

COMPASS-Reading Scores as a Predictor for Success

In the General Education Course,

Written Communication

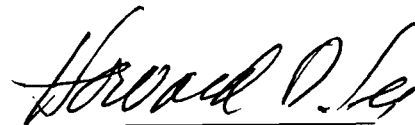
by

M. Jane Lamal Henschler

A Research Paper
Submitted in Partial Fulfillment of the
Requirements for the
Master of Science Degree
in

Career & Technical Education

Approved: 2 Semester Credits



Dr. Howard D. Lee

The Graduate School

University of Wisconsin-Stout

July 2006

**The Graduate School
University of Wisconsin-Stout
Menomonie, WI**

Author: Henschler, M. Jane Lamal

Title: *COMPASS-Reading Scores as a Predictor for Success in the
General Education Course, Written Communication*

Graduate Degree/ Major: Career & Technical Education

Research Adviser: Howard D. Lee, Ph.D.

Month/Year: July 2006

Number of Pages: 59

Style Manual Used: American Psychological Association, 5th edition

ABSTRACT

This study was done to determine if any significant correlation existed between students' entrance exam scores on the COMPASS-Reading test and their ensuing success in the general education English course, Written Communication, at Chippewa Valley Technical College (CVTC). Students were identified from the Written Communication course enrollment at CVTC, fall of 2003 through spring of 2006. To ensure the student data for correlation was relatively equal the selection of students was limited to a student's first time enrollment, and those enrolled in traditional delivery, semester long sections of Written Communication. The students also had to have an academic outcome in Written Communication and a COMPASS-Reading entrance exam predictor score. CVTC's IT Department identified 2,695 students during this timeframe that met the criteria for

correlation. The data was provided to UW-Stout's Budget, Planning and Analysis office for correlation. Ultimately, of the 2,695 students 1,941 were identified for correlation as being enrolled in the course for the first time, having a COMPASS-Reading Score, and having an academic outcome in Written Communication. The Pearson's-r two-tailed correlation outcome found a coefficient of .137, or a finding of no linear relationship between the COMPASS-Reading score and the academic success of a student in Written Communication. The finding proved the null hypothesis of no relationship of statistical significance, meaning the COMPASS-Reading score is not a good indicator for predicting student success in Written Communication.

The Graduate School
University of Wisconsin Stout
Menomonie, WI
Acknowledgments

I would like to make the following acknowledgements to give thanks and credit to individuals who have been supportive of my success.

Dr. Howard Lee – I am sincerely grateful to Dr. Lee for his support and guidance, without which the completion this thesis would not have been possible.

Chippewa Valley Technical College – I extend sincere thanks to my colleagues at CVTC who specifically supported and facilitated the research for this study - Joe Hegge, Sue Brehm, Marlene Mathison, and Al Dohm. Thanks, too, go to the many individuals whose words of encouragement have been so greatly appreciated.

My family – I want to express my heartfelt gratitude to my husband, Bill, and our daughters, Meg and Christine, for their unyielding support and collective sympathetic ears. The process of continuing my education would not have been possible if you had not provided such encouragement.

My parents – Though they are not physically present to witness this accomplishment they deserve thanks and credit for the opportunities they provided educationally and through travel that have so greatly influenced me. They are greatly missed.

Dr. Kate Reynolds and Dale Omtvedt Gable – Thank you for your encouragement and support throughout my participation in UW-EC's TESOL Grant. Your guidance provided the gateway to this endeavor and I am incredibly grateful to you both.

TABLE OF CONTENTS

	Page
.....	
ABSTRACT.....	ii
List of Tables	vii
Chapter I: Introduction.....	1
<i>Statement of the Problem</i>	6
<i>Purpose of the Study</i>	7
<i>Research Objective</i>	7
<i>Null Hypothesis</i>	8
<i>Importance of the Study</i>	8
<i>Limitations</i>	9
<i>Assumptions</i>	10
<i>Definition of Terms</i>	10
Chapter II: Literature Review	12
<i>Introduction</i>	12
<i>Background on Predictor Exams and Reliability</i>	12
<i>Other Predictors in Addition to Entrance Exams</i>	15
<i>Reading Proficiency and Writing Production</i>	22
<i>Student Preparedness for Post-Secondary Settings</i>	24
<i>Summary</i>	28
Chapter III: Methodology	29
<i>Overview</i>	29
<i>Null Hypothesis</i>	29

<i>Subject Selection and Description</i>	30
<i>Variables</i>	30
<i>Data Collection Procedures</i>	31
<i>Data Analysis</i>	33
<i>Assumptions</i>	34
<i>Limitations</i>	35
Chapter IV: Analysis of Data.....	36
<i>Introduction</i>	36
<i>Data Findings</i>	37
<i>Student Data Findings</i>	38
<i>Correlation Findings</i>	44
Chapter V: Summary, Conclusions, and Recommendations.....	46
<i>Summary</i>	46
<i>Conclusions</i>	48
<i>Research Objective</i>	48
<i>Null Hypothesis</i>	48
<i>Recommendations</i>	51
References.....	55

LIST OF TABLES

Table 1 - <i>Fiscal Year QRP Scorecard</i>	3
Table 2 - <i>Examples of Possible ACT and COMPASS Cutoff Scores</i>	14
Table 3 - <i>COMPASS Cutoff Score Guide for Placement</i>	15
Table 4 - <i>Typical Occupational Beginning Annual Salary 2005</i>	17
Table 5 - <i>Number of Times a Student Record Appears by Semester</i>	32
Table 6 - <i>BP&A Office Letter to Numeric Grade Conversion Data</i>	33
Table 7 - <i>Number of Times a Student Record Appears by Semester</i>	38
Table 8 - <i>Grade Received in Written Communication (numeric)</i>	39
Table 9 - <i>ANOVA with TERM as Independent Variable</i>	41
Table 10 - <i>ANOVA with GRADE as Independent Variable</i>	43
Table 11 - <i>Pearson Correlation Coefficient On All Combinations</i>	45

Chapter I

Introduction

Background of the Problem

Chippewa Valley Technical College (CVTC) is part of the Wisconsin Technical College System (WTCS) and is one of the sixteen technical college districts located in the state. CVTC's website states its district serves the following eleven county area: Eau Claire, Chippewa, Dunn, Pierce, Trempealeau, Taylor, Clark, St. Croix, Jackson, Buffalo, and Pepin. The college has seven campus sites with three in Eau Claire, individual campuses serving River Falls, Menomonie, Chippewa Falls, and a small campus center in Neillsville. According to CVTC's Academic Quality Improvement Program Report (2005), CVTC offers 51 associate degree and technical diplomas and had 4,028 full time equivalent (FTE) students enrolled during academic year 2003-2004 (p.11). CVTC's Welcome Center (2006) web page offers the following "General Education Mission Statement:"

General Education is an integral part of all educational programs. General Education should reflect those competencies that comprise a level of skill needed to enable the individual to understand and appreciate his/her culture and environment; to develop a system of personal values based on accepted ethics that lead to civic and social responsibility; and to attain skills in analysis communication, quantification, and synthesis necessary for success in an occupational area and for further growth as a lifelong learner and a productive member of society (<http://www.cvtc.edu>).

Students enrolled in post secondary education at CVTC are required to take general education courses to meet program area requirements whether seeking a technical (1 year) diploma or an associate (2 year) degree. It is important for students to be successful in their general education courses in order for them to continue into the more rigorous coursework of their chosen program area. Though general education courses are housed within several departments, CVTC's Communication Skills Department (2006) web page delineates a number of required and elective courses taught by the department that support CVTC's general education mission statement. One general education course requirement which all students seeking an associate degree must fulfill is a course entitled "Written Communication" (<http://www.cvtc.edu/Programs>).

Students seeking an associate degree must meet their program's general education requirements by taking Written Communication, a 3-credit course. The course is offered in a number of formats, to include traditional face-to-face, internet, print based, CD, and Inter-active television (<http://www.cvtc.edu/Programs>). The only way a student seeking an associate degree would not have to take Written Communication is if they test out of the course requirement by taking a proficiency exam, or if they have taken a similar course at another institution that the admissions office accepts in lieu of Written Communication (<http://www.cvtc.edu>). Written Communication is a rigorous course and an indicator of this is that it transfers to University of Wisconsin system schools as the equivalent of English Composition 101, as stated on the UW-Transfer Information System website (<http://www.uwsa.edu/tis/>).

According to data provided by the WTCS Quality Review Process (QRP) Fiscal Year 2005 Scorecard the course completion rate for general education, to include courses

offered through the Communication Skills Department, falls well below the identified “Target” (p. 1). The QRP Scorecard reports the following for general education as delineated in Table 1:

Table 1

Fiscal Year 2005 QRP Scorecard

Indicator Name	Threshold	Target	Actual
CG04-AAS Course Completion – Mathematics	63.01	78.68	74.89
CG05-AAS Course Completion – Communication	67.07	81.34	70.88
CG06-AAS Course Completion – Social-Behavioral	72.7	86.18	86.13
CG07-AAS Course Completion – Natural Sciences	72.27	83.47	74.69

CVTC’s Assessment and Curriculum Specialist, Claudeen Oebser in a personal communication (July 12, 2006) provided the following definitions for Table 1:

Threshold – is defined as the average of the bottom four technical colleges Table for a given state indicator showing on the scorecard sheet. The target is defined as the average of the top four college scores for the indicator. Actual – is the individual college’s only score for a given period of time for the state indicator (Oebser 2006).

Table 1 shows course completion in the communication skills area as being the lowest “Actual” score of all four general education areas (QRP p.1). There are several if not many possibilities one could chose to explore regarding the cause for this high rate of

failure regarding course completion, but one of interest that may help to circumvent failure is to determine if students are properly identified as having the potential for success in the course. College entrance exams are most often identified as being such predictors. In fact, CVTC's COMPASS Frequently Asked Questions (FAQ) web page states the college uses COMPASS as a requirement for most associate and a few of the technical degree programs; however, it also states that the scores are typically used by academic advisors for "advisory purposes only." The web page additionally states that individuals whose scores are too low may not be eligible for some programs, in which case the academic advisor may provide alternate options – retesting, taking advantage of CVTC support services, or remediation (<http://www.cvtc.edu/GetStarted/>).

Four year colleges and universities require individuals to take some type of entrance exam for acceptance, while technical colleges characteristically use entrance exams, with few exceptions, as predictors and only rarely require students to obtain certain scores in order to be accepted into a program. Educational institutions that do not have entrance requirements, or offer programs that do not require certain standards for acceptance, are referred to as being "open admission." Open admission, in effect, means that an educational institution admits students who have a high school diploma or its equivalent regardless of grades, even though they may require remedial coursework to ensure success in a program area (<http://www.google.com>). CVTC's admissions (2006) web page states that students are required to take an entrance predictor exam called the COMPASS for the majority of its associate degree programs; however, much as the open admission definition states, performance rarely precludes an individual from being admitted. The COMPASS exam is a computerized and un-timed assessment created by

American College Testing (ACT) which is used and/or accepted by all Wisconsin technical colleges (<http://www.cvtc.edu/GetStarted/>). The testing components of the COMPASS exam listed on CVTC's program requirement (2006) web page are as follows: reading, writing, pre-algebra, algebra, college algebra, and trigonometry. Though these components are all available for use as predictors, the majority of programs at CVTC only have candidates take the reading and pre-algebra components. The COMPASS reading score is the indicator used to predict student success, and though there is a writing component it is only administered to students who are interesting in seeking a paralegal or pharmacy technician associate degree ([http://www.cvtc.edu/Get Started/](http://www.cvtc.edu/GetStarted/)).

According to data compiled by CVTC's Information Technology (IT) Department (2006) and tabulated by Stout's Budget, Planning and Analysis office (BP&A), a total of 2,695 students with a COMPASS-Reading score were enrolled in a traditional delivery format of Written Communication between fall of 2003 and spring of 2006. Of those 2,695 students, 2,400 received a grade (others audited, withdrew, or had an incomplete at the time the data was gathered). Of these 2,400 students 1,940 were identified as initial enrollments (non-repeating) as having both a COMPASS-Reading score and an academic grade. During this period, 837 of the 2400 students received a below average or failing grade in the course and 512 had taken the course anywhere from two to six times (BP&A p. 4).

These numbers provide some compelling information regarding student success in Written Communication, as it shows a student enrolled in the course has approximately a one in three chance of performing poorly. The numbers themselves speak to the need of

identifying students who have less than adequate skill level to meet the rigors of the course. Since CVTC uses the widely accepted COMPASS entrance exam, developed by ACT, and its reading component to assess and predict student success it would be advantageous to know if a student's reading score serves as an adequate indicator of a student's success in the Written Communication.

Statement of the Problem

The data provided by CVTC's IT Department shows that 617 students failed Written Communication between fall 2003 and spring 2006, which equates to about a 25 percent rate of failure. Another 220 students received a below average grade (D+, D, or D-), which is typically not acceptable for program placement or transfer to another institution (BP&A p.4). Additionally, according to the WTCS 2005 QRP Scorecard, the course completion rate for general education communication courses at CVTC is the lowest of the general education categories (QRP 2005).

Each student enrolled in Written Communication has a COMPASS or some other predictor entrance exam reading score upon which their success in the course is based, as students enrolling in all but a four of the programs at CVTC (RN, LPN, Pharmacy Tech, and Paralegal) are only assessed in reading and not writing (<http://www.cvtc.edu/GetStarted/>). In order to improve retention and increase student success it would be of value to determine if a student's COMPASS reading score serves as a good indicator or predictor of success in Written Communication.

Purpose of the Study

The purpose of this study was to investigate whether any relationship existed between the score students' received on the reading portion of the COMPASS entrance exam and their level of success in CVTC's general education course required for associate degree candidates, Written Communication. The relationship outcome between the score and the student success rate in this course could serve to assist CVTC in its programming and planning, especially if the results indicate students with low COMPASS-Reading scores tend to fail Written Communication.

Research Objective

The research objective for this study was to identify whether or not students' reading scores on their college entrance exam act as a reliable predictor of their success in an entry level, general education English course. A correlation was performed on the identified variables of the student's COMPASS-Reading score and the same student's academic outcome in Written Communication using the Pearson Product Moment. The research encompassed six semesters of student enrollment in traditional delivery, semester long courses from fall 2003 through spring 2006. The research group only included those students who had both a COMPASS-Reading score and a final grade in Written Communication; students with other reading indicators were not considered in order to establish the truest correlation between the score and the grade.

Null Hypothesis

There is no difference of statistical significance between a student's COMPASS-Reading entrance exam score and their academic success in CVTC's general education course Written Communication as measured by their grade.

Importance of the Study

The information afforded by the outcome of this research may lead the college to investigate the results in more detail, and/or lead to implementation of measures to ensure greater student success. The action taken by the college could range from non-interventive measures such as simply providing greater levels of communication regarding academic support available to students at the college, to actual interventive measures such as remediation.

If the research outcome determines the COMPASS-Reading is a rather poor indicator of student success, CVTC may be additionally be interested in investigating what would be a good predictor of student success in the course. This would be particularly true if the group identified for this study had an unacceptable rate of failure or retention. Colleges today are concerned about enrollments and the number of full time students because in addition to tuition dollars, enrollment is also tied to federal and state funding. There is a great deal of discussion in the administrative circles of academia directed toward improving retention levels and increasing student success. Therefore, CVTC could come to identify what is a good predictor of student success in Written Communication through the knowledge of what does not serve to be a good predictor. There are a range of possibilities, all of which would depend on the strength of the relationship the correlation provides.

Limitations

The following limitations were identified as being present in this study:

1. The group of students selected for correlation were all enrolled in a traditional delivery format of Written Communication. Traditional delivery is 16-weeks, or a semester long, and taught face-to-face. Students enrolled in other delivery formats were excluded in order to eliminate as much inconsistency as possible in the correlation as to the type of instruction the student received influencing their grade outcome.
2. Only students who received a grade were used in the correlation. Students who audited, withdrew, or had incomplete grades when the pool of students was created were eliminated from the correlation.
3. If a student was present in the data more than once as having taken Written Communication during the designated timeframe, only the initial entry for which they had an academic grade in the course was used in the correlation. Subsequent outcomes in the course were not used in the data.
4. Only students who had a COMPASS-Reading score were used in the correlation. There were other students who were enrolled in Written Communication during this period who had other entrance criteria that allowed them to take the course, such as the SAT or ACT college entrance exams. However, in order to keep the correlation as true as possible to the student outcome in the course other entrance criteria was omitted.

Assumptions

This study acknowledges the following assumptions:

1. Written Communication is taught by WTCS certified instructors at CVTC and it is assumed that all instructors through having this certification also have a similar level of expertise.
2. Communication Skills Department guidelines state that instructors should not grade on a curve. Therefore, it is assumed that the grade received by the student and used in this correlation is consistent and done strictly on a points earned basis.
3. Written Communication is taught by all instructors using the same textbook, and with a course supplement containing all assignments and grading rubrics. It is assumed that the students all had instructors who followed department guidelines in accordance with WTCS approved curriculum and taught the course in a similar manner using the text, supplement, and rubrics provided.

Definition of Terms

The following terms will be used throughout this research study:

Academic Grade or Grade – The acknowledged academic achievement of a student based on the grading scale of “A” - equating to excellence, through “F” - equating to failure in an educational environment.

Associate Degree – Associate degrees are typically offered through community and technical colleges and are indicative of two year programs of study and training in a specific area of learning geared to entry in the workforce. Internships in the workplace can often be part of the program requirements.

COMPASS (COMPASS-Reading) – COMPASS is CVTC’s entrance exam used mainly as an indicator of student success and skill level for entry into the majority of program areas the college offers. COMPASS stands for Computer-adapted Placement Assessment Support Services and is an accredited standardized instrument created by the American College of Testing (ACT). This assessment is used by many of Wisconsin’s technical colleges and is taken on a computer. This measure is un-timed, and is capable of assessing reading, writing, and various types of math in isolation. COMPASS-Reading is the reading portion of the exam used for the correlation.

Traditional Delivery (Format) - The method by which a course is taught or delivered to students as opposed to untraditional formats of Web-based or Internet, distance education, etc. Traditional delivery format consists of 16-week, semester long courses taught face-to-face, meeting on a weekly basis.

Written Communication – a general education course offered by all Wisconsin technical colleges housed under the Communication Skills Department at Chippewa Valley Technical College, and taught by WI Technical College System certified instructors using state approved curriculum with a consistent set of competencies. This course has articulation agreements for transfer to many university system schools in Wisconsin as being commensurate with a 100 level freshman English course.

Chapter II

Literature Review

Introduction

The intent of this research is to determine if any significant correlation can be made between students' entrance exam COMPASS-Reading scores, and the academic outcome of those same students in the general education composition course Written Communication. The following provides an overview of literature on college entrance examinations and how they serve to predict or indicate a student's level of success, reading research as it relates to writing production and competency, and student preparedness for writing in post-secondary settings.

Background on Predictor Exams and Reliability

According to COMPASS's Resource Manual (2006), COMPASS is short for Computerized-Adapted Placement Assessment, was implemented in 1995 after approximately 10 years of discussion and research. COMPASS is a product of American College Testing (ACT) and was developed using many of ACT's formats (p. 106). According to the ACT/COMPASS website, ACT has another test similar to the COMPASS called the ASSET which community and technical colleges also use as an entrance exam. Unlike COMPASS, which is computerized, ASSET exams are paper and pencil (<http://www.act.org>). The very appeal of COMPASS to technical and community colleges, according to COMPASS's Resource Manual (2006) is that it is computerized, gives the results at the end of the test for immediate response, and it can be used for placement, diagnostics, and for creating demographic profile information of test takers.

COMPASS's software is easily updated and the testing has broadened in recent years to including expanded sections in math, writing and English as a Second Language (ESL). It is a cost-effective and immediate way for counselor's to provide feedback to possible enrollees regarding program entry and skill level and allows the college to generate reports that assist in planning and programming (pp. 1-2).

Postsecondary institutions rely on predictor exams, such as the ACT, COMPASS and ASSET, for acceptance and placement of students who apply for admission. Even open-entry institutions administer some type of assessment to indicate student preparedness upon which to base program admission or determine success. The American Testing College (ACT) Brief 97-2 (1997) provides information regarding the success rates of students entering a postsecondary setting using both ACT Composite scores and high school GPA as performance indicators. The brief contains information derived from a study of students with both an ACT Composite score and a high school grade average who were enrolled in one of 29 colleges within one Midwestern state. The study's results showed a student with a ACT Composite score of less than 18 would have about a 15 percent chance of obtaining a 3.0 GPA and a little over a 50 percent chance of obtaining a 2.0 GPA in college. Similarly, with regard to GPA, the brief shows a student with a high school GPA of 2.8 would have about a 15 percent chance of earning a 3.0 in college, and about a 60 percent chance of earning a 2.0. This study's findings seem to support the idea that both the ACT and high school GPA serve as good predictors of student success in postsecondary environments. However, the brief goes on to report that using both indicators in the decision making process, and not relying on one, works in favor of the student who either scored low on the ACT or had a lower high school GPA (pp. 1-4).

To understand how this relates to COMPASS, Tim Osborn, ACT Senior Consultant for Postsecondary/Business Services for ACT, provided the following guideline of cut-off scores between ACT and COMPASS-Reading in a personal communication (June 20, 2006), which Table 2 shows.

Table 2

Examples of Possible ACT and COMPASS "Stage 1" Cut-Off Scores for Consideration in Student Course Placement and Advising.

ACT Scores	COMPASS Scores	Course Recommendations by Faculty
0-13	0-60	Reading Development 1
14-17	61-80	Reading Development 2
18-36	81-99	No Reading Required

In correlating Brief 97-2's ACT outcome information to COMPASS, it would indicate that individuals who score at 80 or below on COMPASS-Reading would have similar challenges in their postsecondary success in achieving certain grade points. Additionally, as Table 2 indicates, students who score at 80 or below would benefit or be placed in developmental or remedial courses (Osborn/ACT 2006).

Reading skills data were collected from 22 schools, between January of 1995 and November 2001, who took part in course placement services offered by ACT/COMPASS. Table 3 below replicates the reading score results from Table 13.3, as presented in the COMPASS Resource Manual (p 105).

Table 3

*COMPASS Cutoff Score Guide for Placement in First-Year College Courses –
COMPASS Resource Manual*

Course Type (Number of Colleges)	COMPASS Test	Score Needed for 50% Chance of –	
		<i>B or higher</i>	<i>C or higher</i>
Composition (22)	Reading Skills	80	55

Table 13.3's data indicates that a student would need a score of 80 or above on the COMPASS-Reading in order to have a 50 percent chance of obtaining a B or higher in first year college courses, and a score of 55 or higher for a 50 percent chance to achieve a C or higher (p. 105). This data provides additional support to the findings of the ACT Briefs regarding the ability to predict student success based on entrance exam predictor cut-off scores for first year college students in preparatory courses.

Other Predictors in Addition to Entrance Exams

ACT Brief 2001-3 (2001) makes a strong connection with regard to a high school student's GPA and postsecondary success in support of the data presented in ACT Brief 97-2 (1997), but Brief 2001 also credits taking college preparatory coursework and extracurricular activities with promoting success in postsecondary settings. The brief cites the following three factors as being relevant to a student's achievement in a postsecondary setting -- educational preparation, academic performance and extracurricular activities. The bulletin shows evidence that students who identify their plans for education after high school, enroll in corresponding rigorous course work, and achieve good grades are --

not surprisingly -- more successful in college. Somewhat more surprising was the correlation the bulletin made between the number of extracurricular activities a student engages in during high school and postsecondary success. Students who participated in activities such as service organizations, student government, clubs, or played an instrument were more likely to be successful in college. Identifying these characteristics conducive to success, according to the brief, gives both students and parents the insight necessary for how to best prepare for success in college. It also provides colleges other measures in addition to predictor exams to assist them in making their enrollment choices (pp. 1-3).

To show the importance of literacy skills in both reading and writing, ACT Information Brief, 2004-2 (2004), and its predecessor Brief 2000-1 (2000), both correlate reading and writing to higher pay for employees. ACT has a “WorkKeys” employability exam which isolates mastery of skills much like predictor exams for college, only these are for the workplace. The exam has levels of capability that range from 1 (low) to 7 (high), and lists the pay difference between those levels for various academic and soft-skill capabilities. The brief acknowledges that the information it provides are for “skill levels for a particular WorkKeys test range from the lowest level that employers typically need, to a level beyond which specialized training is required” (p.2). Table 4 below replicates the brief’s information for reading and writing as follows:

Table 4

Typical Occupational Beginning Annual Salary (2002) - By WorkKeys Profiled Skill Level

WorkKeys Profiled Skill Level	Reading for Information	Writing
1	N/A	\$15,000
2	N/A	\$17,000
3	\$15,000	\$19,000
4	\$19,000	\$22,000
5	\$22,000	\$24,000
6	\$25,000	N/A
7	\$28,000	N/A

The data demonstrates that a person with a highest level of competency (7) could earn as much as \$12,000 more than the lower competency level of 3. The 2004-2 brief results all show that the greater the level of competency a graduate has the greater the benefit will be in pay for each category. The brief reinforces the research that students not only benefit from a of transfer of strong skill sets from high school to postsecondary settings, but proves they also transfer to higher paying jobs in the workforce after college (2004).

Such correlations or equations between performance on college entrance exams and their prediction of student success have their detractors. In January of 2002, James Barr, Richard Rasor and Cathie Grill, published a report critical of COMPASS exam use as a placement exam for college freshman in selected courses, including English

composition. The authors take issue with the term “test validity” stating that the term is used incorrectly in regard to COMPASS placement. In reality the authors argue the concern needs to be with the validity of the decisions made based on the COMPASS test outcome as opposed to the validity of the test itself (p. 5). Barr, Rasor, and Grille’s study was done at American River Community College in California, and their correlation findings were that COMPASS was an ineffective tool in placement for math, English and reading. The study surveyed student success in four English courses and found in all cases COMPASS proved a weak predictor of student success (pp. 12-15). Their report gave various suggestions for implementing alternative methods for placement, one of which was to have the instructors of these courses, which included a course in composition similar to Written Communication, to delineate specific skill sets that all must students must have prior to enrolling in a particular course. In agreeing on a final set of entrance criteria a student must meet then some type of instrument should be developed and implemented to assess student preparedness for entrance. The authors then state some type of correlation would need to be done to determine if this were an effective means in predicting student success (p. 43).

Accordingly, Horton, Kher, Molstad, Autrey, and Juneau (1999), in their study entitled “Using Discriminate-Function Analysis to Predict Student Success in Core English Courses,” performed an analysis of 942 students from a small, rural, open admissions university located in a southern state. The authors of the study used eight predictor variables in an effort to establish a relationship between the variables and the student success in an introductory English course, English 1010. The purpose of the study was to assess “the effectiveness of various academic and demographic variables on

predicting the success of students in courses in the general education curriculum” (p. 4). The predictor variables used in the study were as follows: “completion of the prerequisite requirement for the English course, student age, ACT Assessment composite score, ACT reading score, part-time or full-time status, public or nonpublic state high school, gender, and traditional or General Education Development high school diploma” (p. 5). As Written Communication is identified as being comparable to freshman English in a four-year college or university, this study revealed “very few statistically significant relationships were found between various predictor variables and student success or failure” with regard to the English course. The study found that ACT sub-scores were unreliable in predicting student success, but that the ACT composite score and gender proved more reliable predictors of all the variables studied (p.8). Though the study said it was not focused on course retention the authors still noted a poor rate of success and retention of students in English 1010 that they urged be investigated (p.10).

However, using a reading score in isolation to predict success in postsecondary settings isn’t something that even COMPASS recommends. I asked Richard Sawyer, Senior Research Scientist – ACT Research Area in a personal communication (July 19, 2006), whether or not the COMPASS-Reading test is a good indicator of an individual’s ability to write. Mr. Sawyer responded as follows:

Although scores on the COMPASS Reading Skills Test are related to success in first-year composition courses, we recommend using scores on either the COMPASS Writing Skills Test or the COMPASS e-Write Test to measure students’ writing skills, or using the Reading measure in combination with the writing measures (Sawyer 2006).

Additionally, Sawyer stated that the COMPASS-Reading score should really only be used as an adjunct to one or both of the writing tests in determining success in an English composition course. He contends “that although the Reading Skills score is related to accurate placement in first-year composition courses, the Writing Skills score is more strongly related” (2006). More typical would be the use of a reading score, Sawyer contends, to indicate student success in a composition course that required a considerable amount of reading in addition to writing. Though, again, it should be in conjunction with a writing assessment.

Another study seeming to support the importance of high school GPA, along with other extraneous variables was performed by William Armstrong (1999) in “Explaining Community College Outcomes by Analyzing Student Data and Instructor Effects.” As stated in the abstract, Armstrong’s study “examines the validity and usefulness of employing standardized placements tests and other indicators of academic ability to make education or training decisions about community college students.” The study was conducted in four parts and involved three large, urban community colleges in California (p. 203). Armstrong’s study concluded that “dispositional variables” such as a student’s high school GPA, a student’s educational aspirations, attendance, etc. accounted for more significant variance in course outcomes than other factors considered -- including placement test scores (p. xv). One of Armstrong’s concerns regarding the use of cut-off scores as predictors was the resulting impact on students who are inaccurately assessed. The resulting impact of an inaccurate prediction of success is that it sets a student up for failure and may serve to a long term negative impact the student in various ways. Conversely, Armstrong was also concerned with the impact of inaccurately predicting the

failure of a student who might have been otherwise successful. Such an indication would mandate the student enroll in preparatory course work that is not eligible for financial aid creating an additional financial burden for the student. Such an inaccurate prediction and ensuring financial burden may lead a student to abandon seeking a postsecondary education altogether (p. 197).

Other research has studied the usefulness of preparatory courses to enhance student performance when entrance predictor scores are low. The success of students in preparatory courses for reading, math and English was reported in an article by Joanne Bashford (2000), "How Well Do Prerequisite Courses Prepare Students for the Next Course in the Sequence?" Bashford's study reported that students who took the preparatory English courses were more likely to experience success in completing the required courses. The study also concluded that students who received a "C" were less likely to experience success in the required course, whereas students who earned an "A" or a "B" were often more successful (p. 5). Additionally, Anne H. Southard and Jennifer Clay's (2004) study "Measuring the Effectiveness of Developmental Writing Courses" also supports the use of preparatory courses for core writing courses. Their study researched whether or not the preparatory course, College Prep English II, was effective in addressing deficits of preparedness for their core course, Composition I (p. 2). Though they found a low correlation, the research did find that 74% of the students who took the developmental course succeeded in Composition I, their grade in the course was approximately one letter below their preparatory course outcome (p. 4). Of other concern to the authors was the fact that the state mandated placement test, which they also correlated to the composition course, showed a significant lack of correlation between the

test score and outcome in the composition course. Though the correlation for the preparatory course was weak it was a better predictor than the state mandated placement test (p. 5).

Reading Proficiency and Writing Production

Authors Robert Tierney and Timothy Shanahan asserted in their article “Research on the Reading-Writing Relationship: Interactions, Transactions, and Outcomes,” (1996) that the foundation of language curriculum development has been based on the long-standing belief that reading and writing “were similar prerequisite skills and abilities (p 246).” According to the authors, the problem with thinking that reading proficiency leads to better writing production has led the focus in learning in elementary school settings to favor reading over writing (p 247). The reasoning behind this lopsided focus, according to Tierney and Shanahan, was that educators felt if students were proficient readers they would naturally become proficient writers due to the literacy fundamentals these skills share. Compounding this curriculum focus on reading has been the fact that most of the research conducted has been founded the “psychological sharing” of these skills (p 247). In commenting on a comprehensive analysis completed by Shanahan and Lomax (1986), which found positive correlations, the authors cautioned the following:

Such studies suggest that knowledge sharing in reading and writing is a likely phenomenon, though it is neither as simple nor as complete as was once assumed. Correlations between performance variables have been generally moderate, even in multivariate studies. Evidently reading and writing knowledge is either not identical or it is used or instantiated in strikingly different ways in reading and writing (p 249).

While the authors agree that research seems to support combining reading and writing instructionally, they urge that the direction of research in understanding the cognitive processes associated with these skills be focused on how the knowledge is shared (250). Clearly the authors concerns are to encourage research in what makes each of these skills unique which would further serve to develop curriculum that would support and enhance a student's ability to gain expertise in them equally.

To that end and in support of equalizing skill building in both reading and writing was the development of "writing across the curriculum" (WAC) and "writing in the disciplines" (WID). According to Purdue University's Online Writing Lab, (2000) WAC was initiated in the 1980s in response to what were seen as marked writing deficiencies among college students. WAC offered a method of integrating language in curriculum that provided students with the skill sets to "synthesize, analyze, and apply course content." WAC approach focuses on "writing to learn" and uses concepts of journaling and other equally informal writing methods to reinforce the learning of content as well as the ability of the student to give that content meaning. The Purdue Writing Lab further explains that WID, though rooted in many of the same ideas as WAC, differs in that it focuses on the writing needs and conventions of individual disciplines (<http://owl.english.purdue.edu/>). Though some people use the terms WAC and WID interchangeably, Jonathan Monroe, author of "Writing in the Disciplines," (2003) feels that it is important to make a distinction between the two writing initiatives. Monroe sees WAC as having been conceived and implemented by administrators, whereas the principal responsibility for WID "rests with individual faculty situated in particular fields." This is not to say, Monroe states, that faculty would be solely responsible WID

because many curriculum considerations go beyond an individual discipline, but that faculty would simply be better suited to identifying the role of writing in their particular discipline. Monroe credits WAC bringing the importance of writing back to the forefront educationally, and the need for writing skills to go beyond traditional roles to have more practical and widespread application in learning (p. 1).

Student Preparedness for Post-Secondary Settings

Thus far the literature indicates that due to perceived shortcomings in writing, as stated by the University of Purdue's Online Writing Lab (2000), writing curriculum changed in the 1980s with the implementation of WAC, and subsequently WID. These shifts in curriculum delivery responded to the overemphasis on reading in elementary and secondary education that served to underprepare students for the rigors of writing in post-secondary education (<http://owl.english.purdue.edu/>). In 2002, the National Assessment of Educational Progress (NAEP) (2002) published "The Nation's Report Card – Writing 2002." In its introduction, the NAEP cites writing as a form of discourse that is elemental to civilizations and essential to a democratic society (p. 1). The framework used to measure writing in all grade areas included three types of writing the NAEP determined through collaborative research to be critical and are as follows: informative, persuasive, and narrative (pp. 3-4). Within each grade the report provides three levels of reporting for the results, student skills are categorized as follows: basic, proficient, or advanced (p. 7). The report concluded that writing skills improved from its 1998 report for 4th and 8th graders; however, the report showed a slight decline in the writing skills of 12th graders for several of the percentiles reported (p. 18). Twelfth graders are the very population that needs these skills to be successful in a post-secondary environment.

Another prominent report published by the National Commission on Writing in America's Schools and Colleges entitled "The Neglected R – The Need for a Writing Revolution" (2003) opens its publication with the following quote: "Writing today is not a frill for the few, but an essential skill for the many" (p.11). The Commission was founded in 2002 by the College Board, and calls for a "five year Writing Challenge" in order to properly identify shortfalls and promote the necessary awareness in writing in education today (p. 5). The publication goes on to say that writing is neglected on at all educational levels and whereas high school enrollments for math and science have climbed the enrollments in composition courses have dropped (p. 14). Additionally, the Commission warns, "American education will never realize its potential as an engine of opportunity and economic growth until a writing revolution puts the power of language and communication in their proper place in the classroom" (p. 14). Though the Commission has no authority on which it can rely to promote its agenda regarding writing, it is optimistic that it can still influence change. It cautions, much like the NAEP's Report Card (2002), that the ability to write is a crucial element to a democratic society.

Why this information on writing is important is reflected in the National Association of Colleges and Employers "Job Outlook 2005" (2005) survey. In this survey employers are asked to rank 12 skills on a scale of one to five (five being highest) the skills they value most in employees. Employers surveyed ranked "communication skills – written and verbal" as being the most desirable at 4.7, which was a tie with "honesty and integrity." In fact communication skills (written and verbal) have ranked at the top of NACE's survey since 1999. A NACE press release entitled "Employers Cite

Communication Skills as Key, But Say Many Job Seekers Lack Them,” (2006) reports that employers cite communication skills as the most desired quality in a job candidate, but state that these are the very skills they seek lacking overall (NACE). These surveys reflect the National Commission on Writing’s concerns regarding the lack of emphasis on writing as a skill in education and the far reaching consequences in the job market (<http://www.naceweb.org/press>).

As well, educators at the post-secondary level are also cognizant of the writing skills that students lack to be successful. Mary Brocato, Paula Furr, Martha Henderson and Steve Horton (2005) collaborated on an article entitled “Assessing Student Written Communications Skills: A Gateway Writing Proficiency Test for Aspiring Journalism Majors.” The article reflects the growing concerns of faculty who teach journalism in an open-entry university and the poor writing skills the students possess as evidenced by lack of “correctness, content, and coherence” (p. 1). The authors state that department faculty overall express concern over student’s “poor preparation for college level writing and the lack of student interest or motivation to write well, and often, or both” (p. 6). Due to their concerns, the authors and members of the journalism department created a diagnostic test to administer as a prerequisite to a “gateway media writing course” (p. 1). The diagnostic served to identify underprepared writers who would benefit from a preparatory course prior to the writing course. The findings reported stated that 57 percent of the students who took the diagnostic test “did not meet the minimum requirements for success.” The authors were additionally quite surprised by the number of students (49 percent) who failed the diagnostic but had acceptable ACT scores, meaning their ACT score did not indicate a need for a preparatory course (p. 8). The

article stresses that writing like any skill must be performed on a regular basis in order for it to evolve into something an individual is proficient in doing (p. 8).

David Chapman (2003), the author of “Undergraduate Research and the Mandate for Writing Assessment” expresses many of the same concerns the journalism faculty in the previous article and states that though writing ability is central to learning it is often “given a low priority at many institutions” (p. 1). However, though he sees student skills lacking he proposes that faculty might shy away from giving writing assignments because of their labor intensive nature in grading. Also, he wonders if faculty allow for proper feedback by assigning research assignments often so late in the semester. When this happens students typically fail to retrieve the assignments and forfeit instructor feedback on their writing (p. 1). Chapman proposes that the “act of writing” is more than communication of known ideas, but an attempt by the writer to come to an understanding of the topic” (p. 3) This is the very essence of writing to learn, an idea basic to WAC. Chapman goes on to explain that when individuals write they are forced to express ideas and concepts upon which they reach conclusions and/or base opinions. Additionally, he sees ongoing assessment in post-secondary education as an important part of the learning process, and at Stanford they have implemented a round-table dedicated to assessment processes and learning outcomes that promote proficiency in literary skills – writing in particular (p 2). An important point Chapman makes about students’ ability to write well is that most of them go into careers after college as opposed to graduate school. Therefore, research techniques taught in college should be founded in skill building for students’ professional occupations (p. 2).

Summary

The review of literature regarding predictor exams indicates that though there have been studies of note they have not had enough impact to displace commonly held perceptions by counselors, administrators and to a limited degree testing organizations themselves that other factors have the capability of being more accurate than these well known and widely used measures, such as the ACT and COMPASS, in predicting a student's success in a postsecondary environment. It would appear through review of ACT's Briefs that the testing organization itself recognizes the existence of other variables in predicting student success, but overall believes that their instruments provide the best indication of how a student will perform. As well, the COMPASS/ACT organization indicates that reading scores are not the most accurate predictors of success in first-year English composition courses. Their information indicates that institutions may be using tests and applying the results to indicate student success inappropriately. Gaining an understanding of the common skill sets of reading and writing is important, but possibly what researchers need to investigate to do both skills justice is find out what makes each of them unique. Understanding what sets the skills apart will lead to better curriculum development, better instruction, and better assessment techniques.

Chapter III

Methodology

Overview

This chapter reviews the purpose of this study and defines its methodology regarding the population, the variables involved, protection of subjects, and the data analysis. The limitations and assumptions regarding the study are also included.

The purpose of this study was to determine the level of correlation between students' predictor scores in reading as measured by the COMPASS-Reading entrance exam and their success in CVTC's Written Communications course. The outcome of the correlation measured their reading score and their final grade in the course for students enrolled in six semesters of Written Communications, fall 2003 through spring 2006, at CVTC. Written Communication is a general education course transferable to University of Wisconsin system schools as being equal to their entry level freshman English.

Null Hypothesis

The null hypothesis for this study was that there would be no statistically significant correlation between a student's COMPASS-Reading entrance exam score and the same student's success in CVTC's general education course Written Communication. Through correlation of these two variables the degree of their relationship was determined by studying an identified group of students over six semesters, enrolled in the same general education course, at the same college, using the same curriculum.

Subject Selection and Description

The subjects for this study were drawn from the student enrollment in Written Communication at CVTC from fall semester 2003 through spring semester 2006. The subjects were selected on the basis of having both the COMPASS-Reading score and a final grade in Written Communication. Only students enrolled in the traditional delivery format of Written Communication were chosen for correlation, and only the students first attempt in the course were included in the data. Subsequent enrollment or multiple enrollments were omitted from the correlation. Students who had other entrance exam predictor scores were not used to keep the strongest possible connection between the COMPASS-Reading score and the course outcome.

There were a total of 2,695 students identified as enrolled in the traditional delivery format of Written Communication between fall 2003 and spring 2006; however only 1,941 were ultimately used in the study. The other students were deleted from inclusion either because they did not have a final grade (withdrew, had an incomplete, or audited) or because they were a multiple enrollment. No other discriminate, such as enrollment in a certain program area, was used in identifying students for inclusion in the research group.

Variables

The variables used for this correlation were the student's COMPASS-Reading entrance exam score and same student's grade in Written Communication.

Data Collection Procedures

CVTC gave approval for the collection of data for this study and also provided assistance in compiling this data mainly because the outcome of this correlation could provide value to the college in its programming and planning. Their assistance allowed for a “blind-study” wherein the identity of the subjects, in this case the students, remained unknown to the researcher, to individual(s) who performed the correlation, and to anyone who would read the study. This created ID number also served as an identifier so that each record could be isolated for correlation purposes.

Student enrollment in traditional delivery Written Communications courses from fall 2003 through spring 2006 were identified by CVTC’s IT Department, who then matched the enrollment list to entrance exam information to identify which of the enrollments had a COMPASS-Reading score. The final pool of students identified were merged into an EXCEL spreadsheet and submitted to UW-Stout’s Budget, Planning and Analysis (BP&A) office for correlation.

UW-Stout’s BP&A office then refined the CVTC data to ensure there were no duplicate enrollments. Of the 2,695 students identified as enrolled in Written Communication, the BP&A office identified 512 repeat records showing a student was enrolled more than once during the six semester timeframe. Such records needed to be identified for omission from the correlation. Table 5, provided by the BP&A office, details the student records and identifies 2,183 students as enrolled in the course for the first time.

Table 5

*Number of Times a Student Record Appears by Semester
Fall 2003 through Spring 2006*

Entry	Dec 03	May 04	Dec 04	May 05	Dec 05	May 06	Total
1 st	549	287	452	256	404	235	2183
2 nd	60	57	76	52	85	77	404
3 rd	12	4	17	10	16	6	65
4 th	1	2	7	6	6	11	33
5 th	1	0	2	1	1	0	5
6 th	0	1	0	2	0	0	5
Total	623	351	554	327	510	330	2695

In addition to refining the data to exclude multiple enrollments, UW-Stout's BP&A office further refined the data to identify only those students who received an academic grade A through F during the study's timeframe. Students who had other indicators such as a "W" (withdrawal), "I" (Incomplete), or "AU" (audit) were deleted from the correlation pool. Of the 2,695 students identified the 295 were not included in the study because they did not have a final grade outcome. The BP&A office delineated the total number of students not having a grade as follows: (4) audits, (9) had incompletes, (282) withdrawals.

The final pool of 1,941 students identified for correlation met the criteria for inclusion in the study because they had a COMPASS-Reading score, had an academic

grade in Written Communication during the identified time frame, and were limited to one entry.

Data Analysis

The enrollment information gathered by CVTC's IT Department and provided to University of Wisconsin-Stout's Budget, Planning and Analysis (BP&A) office eventually identified 1,941 students as acceptable candidates in meeting the parameters of study. However, because the COMPASS-Reading score was reflected in a numerical format and the Written Communication grades were in letter format, the BP&A office converted the letter grades to numerical form in keeping with standard academic practices for calculating GPA in order to complete a numeric to numeric correlation. The following conversion data shown in Table 6 was used and provided by the BP&A office:

Table 6

BP&A Office Letter to Numeric Grade Conversion Data

Grade	GPA Equivalent	Grade	GPA Equivalent
A+	4.33	A	4.00
A-	3.67	B+	3.33
B	3.00	B-	2.67
C+	2.33	C	2.00
C-	1.67	D+	1.33
D	1.00	D-	0.67
F	0.00		

After conversion of the above data, the BP&A office performed a Pearson 2-tailed correlation individually for each semester and cumulatively for the six semesters identified. The data was correlated determined if there was any significant relationship between the student's COMPASS-Reading score and the same student's academic grade in Written Communication. To determine there was no correlation of statistical significance between the COMPASS-Reading score and student's academic grade in Written Communication would prove the null hypothesis correct and therefore accepted. Conversely, to find a correlation of statistical significance between the variables would cause the null hypothesis to prove incorrect and therefore rejected.

Assumptions

This study acknowledges the following assumptions:

1. Written Communication is taught by WTCS certified instructors at CVTC and it is assumed that all instructors through having this certification also have a similar level of expertise.
2. Communication Skills Department guidelines state that instructors should not grade on a curve. Therefore, it is assumed that the grade received by the student and used in this correlation is consistent and done strictly on a points earned basis.
3. Written Communication is taught by all instructors using the same textbook, and with a course supplement containing all assignments and grading rubrics. It is assumed that the students all had instructors who followed department guidelines in accordance with WTCS approved curriculum and taught the course in a similar manner using the text, supplement, and rubrics provided.

Limitations

The following limitations were identified as being present in this study:

1. The group of students selected for correlation were all enrolled in a traditional delivery format of Written Communication. Traditional delivery is 16-weeks, or a semester long, and taught face-to-face. Students enrolled in other delivery formats were excluded in order to eliminate as much inconsistency as possible in the correlation as to the type of instruction the student received influencing their grade outcome.
2. Only students who received a grade were used in the correlation. Students who audited, withdrew, or had incomplete grades when the pool of students was created were eliminated from the correlation.
3. If a student was present in the data more than once as having taken Written Communication during the designated timeframe, only the initial entry for which they had an academic grade in the course was used in the correlation. Subsequent outcomes in the course were not used in the data.
4. Only students who had a COMPASS-Reading score were used in the correlation. There were other students who were enrolled in Written Communication during this period who had other entrance criteria that allowed them to take the course, such as the SAT or ACT college entrance exams. However, in order to keep the correlation as true as possible to the student outcome in the course other entrance criteria was omitted.

Chapter IV

Analysis of Data

Introduction

This chapter presents the research data and correlation findings, as well as a summary regarding the findings. To review, a correlation was completed between students' COMPASS-Reading scores and the same students' ensuing academic outcome in Written Communication. COMPASS-Reading, an ACT product, is one component of a predictor entrance exam used by CVTC to indicate the academic preparedness for and probable success of a student in a program area. Written Communication is a general education course at CVTC that is part of the general education requirements for an associate degree.

The intent of this research was to determine the extent to which the identified variables of a student's COMPASS-Reading score and the same student's outcome in Written Communication were related. CVTC agreed to assist in gathering the data for the correlation variables, which was compiled by their IT Department, because the information provided by the study could assist them in their programming and/or planning. CVTC's IT Department gathered student grade data for the course Written Communication from fall 2003 to spring 2006. To keep the pool of candidates as uniform as possible, only students enrolled in traditional format, semester long sections of Written Communication were used. The IT Department then compared this student data to entrance exam information to see which students also had a COMPASS-Reading score. CVTC's IT Department ultimately identified 2,695 students for the study.

Prior to performing the correlation the data pool was clarified by eliminating multiple entries (if the student took the course more than one time during the identified time period) and by eliminating students who showed anything other than an academic grade (withdrawal, audit, or incomplete). Of the 2,695 candidates CVTC provided for the study, Stout identified 1,941 as having an academic grade outcome in Written Communication and 2,183 as having a COMPASS-Reading score. The other candidates were eliminated as not being eligible for the correlation.

Data Findings

CVTC's data showed a total of 2,695 students with both an outcome in Written Communications and a COMPASS-Reading score over the six semester period. However, 512 students with duplicate records for the six semester correlation time frame were identified. The students with multiple entries in Written Communications are identified as follows in Table 7.

Table 7

Number of Times a Student Record Appears by Semester Fall 2003 through Spring 2006

Entry	Dec 03	May 04	Dec 04	May 05	Dec 05	May 06	Total
1 st	549	287	452	256	404	235	2183
2 nd	60	57	76	52	85	77	404
3 rd	12	4	17	10	16	6	65
4 th	1	2	7	6	6	11	33

Entry	Dec 03	May 04	Dec 04	May 05	Dec 05	May 06	Total
5 th	1	0	2	1	1	0	5
6 th	0	1	0	2	0	0	5
Total	623	351	554	327	510	330	2695

Omitting these records from the group then provided a total of 2,183 students acceptable for correlation purposes as having one record.

The data required further refinement to eliminate students who did not show as having received an academic grade in Written Communication. CVTC's data included students who showed outcomes as follows: "AU" audit, "I" incomplete, and "W" withdrawal. Of the 2,183 students identified with a COMPASS-Reading score, 242 student records that reported a nonacademic outcome in Written Communication were also eliminated. The following provides a breakdown of the 242 records that were omitted from correlation: (3) audits, (6) incompletes, (233) withdrawals. The outcome of which was a total 1,941 students identified with an academic outcome acceptable for correlation.

Student Data Findings

The success of students in Written Communication is identified in Table 8. The table identifies the academic outcome of the students' initial course entry from fall 2003 through spring 2006. This breakdown of academic achievement is important to understanding the level of student success in Written Communication and any relationship it may have with the COMPASS-Reading entrance exam scores.

Table 8
Grade Received in Written Communication (numeric)

First Time In Course	Frequency	Percent	Valid Percent	Cumulative Percent
.00 grade F	456	20.9	23.5	23.5
.67 grade D-	37	1.7	1.9	25.4
1.00 grade D	87	4.0	4.5	29.9
1.33 grade D+	50	2.3	2.6	32.5
1.67 grade C-	81	3.7	4.2	36.6
2.00 grade C	205	9.4	10.6	47.2
2.33 grade C+	135	6.2	7.0	54.1
2.67 grade B-	149	6.8	7.7	61.8
3.00 grade B	258	11.8	13.3	75.1
3.33 grade B+	151	6.9	7.8	82.9
3.67 grade A-	134	6.1	6.9	89.8
4.00 grade A	168	7.7	8.7	98.5
4.33 grade A+	30	1.4	1.5	100.0
Sub-Total	1941	88.9	100.0	
Audit	3	.1		
Incomplete	6	.3		
Withdrew	233	10.7		
Sub-Total	242	11.1		
Total	2183	100.0		

The table reveals that 456 students, or 23.5 %, of the 1,941 who received an academic grade in Written Communication between fall 2003 and spring 2006 received a failing grade. The table also shows that 630, or 32.5 %, of first time entry students in Written Communication received a grade in the below average range of D+, or lower, during the same timeframe. Several negative outcomes can result from receiving a failing or below average grade in Written Communication. Written Communication is transferable to University of Wisconsin system schools as an equivalent to freshman English composition, but only transfers if the student has received a grade of C, or better. Therefore, though these 630 students received a grade they cannot transfer the course to another institution for credit. Additionally, some general education courses at CVTC serve as entrance requirements to program areas and receiving a below average grade may keep students from program acceptance or entrance into required core courses of a program.

Though the information on grade outcomes for first time students enrolled in Written Communication provides some insight, it is only valuable if the findings can be generalized to the larger population of students enrolled in Written Communication at CVTC. Table 9 shows the variance in the groups through a one way analysis (ANOVA) for the time frame of fall 2003 through spring 2006.

Table 9

One Way Analysis of Variance with a Student Newman-Keuls Multiple Range Test on "GRADE" and "COMPASS" using "TERM" (2003-2006) as the Independent Variable

		Sum of Squares	df	Mean Square	F	Sig.
Grade Rec'd in Written	Between Groups	21.060	5	4.212	2.148	
Communication Course	Within Groups	3793.947	1935	1.961		
(numeric)	Total	3815.007	1940			.057
COMPASS-Reading	Between Groups	631.719	5	126.344	.713	
Component Score	Within Groups	385600.50	2177	177.125		
(Percentile)	Total	386232.22	2182			.613

Even though the average Written Communication course grade varied more between the six groups than the average COMPASS-Reading score, the P-value of .057 shows that the variation is statistically insignificant. The lack of variation between the six groups is important for purposes of generalizing this data to a larger population. Given the large sample population of students over six semesters and the lack of variation as indicated by the P-value, the outcome of the correlation could be generalized to the larger population of students at CVTC enrolled in Written Communication.

Analysis of variance (ANOVA) using the "GRADE" as the independent variable is shown in Table 10. The table separates the students by the grade they received in Written Communication over the study's timeframe of fall 2003 to spring 2006. This one way analysis of variance provided evidence of a significant difference on the COMPASS-

Reading score with the students separated by grade. In performing the Newman-Keuls test an attempt was made to segment the students by the grade they received into groups of similar (or statistically equal) average COMPASS scores. However, the groups are not unique, and there is overlap as indicated by the spread of the COMPASS-Reading outcomes across the table as separated by grade outcome.

The table shows students who received grades of B, A-, B+, A and A+ had COMPASS-Reading scores that ranged from 83.43 to 89.47. Conversely, students who received a grade of D+, C, C- and C had lower COMPASS-Reading scores ranging from 74.72 to 80.41. The table's results tends to generally support the idea that a higher COMPASS-Reading score equates to a higher grade in Written Communication, and a lower score equates to a lower grade. However, what does not fit the pattern is the fact that students who received grades of B-, D-, and F ended up being in the mid-range of COMPASS-Reading scores ranging from 81.29 to 82.30, as noted by the shaded areas in the table. It is unexpected that individuals who received a failing grade had COMPASS-Reading scores in the range of 82.30, a higher score than the individuals who received a grade of B-. The table indicates COMPASS-Reading scores have inconsistent reliability in predicting student success in Written Communication.

Table 10

One Way Analysis of Variance with a Student Neuman-Keuls Multiple Range Test on "COMPASS" using "GRADE" as the Independent Variable

Subset for Alpha = .050							
Grade Rec'd in Written Comm. Course	N	1	2	3	4	5	6
1.33 grade of D+	50	74.72					
1.00 grade of D	87	78.26	78.26				
1.67 grade of C-	81	78.88	78.88				
2.00 grade of C	205		80.41	80.41			
2.67 grade of B-	149		81.29	81.28	81.29		
2.67 grade of D-	37		81.92	81.92	81.92		
2.00 grade of F	456		82.30	82.30	82.30		
3.00 grade of B	258		83.43	83.43	83.43	83.43	
3.67 grade of A-	134			86.16	86.16	86.16	86.16
3.33 grade of B+	151				86.59	86.59	86.59
4.00 grade of A	168					87.92	87.92
4.33 grade of A+	30						89.47
Sig.		.087	.145	.054	.099	.065	.332

Notes:

Means for groups in homogenous subsets are displayed.

- a. Uses Harmonic Mean Sample Size = 87.071
- b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Correlation Findings

A correlation between two variables, such as the COMPASS-Reading and academic outcome in Written Communication, reflects the degree to which the variables are related. According to the Rice Virtual Lab in Statistics (2006) web page “Hyperstat OnLine,” the most common measure for performing a calculation for a population as large as the sample in this study is the Pearson Product Moment, commonly referred to as “Pearson’s r .” Pearson’s r reflects the degree of linear relationship between two variables ranging from +1, reflecting a perfect positive linear relationship between the variables in the study, to -1, reflecting a perfect negative linear relationship. It is rare to achieve correlations with either a +1, or a -1 in research (<http://onlinestatbook.com/rvls/>). Table 11 shows the Pearson correlation co-efficient matrix on all combinations of “Grade” and “COMPASS” for the total group of respondents fall 2003 through spring 2006.

Table 11

Pearson Correlation Coefficient Matrix on All Combinations of "Grade" and "COMPASS" for the Total Group of Respondents

		Grade Received in Written Communication Course (Numeric)	COMPASS Reading Component Score (Percentile)
Grade Received in	Pearson Correlation	1	.137
Written Comm.	Sig. (2-tailed)		.000
Course (Numeric)	N	1941	1941
COMPASS Reading	Pearson Correlation	.137	1
Component Score	Sig. (2-tailed)	.000	
(Percentile)	N	1941	2183

In using the Pearson-r product to correlate the variables for this study it was found that the coefficient value was .137, which indicates no linear correlation between the students' COMPASS-Reading score and their final grade in Written Communication. Considering a Pearson's-r outcome of +.1 is a perfect linear relationship and the range of .5 to .8 is considered statistically weak, the finding of .137 seems to be a random outcome of the one variable in relationship to the other. This may mean that a student's COMPASS-Reading entrance exam predictor score is not a good predictor of that same student's success in the general education course Written Communication.

Chapter V

Summary, Conclusions, and Recommendations

Summary

This study was done to determine if any significant correlation existed between students' entrance exam scores on the COMPASS-Reading test and their ensuing success in the general education English course, Written Communication. Students were identified from the Written Communication course enrollment at CVTC, fall of 2003 through spring of 2006, by CVTC's IT Department. To ensure the student data for correlation was relatively equal the selection of students was limited to those enrolled in traditional delivery, semester long sections of Written Communication. The students also had to have an outcome in Written Communication and a COMPASS-Reading entrance exam predictor score. CVTC's IT Department identified 2,695 students during this timeframe that met the criteria for correlation. The following limitations were identified with regard to the study:

1. The group of students selected for correlation were all enrolled in a traditional delivery format of Written Communication. Traditional delivery is 16-weeks, or a semester long, and taught face-to-face. Students enrolled in other delivery formats were excluded in order to eliminate as much inconsistency as possible in the correlation as to the type of instruction the student received influencing their grade outcome.
2. Only students who received a grade were used in the correlation. Students who audited, withdrew, or had incomplete grades when the pool of students was created were eliminated from the correlation.

3. If a student was present in the data more than once as having taken Written Communication during the designated timeframe, only the initial entry for which they had an academic grade in the course was used in the correlation. Subsequent outcomes in the course were not used in the data.
4. Only students who had a COMPASS-Reading score were used in the correlation. There were other students who were enrolled in Written Communication during this period who had other entrance criteria that allowed them to take the course, such as the SAT or ACT college entrance exams. However, in order to keep the correlation as true as possible to the student outcome in the course other entrance criteria was omitted.

After the pool of candidates were identified several calculations were performed in addition to the correlation of the variables. A one way analysis of variance with a student Newman-Kuels multiple range test, on “grade” and “COMPASS” with the semesters as the independent variable was completed. This identified the variance between and within the groups. The ANOVA P-value for “grade” was .057, and for “COMPASS” was .613. Even though the average Written Communication course grade varied more between the six groups than the average COMPASS-Reading score, the P-value of .057 shows that the variation is statistically insignificant. This rather homogenous finding regarding lack of variance in and between groups is important for purposes of generalizing the correlation outcome to the larger population at CVTC who have taken Written Communication.

Additional breakout of the data by grade revealed that 456 students, or 23.5 %, of the 1,941 who enrolled in Written Communication between for the first time between

fall 2003 and spring 2006 received a failing grade. The breakdown also showed that 630, or 32.5 %, received a grade in the below average range of D+, or lower, during the same timeframe. These below average and failing grades have a significant impact on student success and retention being that Written Communication is a requirement for associate degree programs.

Conclusions

Research Objective. The research objective for this study was to identify whether or not students' reading scores on their college entrance exam act as a reliable predictor of their success in an entry level, general education English course.

Null Hypothesis. There is no difference of statistical significance between a student's COMPASS-Reading entrance exam score and their academic success in CVTC's general education course Written Communication as measured by their grade.

The null hypothesis is accepted because the correlation proved no difference of statistical significance between the two variables. The two-tailed Pearson's-r correlation found a coefficient value of .137, which indicated no linear correlation between students' COMPASS-Reading score and their final grade in Written Communication. Considering a Pearson's-r outcome of +.1 is a perfect linear relationship and the range of .5 to .8 is considered statistically weak, the finding of .137 is a rather random outcome of the one variable in relationship to the other. This shows a student's

COMPASS-Reading entrance exam predictor score is not a good indicator of that same student's success in the general education course Written Communication at CVTC.

The finding of no statistically significant relationship between the correlation variables, was generally supported throughout the literature review. Predictor exams are used by four-year colleges and universities to set parameters for acceptance and placement of students while open admission community colleges and technical colleges mainly use predictor exams for advisory purposes. Such exams save colleges time in application review and advising by allowing admissions offices a non-subjective method of screening applicants for acceptance or rejection. Organizations such as ACT, who produces the COMPASS exam product, provide studies with historical data supporting the accuracy of their entrance exams scores as predictors of student success in college. However, entrance exam predictors have their detractors, and even the ACT organization promotes the use of multiple indicators in conjunction with their entrance exam when making admissions decisions.

The published study conducted by colleagues James Barr, Richard Rasor, and Cathie Grill (2002), which found COMPASS an ineffective tool for predicting student success, suggested alternative methods be used predicting student success. One such suggestion was making sure the instructors of courses have properly identified the competencies required of students prior to their enrollment. This would be particularly useful in institutions with open admissions where students are eligible to enroll in classes without benefit of having prerequisite abilities for success in the course identified.

Colleges typically offer preparatory courses if a student falls below a cut-off score on an entrance exam, and research performed by authors Anne Southard and Jennifer

Clay found students benefited from such preparatory coursework. The study was a good parallel indicator for this research as it also dealt with reading and writing in a community college setting. However, preparatory coursework is not assigned college credit hours that count toward a student's GPA. More problematic is that fact the preparatory courses typically cost the same as courses taken for credit, but are not eligible for financial aid or other assistance programs. Given these circumstances there is little incentive for a student to spend money for a preparatory course, and even if they had the desire to do so they may simply not have the financial resources. Recently, however, the Wisconsin legislature has been considering an initiative that targets the problem of under-prepared learners in postsecondary settings through creation of courses that would strengthen skills in preparation for general education and core courses in degree areas. One benefit of this legislation would be that the under-prepared learner preparatory classes would meet the eligibility requirements for financial aid and other assistance.

The question remains as why entrance exam reading scores, such as the COMPASS-Reading, are used to indicate preparedness for English composition courses in so many community and technical colleges particularly when there are writing components available. Research shows that reading and writing share a foundation of similar skill sets, as Robert Tierney and Timothy Shanahan (1996) discuss in their article "Research on the Reading-Writing Relationship: Interactions, Transactions, and Outcomes." The authors felt that the foundation these skills share has worked to the detriment of writing in curriculum, because the prevailing thinking was that if a student was a good reader they would become a good writer. This led educators to focus more attention toward reading in the belief that writing skills would ensue almost naturally.

The authors believed that reading and writing should be promoted equally and used in tandem (1996).

The limited use of writing as an entrance predictor is evident when viewing the entrance exam requirements for program areas on CVTC's admissions web page (<http://www.cvtc.edu/GetStarted/Admiss/>). Of the 54 technical and associate degree programs offered by the college only two require the COMPASS-Writing assessment, the pharmacy technician and paralegal associate degree programs. Even the nursing and licensed practical nursing programs, which require the ACT exam as opposed to the COMPASS exam for admission, do not list a writing component requirement. It could be argued the reason for not administering the writing component is economic for if potential candidates for admission were identified as not having the necessary skill level they might be directed to enroll in developmental or remedial coursework prior to taking general education courses. Since these courses are not eligible for credit or for financial aid students might be deterred from attending school at all, or at least at the institution whose standards they could not meet for entrance. Such an admissions policy would have the potential to lower attendance and impact the full time equivalent (FTE) student requirements state and federal monies are often tied to.

Recommendations

Based on the literature and the findings of the research, the following recommendations are suggested:

1. Implement broader use of COMPASS Writing assessments with other COMPASS entrance testing components.

2. Provide students with a listing of core competencies required to be successful in Written Communication.
3. Conduct a survey of students who have taken Written Communication to assess what, if any, common barriers to success they have encountered.

The establishment of writing initiatives such as WAC and WID, and national commissions such as the National Commission on Writing in America's Schools and Colleges and the National Assessment of Educational Progress are all end products of the movement for stronger emphasis on writing in education. Not only is there has been response for more balanced curriculum development through WAC and WID, but more attention has also been given to the assessment of writing. Both the ACT exam and the COMPASS have initiated writing components in their testing instruments. The COMPASS test offers writing components for placement, assessment, and ESL. These components are formatted for computer delivery much like the other components of the COMPASS exam.

It would be beneficial to implement a plan at CVTC for more comprehensive administration of the COMPASS exam's writing components to prospective students. It is crucial that students and academic advisors be aware of deficiencies in writing much as they would be if they scored low in math or any other testing component. Recommendations could then be made, based on the writing score, as to whether or not the student would benefit from remedial or preparatory coursework in order to be successful in general education and required core courses. Providing the student with this knowledge regarding their ability, or their needs, empowers and allows them to make informed decisions. Having knowledge of their skill level would permit students to get

preparatory assistance if needed, or if not they can proceed with the knowledge they have the skill set necessary to be successful.

Based on the results of this study it is apparent that students experience a lack of success in Written Communication with 32.5 percent receiving a below average or failing grade. Additionally, the research results show COMPASS-Reading test a very poor predictor of success in the course. To create better opportunities for student success in Written Communication, and the many other courses that require writing competency, the administrators and program deans at CVTC might consider re-evaluating the writing assessment requirements for program entrance. Since students applying for admission to program areas are already required to take the COMPASS, it would not be burdensome to administer or to require the writing component. COMPASS Writing, like the other COMPASS testing components, is completely computerized and the results are available upon completion of the test. Implementation of the writing test to predict success in a writing course was even supported by Richard Sawyer, Senior Research Scientist – ACT Research Area in a personal communication (July 19, 2006). Sawyer stated that reading tests are “related” to student success in writing courses but writing tests more accurately reflect the competency (2006).

A comparable to testing a student in reading to predict success in writing would be to test someone for math and then enroll them in a calculus course; though they might do well in math, they would most likely be infinitely less successful in calculus. Basic theories of assessment advise educators to test students’ skills relative to process they are asked to perform. Therefore, it makes sense to assess writing skills for a writing course –

especially one that provides such an important and fundamental foundation for core course work and future employment.

The research conducted in this study investigated the relationship of two variables to see if one can indicate or predict success of the other. Though there are numerous other variables that serve to influence student success that could be researched as predictors, not all these variables impact students as comprehensively as college entrance exams. Therefore, by examining the variables that we know to have the greatest impact on all students, we can identify what helps or does not help predict student success. By examining the relationship of the COMPASS-Reading score in predicting student success in Written Communication the unfavorable reliability of one variable in predicting the other has been determined. It would be of benefit to research other variables that students have in common, but of greater benefit to simply implement what this research has concluded to be better suited in predicting student success in Written Communication – the COMPASS Writing assessment.

References

- ACT Research (2004). *High Skills and High Pay - 2004 Update*. Retrieved August 01, 2004, from <http://www.act.org/research/briefs/2004-2.html> 2
- ACT Research (2004). *High Skills and High Pay -2004 Update: Typical Occupational Beginning Annual Salaries– By WorkKeys Profiled Skill Level*. [Table]. Retrieved August 01, 2004, from <http://www.act.org/research/briefs/2000-1.html>
- ACT Research (1997). *Making good Admissions Decisions Using ACT Test Scores and High School GPAs*. Retrieved August 01, 2005, from <http://www.act.org/research/briefs/97-2.html> 1-4
- ACT Research (2001). *What Helps or Hinders Students' Chances of Success in College?* Retrieved July 30, 2005, from <http://www.act.org/research/briefs/2001-3.html> 1-3
- Armstrong, W. B. (1999). *Explaining Community College Outcomes by Analyzing Student Data and Instructor Effects* (Rep. No. JC990084). RIE - Resources in Education. (ERIC Document Reproduction Service No. ED426750) xv, 197, 203
- Bashford, J. (2000). *How Well Do Prerequisite Courses Prepare Student for the Next Course in the Sequence?*(Rep. No. MDCC-OIR-2000-09C) Miami Dade Community College Information Capsule (ERIC Document Reproduction Service No. ED488799) 5
- Brocato, M., Furr, P., Henderson, M., Horton, S. (2005). *Assessing Student Written Communication Skills: A Gateway Writing Proficiency Test for Aspiring Journalism Majors*. EBSCOHost Database. (Assn. Number 18404423) College Student Journal (39-3). Retrieved on June 6, 2006, from <http://search>.

epnet.com/login.aspx?direct=true&db=afh&an=18404423 1, 6, 8

Chapman, D. (2003) *Undergraduate Research and the Mandate for Writing Assessment. American Association of Colleges – Fall 2003*. (Proquest Information & Learning Company) Retrieved on June 8, 2006, from http://www.findarticles.com/p/articles/mi_qa4115/is_200310/ai_n9271630 1- 3

Chippewa Valley Technical College (2005). *Systems Appraisal Feedback Report. Chippewa Valley Technical College*, (October 17, 2005), 11, Retrieved June 10, 2006, from <http://www.cvtc.edu/Welcome/ReportsPub/AQIPSystemsAppraisalReport.pdf>

Chippewa Valley Technical College (2005), *WTCS Quality Review Process (QRP) Fiscal Year 2005 Scorecard – General Studies*, [Table] 1

COMPASS Reference Manual (2006) *COMPASS/ESL Windows Version Reference Manual*. American College Testing (ACT) Organization. Retrieved June 2006, from http://www.act.org/compass/secure/ref_man.pdf 1-2, 105,106

COMPASS Reference Manual (2006) *COMPASS Cutoff Score Guide for Placement in First-Year College Courses*. [Table]. American College Testing (ACT) Organization. Retrieved June 2006, from http://www.act.org/compass/secure/ref_man.pdf 105

Barr, J. E., Rasor, R. A., & Grill, C. (2002). *The Evaluation of Present Course Placement Procedures Using the Compass Tests*. (ERIC Document Reproduction Service No. ED482495) 5, 12-15, 43

- Google, (2006), Definition: “*Open Admission*.” Retrieved July 18, from
[http://www.google.com/search?hl=en&lr=&defl=en&q=define:Open+admission
&sa=X&oi=glossary_definition&ct=title](http://www.google.com/search?hl=en&lr=&defl=en&q=define:Open+admission&sa=X&oi=glossary_definition&ct=title)
- Horton, S., Kher, N., Molstad, S., Autrey, K., & Juneau, G. (1999). *Using Discriminate-Function Analysis to Predict Student Success in Core English Courses* (Rep.). (ERIC Document Reproduction Service No. ED436579) 4-5, 8, 10
- Monroe, J. (2003). *Writing in the Disciplines*. Association of American Colleges and Universities Peer Review, Fall 2003. Retrieved on June 8, 2006, from
<http://www.aacu.org/peerreview/pr-fa03/pr-fa03feature1.cfm> 1
- National Assessment of Educational Progress (NAEP) (2002). *The Nation’s Report Card – Writing 2002*. Retrieved on June 26, 2006, from <http://nces.ed.gov/nationsreportcard/pdf/main2002/2003529a.pdf> 1, 3-4, 7, 18
- National Association of Colleges and Employers (NACE) (2005). *Job Outlook 2005 – Employers Cite Communication Skills as Key, But Say Many Job Seekers Lack Them*. Retrieved on June 26, 2006, from <http://www.naceweb.org/press/display.asp?year=2006&prid=235>
- National Commission on Writing in America’s Schools and Colleges (2003). *The Neglected “R” – The Need for a Writing Revolution*. Retrieved on June 28, 2006, from http://www.writingcommission.org/prod_downloads/writingcom/neglectedr.pdf 5, 11, 14
- Osborn, T. (2006) Personal Communication: *Examples of Possible ACT and COMPASS “Stage 1” Cut-Off Scores for Consideration in Student Course Placement and Advising*. [Table] June 20, 2006

Rice Virtual Lab Statistics (2006). *Hyperstat OnLine – Pearson's Correlation*. Retrieved on July 28, 2006, from http://davidmlane.com/hyperstat/search_hyperstat.html

Southard, A., & Clay, J. (2004) *Measuring the Effectiveness of Developmental Writing Courses*. Community College Review Fall 2004. Retrieved August 2, 2006, from http://www.findarticles.com/p/articles/mi_m0HCZ/is_2_32/ai_n8689907_2,4,5

Tierney, R. & Shanahan, T. (1996). *Research on the Reading-Writing Relationship: Interactions, Transactions, and Outcomes*. Handbook of Reading Research, Volume II., New Jersey: L Erlbaum Associates. 246-247, 249-250

University of Wisconsin-Stout, (2006) *Title: BP&A Office Letter to Numeric Grade Conversion Data*. [Table] Office of Budget, Planning and Analysis

University of Wisconsin-Stout, (2006) *Title: Grade Received in Written Communication (numeric)*. [Table] Office of Budget, Planning and Analysis

University of Wisconsin-Stout, (2006) *Title: Jane Henschler – Written Communication Grades vs. Compass Reading*. [Table] Office of Budget, Planning and Analysis

University of Wisconsin-Stout, (2006) *Title: Number of Times a Student Record Appears by Semester Fall 2003 through Spring 2006*. [Table] Office of Budget, Planning and Analysis

University of Wisconsin-Stout, (2006) *Title: Pearson Correlation Coefficient Matrix on All Combinations of "Grade" and "COMPASS" for the Total Group of Respondents*. [Table] Office of Budget, Planning and Analysis

University of Wisconsin-Stout, (2006) *Title:One Way Analysis with a Student Newman-Keuls Multiple Range Test on "COMPASS" using "GRADE" as the Independent Variable.* [Table] Office of Budget, Planning and Analysis

University of Wisconsin-Stout, (2006) *Title:One Way Analysis with a Student Newman-Keuls Multiple Range Test on "GRADE" and "COMPASS" using "TERM" 2003 – 2006) as the Independent Variable.* [Table] Office of Budget, Planning and Analysis