The highest score a student can reach in each of the three areas is 99. Program deans and instructors set their own numerical cutoff in the three areas and adjust the level to the appropriateness of their course work. For example, potential students taking the assessment for the Associate Degree in Nursing program must obtain at least a score of 60 in the mathematics portion of the COMPASS and slightly lower than 60 in writing and reading . Cut off scores for reading, math and writing are adequately set to prepare a student for the rigors of

coursework in each program.

In the spring of 1993 WITC decided to implement a formal basic screening for admissions using a proven instrument from ACT. According to Ballinger-Hellerud, Dean of Student Services for the New Richmond Campus of WITC, the college began ASSET in 1993. WITC was encountering problems with students signing up for programs with little to no preparatory readiness for their course work. "WITC's open policy for admissions would attract many potential students but without assessment requirements, students were placed behind the "eight ball" and would drop out." (personal communication, June 26, 2000). Students coming into the classroom unprepared for academic work would obtain grants and loans for tuition books and personal costs. As tuition went up and students struggled to pass their coursework, they would be referred to study skills to remediate their deficits. Often students would drop out of WITC with enormous debts. WITC started using ASSET assessment, published by the American College Testing Program to ensure that students had some type of screening for in basic skills for their coursework. This test is a timed, paper and pencil test.

After many meetings with deans, managers and instructors, WITC decided on the Computer –Adaptive Placement Assessment (COMPASS). WITC chose COMPASS over ASSET for the majority of students in 1997 due to its affordability, efficiency, and flexibility. Like the ASSET, COMPASS requires students to obtain certain scores to gain admittance into programs. Ballinger-Hellerud claims that the retention of students has improved since using the COMPASS and changing the requirements in the intake process. The assumption is that students who make the cutoff scores will be more prepared and thus obtain a better grade point average.

G.P.A as a Predictive Instrument

At the end of each semester WITC students receive letter grades and a grade point average

(GPA). Their GPA is computed by multiplying the point value assigned to each letter grade (i.e. A=4.00, A-=3.67, etc.) by each course's credit value (i.e. Basic Math = 2 credits, etc.). The totaled point values divided by the total number of credit per semester equals a student's GPA. Figure 1 illustrates WITC's grade point values for each letter grade (Wisconsin Indianhead Technical College Catalog,1999).

Figure 1

Summary of Letter Grades and Grade Point Values at WITC

Letter	Equivalent Work	Grade Points	Numerical
A	Excellent	4.00	95-100
A-		3.67	93-94
B+		3.33	91-92
B	Above Average	3.00	87-90
B-		2.67	85-86
C+		2.33	83-84
C	Average	2.00	80-82
C-	Below Average	1.67	78-79
D+		1.33	76-77
D		1.00	72-75
D-		.67	70-71
F	Failure	0.00	0-69

Summary

The roots of colleges entrance examinations in the United States have come a long way since college presidents hand picked their students for admission. Autocratic processes that were driven by theological battles have dwindled into a more democratic process through the centuries. There is barely any semblance of similarity in admission requirements when contrasting the United State's first college, Harvard to that of WITC –New Richmond. However, some type of testing to insure academic readiness appears necessary for most colleges today. While most of the world still utilizes essay examinations for college entrance, the United States has established a strong relationship to the use of standardized testing and it appears that the ACT and other dreaded pre college prep requirements still await America's next set of senior high school graduates.

CHAPTER 3

Methodology

Introduction

In an effort to determine if college admission test scores predict student success, a correlational study was conducted. In this study, COMPASS scores and GPA of first-year students attending Wisconsin Indianhead Technical College-New Richmond were compared. A description of subjects, selection of sample, instrumentation, data collection procedures, data analysis and limitations will be included in this chapter.

Description of Subjects

One hundred first-year students attending Wisconsin Indianhead Technical College-New Richmond served as subjects for this study. Part-time students were not included. There were 48 males and 52 females. Ages of the subjects ranged from 18 to 53. The mean age was 27.01 years. The subjects' declared majors included: Accounting; Administrative Assistant; Computer Information Systems-Programmer/Analyst; Electronics-Computer; Machine Tooling Technics; Agricultural Power and Equipment Technician; Medical Assistant; Marketing; Nursing-Associate Degree; Automated Packaging Systems Technician; Supervisory Management; Motorcycle, Marine, and Outdoor Power Products Technician; and, Business Administration/Finance.

Student's COMPASS scores were correlated with their GPA. Of the 100 students randomly identified, only 52 met the acceptable criteria for inclusion in the study, having full COMPASS scores (i.e. reading, writing, and math). Forty-eight subjects were eliminated from the study due to incomplete data regarding full COMPASS scores. Of the 52 subjects that met inclusion criteria, 23 were males and 29 were females.

Selection of Sample

One hundred names of first-year core students were randomly drawn from a list of all first-year students beginning coursework in the fall of 1999. The list of first-year students was generated by Wisconsin Indianhead Technical College's AS400 computer system.

Instrumentation

Two instruments were used in this study. Student scores from COMPASS were examined. COMPASS, a comprehensive adaptive testing system, consists of three assessment areas, including mathematics, reading, and writing. Scores on COMPASS are percentages that range from 0 to 99 in all three areas (99 is a true maximum score). The score percentage shows the percentage a student could get correct if all items were completed. Students scoring 99 answered all items correctly; 40-45 percent indicates the student needs to review the subject area; and, 17-20 percent indicates chance guessing.

The validity of COMPASS, according to the ACT Publications COMPASS Manual (1997), can fail or work in four domains:

- 1) The percentage of students who scored below the cutoff who would have failed the standard course had they enrolled in it (true negative).
- 2) The percentage of students who scored below the cutoff who would have succeeded in the standard course had they enrolled in it (false negative).
- 3) The percentage of students who scored at or above the cutoff who actually succeeded in the standard course (true positive).
- 4) The percentage of students who scored at or above the cutoff who actually failed in the standard course (false positive). (p. 3-51)

To test the predictive validity of COMPASS, the assessment was administered to entering

freshmen from several post-secondary institutions in the fall of 1993. End of the semester grades were then provided for tested students (ACT Publications, 1997). Figure 2 provides the results of the 1993 validity study. The figure contains information on: the optimal cutoff *score*, the score that corresponds to a .50 probability of getting a grade of B or higher in a standard course; percent placed in the lower-level course, the percentage of students tested in 1994 who scored less than the optimal cutoff score; and, accuracy rates, the estimated percentage of students that would be appropriately placed in courses.

Figure 2

Summary of COMPASS Validity Analyses

Course type	COMPASS test	Number of institutions	Cutoff score range	Optimal cutoff score	Percent placed in lower-level	Accuracy rate (percent)
English composition	Writing	5	62-80	64	58	60
English composition	Reading	3	83-97	94	81	60
Arithmetic skills	Prealgebra	3	33-57	47	55	71
Elementary algebra	Prealgebra	1	55	55	78	74

COMPASS, a relatively new instrument, lacks sufficient information on reliability. No reliability information could be found in the COMPASS Manual.

The second instrument utilized is GPA records. The GPA for each first-year core student was found on WITC's AS400 system. The computer system is programmed to calculate each individual student's GPA, based on the number of credits taken and the grade earned by the student.

Data Collection Procedures

To maintain the confidentiality of the individual student, the Admissions advisor of Wisconsin Indianhead Technical College-New Richmond ran a computerized list from the college's AS400 system. The list included all core students beginning coursework at WITC in the fall of 1999. The Admissions advisor cut the list into smaller pieces of paper. One student was listed on each small piece of paper. The small pieces of paper were placed in a box. The researcher randomly drew 100 names from the box. The Admissions advisor looked up each of the 100 students on the AS400 to identify their COMPASS scores and GPA. The scores were recorded on a form that identified the student as a number, ranging from 1-100. No student possessed the same number. The researcher had no knowledge of which student had what score.

Data Analysis

The data was analyzed using SPSS, Statistical Package of Social Sciences, by way of linear regression to determine if COMPASS is a predictive instrument of student GPA. Statistical significance of COMPASS when correlated with GPA was analyzed using the Pearson r correlation coefficient..

Limitations

Some limitations in the methodology of this study include the lack of correlation studies for COMPASS in current psychometric literature. The test is very new and most primary information out there is published by ACT/COMPASS. Much COMPASS information for this study seemed geared for commercial interest. Also, the random sample which included first year students from WITC – New Richmond may not be typical of all technical colleges in Wisconsin. Another limitation in methodology provided a considerably reduced random sample because almost half of the 100 students picked for the study were waived from the admissions process. Finally, lifting data from the AS400 is not always error free.

CHAPTER 4

Results

Introduction

The purpose of this correlated study is to determine if COMPASS assessment scores accurately predict first-year student success or GPA . The hypothesis in the study was: no significant relationship exists between the COMPASS scores and GPA of first-year technical college students at Wisconsin Indianhead Technical College.

Initially, the subjects for study included one hundred first-year students attending Wisconsin Indianhead Technical College-New Richmond. There were 48 males and 52 females. Ages of the subjects ranged from 18 to 53. The subjects' declared majors included: Accounting; Administrative Assistant; Computer Information Systems-Programmer/Analyst; Electronics-Computer; Machine Tooling Technics; Agricultural Power and Equipment Technician; Medical Assistant; Marketing; Nursing-Associate Degree; Automated Packaging Systems Technician; Supervisory Management; Motorcycle, Marine, and Outdoor Power Products Technician; and, Business Administration/Finance. Students' COMPASS scores were correlated with their GPA . Of the 100 students randomly identified, only 52 met the acceptable criteria for inclusion in the study, having full COMPASS scores (i.e. reading, writing, and math). Forty-eight subjects were eliminated from the study due to incomplete data regarding full COMPASS scores. Of the 52 subjects that met inclusion criteria, 23 were males and 29 were females.

Data Analysis

COMPASS scores and GPA data was analyzed using the Statistical Package of Social Sciences (SPSS) by way of linear regression. The analysis indicated significant results when correlating COMPASS reading scores with overall GPA (Pearson r of .429, $p < .05$). 3.) These

findings suggest that a student's reading COMPASS score may predict GPA (i.e. the higher the COMPASS score, the higher GPA will be). Although the COMPASS reading scores were found to be statistically significant when correlated with GPA,(<.05), the amount of explained variance is limited. Given that r^2 is .085, significance must be interpreted cautiously.

No significant difference was found for COMPASS writing scores when correlated with GPA (Pearson r of .054, $p>.05$) nor with math scores when correlated with GPA and (Pearson r of .065, $p>.05$). This suggests a potential lack of predictability specific to the writing and math component to COMPASS advisement (see figure 3).

Figure 3

Regression Correlations (N=52)

	GPA OF FIRST ACADEMIC YEAR AT WITC
Pearson Correlation GPA OF FIRST ACADEMIC YEAR AT WITC	1.000
READING COMPASS SCORE: READING	.291
WRITING COMPASS SCORE: WRITING	.054
MATH COMPASS SCORE: MATHEMATICS	.065
Sig. (1-tailed) GPA OF FIRST ACADEMIC YEAR AT WITC	
READING COMPASS SCORE: READING	.018
WRITING COMPASS SCORE: WRITING	.351
MATH COMPASS SCORE: MATHEMATICS	.325

Although, not specifically related to hypothesis, data was analyzed to ascertain the correlation between COMPASS scores. Math was not statistically correlated with reading (Pearson r of .204, $p < .05$) but was significantly correlated with writing (Pearson r of .293, $p > .05$). However, as one might expect, reading and writing were significantly correlated (Pearson r of .470, $p < .001$).

Discussion

Of the 100 students randomly identified, only 52 met the acceptable criteria for inclusion in the study by having full COMPASS scores, i.e., reading, writing and math. Data was analyzed using the Statistical Package of Social Sciences by way of linear regression. Linear Regression indicated significant results when correlating COMPASS reading scores with overall GPA (Pearson r of .429, $p < .05$). The results were non significant for COMPASS writing scores when correlated with GPA (Pearson r .054, N.S. @ .05) nor with math scores when correlated with GPA (Pearson r of .065, N.S. @ .05). Thus, indicating a potential lack of predictability specific to the writing and math component to COMPASS advisement. Although the COMPASS reading scores were found to be statistically significant when correlated with GPA, ($p < .05$), the amount of explained variance is limited. Given that r^2 is @ .085, significant must be interpreted cautiously.

As the primary researcher had suspected, COMPASS reading scores were the only component of the COMPASS Assessment that demonstrates a significant correlation with GPA. Although significant results were found for the correlation of COMPASS reading scores and GPA, other factors may affect the success of a first-year college student. These factors could include the age of the student, his/her motivation potential, previous education or family life.

Chapter 5

Discussion

Admission testing is here to stay. However, in reviewing the literature, admissions processes have evolved and will continue to do so. This study indicated that COMPASS is not necessarily predictive of student success or GPA. Statistics indicated a weak significant relationship between COMPASS reading scores and GPA. Based on the study results, this researcher believes the COMPASS Assessment for admissions to WITC has limited practical application. The implications of these results are extremely important to colleges in general. College admission requirements need to evaluate their entrance qualifications. Are these requirements truly predicting student success or merely working as "Gatekeepers" to limit access? Instrumentation for college entrance is a point of controversy. Maintaining caution could include examining a possible culture bias in the reading and writing components of the assessment? College personnel should also be cautious when working with the self esteem of returning students. If they are trying to return to the school setting with trepidation, might the psychological effects of not passing the COMPASS assessment turn them away from a higher education forever?

Limitations of the Study

The results of this study should not be generalized to other populations. Also, only first year, core students from one technical college were used in this research. Thus, the sample may not be a good representation of other schools and/or student populations. In addition, due to incomplete data set from COMPASS, data from 48 subjects initially included in the study were deleted. This may have decreased the completely random sampling effect.

Recommendations

To further understand the relationship between COMPASS and GPA the following

recommendations for further studies are suggested:

- 1) To conduct an extensive pilot study with a larger group of first-year students.
- 2) To conduct a study examining the success or high GPA of students who did not take COMPASS i.e., students who are waived out of college entrance assessment, and investigate what makes them successful in college.
- 3) Research on qualitative factors that may affect the accomplishment of good grades such as family systems, socioeconomic status, and age.
- 4) Research other forms of multiple intelligence testing such as Howard Gardner's Multiple Intelligence model to provide for a more diverse and culturally appropriate assessment for admissions at Technical colleges.

Conclusion

Technical colleges pride themselves on practical learning and many of their programs are designed to meet the "hands on" application of jobs such as childcare and plumbing etc.. How to screen for appropriate potential students for each program needs further research. Instruments utilized for admissions testing such as those requiring a certain level of math, reading and writing need to be further researched to insure that they are really can predict academic success. Instruments such as the COMPASS must be further refined and admissions criteria better defined to avoid screening out promising students. This is not an easy task. It is hopeful that this research sheds some light upon the utility of this specific assessment tool.

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