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Do They Work? Developmental Courses in Mathematics and English at Sitting Bull College

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DO THEY WORK? DEVELOPMENTAL COURSES IN MATHEMATICS
AND ENGLISH AT SITTING BULL COLLEGE

By

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A Dissertation

Submitted to the Graduate Faculty

of the

University of North Dakota

in partial fulfillment of the requirements

for the degree of

Doctor of Philosophy

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This dissertation, submitted by D'Arlyn A. Bauer in partial fulfillment of the requirements for the Degree of Doctor of Philosophy from the University of North Dakota, has been read by the Faculty Advisory committee under whom the work has been done and is hereby approved.

Richard H. Landry
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This dissertation meets the standards for appearance, conforms to the style and format requirements of the Graduate School of the University of North Dakota, and is hereby approved.

Joseph W. Benoit
Dean of the Graduate School

August 3, 2010
Date

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Department Teaching and Learning

Degree Doctor of Philosophy

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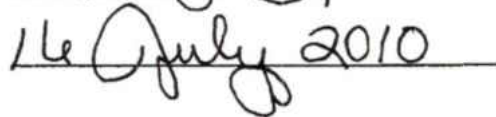


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ABSTRACT

The purpose of this study was to assess the characteristics and impact of developmental courses on students enrolled in developmental mathematics and English courses at a small mid-Western tribal college. This was a quantitative, descriptive study of the courses and the students over a six year timeframe.

All students who enrolled in developmental mathematics and English courses at Sitting Bull College during the summer of 2003 through the spring of 2009 were included in this study. There were 289 students in the Foundations Math and English courses in this timeframe.

Females made up 60% of the students studied who had average age of 26.7 years at the time they first enrolled at the college. The students started college with a high school diploma (54%), a General Equivalency Diploma (26.7%), or neither (19.3%) for a semester. The students were placed based on scores in four content areas on COMputer-adaptive Placement Assessment and Support Services tests or the Test of Adult Basic Education. The students were enrolled an average of four semesters, with a range of 1 to 16 semesters. Students who were enrolled only one semester represented 39% of the study group. Students took from one to four semesters to successfully complete each course. The success rate (passing the course with a grade of C or above) for the courses were Foundations math (37%), Foundations English (43%), English I

(52%), and Pre-Algebra (46%). The remaining students either withdrew or failed the course.

There were 18 graduates during the study timeframe, and 43 students from the study remained enrolled during the Fall of 2009. These low numbers support using other variables as measures of success for students who are placed in developmental coursework.

One placement test and one study cannot possibly tell the entire story of the students who are placed in developmental coursework. However, this study provides a beginning to examine what occurs at one tribal college. This research may also serve as an incentive to study other areas of the curriculum and support services at tribal colleges.

CHAPTER I

"We in developmental education are heirs to various moments of optimism about human possibility and the transformative possibilities of higher education. We and our students enact daily a peculiarly American optimism about human change and intellectual growth."

- Terence Collins (2002, p. v)

INTRODUCTION

Higher education has become increasingly accessible to everyone who chooses to pursue it and it has become increasingly necessary to pursue higher education as well. Eighty percent of the new jobs in the 21st century will require the applicant to have at least some higher education (McCabe, 2000). However, access does not guarantee success.

While tribal colleges have provided increased access to higher education for American Indian students, few studies on tribal colleges and the Native American students that they serve have been conducted. This study was designed to examine the characteristics and impact of developmental coursework and the students who take them at one tribal college in the upper Midwest.

Overview

Access to higher education thrived during the 1960s and 1970s. This growth occurred primarily in the form of community colleges. During the 1980s this growth stabilized and has blossomed again in more recent years. Between

1997 and 2007 undergraduate enrollment in colleges and universities throughout the United States rose 25%; this was matched by a rise in the number of minority students to 32% of the undergraduate students by 2007. While these numbers demonstrate the increase in the proportion of minority undergraduate students, the percentages do not reflect the growth in actual numbers of individual minority students which was 146% in the twenty years from 1984 to 2004 (U.S.

Department of Education, 2008b). The percentage of undergraduate students classified by the U.S. Census Bureau as American Indian/Alaskan Natives has remained steady at 1% of all undergraduate students, although this is also an increase in actual numbers of students (U.S. Department of Education, 2009).

Between 1984 and 2004 the number of institutions that served a high proportion (at least 25%) of minority students, known as minority serving institutions (MSIs), rose from 414 institutions to 1,254 (U.S. Department of Education, 2008a). During this same time period, the number of institutions serving American Indians increased from 26 to 46 institutions. Almost half of these American Indian MSIs were two year, public colleges (U.S. Department of Education, 2008a).

Currently, roughly 95% of community colleges operate with open admission enrollment (U.S. Department of Education, 2008a). This open admission policy at the community colleges has provided access to a broader group of students, including minority students, working students, students with limited resources (academic, financial, and/or social support), and students pursuing certificates. In addition, community colleges offer interest only classes

to students, including individuals who would otherwise not attend college. These are classes such as photography, ballroom dancing, retirement planning, and creating scrapbooks. For example, 58% of all minority students enrolled in higher education are enrolled at community colleges (U.S. Department of Education, 2008b).

Along with increased accessibility to college and university education had come the awareness that not all students entering were prepared with the level of academic literacy necessary to be successful at these institutions. According to McCabe (2000), 29% of all entering college students were unprepared in at least one basic skills area (reading, writing, or mathematics). However, when enrollment at community colleges was examined, the number of students unprepared in at least one basic skills area rose to 42% of the students (McCabe, 2000). McCabe (2000) also highlighted that minority students were overrepresented in the number of students who were unprepared. In the Achieving the Dream cohort from 2002, 94% of the Native American students were referred for developmental education (Clery, 2006).

Developmental education evolved as one method to prepare students identified with deficits in basic reading, writing, and math skills to be able to continue with college level classes. From a historical perspective, developmental education is not something new. Under one name or another, developmental education has been around since higher education established entry requirements. In addition, making an association that developmental education reflects a decline in the academic preparation and standards is not true.

Developmental education does, in fact, help students achieve better grades and complete degree requirements (Arendale, 2000).

It can be argued that the gap between academic preparation and higher education is not a new concern. Brier (1984) stated, "...that bridging the academic preparation gap has been a constant in the history of American higher education and that the controversy surrounding it is an American educational tradition" (p. 2). Brothen and Wambach (2004) concluded that providing access to everyone is "a primary tenant of the U.S. educational system" (p. 22).

Statement of Problem

Sitting Bull College (SBC) was chartered by the Standing Rock Sioux Tribe in 1973, becoming one of the first six tribal colleges to be created in the United States and Canada. The creation of the college was fueled by the recognition that access to higher education would provide opportunities to the peoples on the Standing Rock Sioux Indian Reservation and it would also provide a means to preserve the Lakota/Dakota language and culture.

The admission policy for the college is termed "open door." This means that individuals, regardless of background, age, and interest, are granted admission provided that they have graduated from an accredited high school or have a General Equivalency Diploma (GED) certificate. There are no other requirements for admission. In fact, students pursuing a GED certificate may take one semester of college coursework prior to completing their GED.

This admission policy and the rural location of the college have provided opportunities to many where none would have existed. This has also brought to the college a population of underprepared, high risk, minority students.

Because of the nature of the student population, SBC requires all new students to be tested in English, reading, essay writing, and math proficiency during their initial registration. Currently, SBC is also testing all transfer students in order to have pretest scores on the entire student population. The information obtained is used to place students in the appropriate math and English courses, with the goal of assuring academic success (Sitting Bull College, 2008, p. 23).

The Test of Adult Basic Education (TABE) was the initial test used to determine course placement at SBC. TABE is a standardized test published by CTB McGraw-Hill that identifies the grade performance level of students taking the exam. The test begins with a locator exam that determines the level of difficulty to administer for the various exams. The two most difficult or challenging levels are predictive of student performance on the GED exam. The test is in the form of multiple choice questions and can be given in a written format or on a computer. The TABE test covers the areas of reading comprehension, math comprehension, math application, and language (Higgs, 2007).

The COMputer-adaptive Placement Assessment and Support Services (COMPASS) test has been used as the placement test since 2003 at SBC. It is a computerized test developed by ACT, Inc., a not-for-profit corporation specializing in education and workforce development solutions for assessment, research, information, and program management (ACT, 2010). The test is a

computer-adaptive test, meaning that the difficulty of the test items selected by the computer program is based on the skill level demonstrated by the test subject. The test is designed to be used for placement decisions and to identify a student's areas of strength and weakness (ACT, 2010).

Students who are identified on one of these tests as having weaknesses are placed into one or more development courses at SBC. The question that has presented itself is whether the process is assuring academic success as stated in the SBC catalog (2008). Without analysis, it remains a guess as to whether these programs are successful. In fact, what do these programs accomplish for the students involved? Do the programs increase the chances for successful completion of a degree or do they discourage the student from attending college by providing a barrier in the form of additional classes for attainment of the certificate or degree they are pursuing?

Background

SBC is a rural commuter college located in Fort Yates, North Dakota, on the Standing Rock Sioux Indian Reservation. The reservation is comprised of 2.3 million acres of land that cover all of Sioux County in southwestern North Dakota as well as Corson County in northwestern South Dakota. It is the fourth largest reservation in the United States and has a population of 8,570 people. Students come to the college from all eight districts of the reservation as well as the surrounding communities, such as Mobridge, South Dakota.

The campus provides limited housing for families, and no other housing is available. A daycare facility is located on the campus, and the college provides

public daily transportation at a reduced cost to students. Most students have funding sources available to them, according to the SBC Financial Aid Officer.

The college offers GED services, tutoring, seven certificate programs, 25 Associate degrees, and seven Bachelor of Science degrees. The average enrollment for the fall and spring terms over the last six years has been 327 students (range: 293 to 387). Of all students enrolled at the college, 92% are classified as Native American, meaning they are enrolled in a federally recognized tribe. The average number of new students enrolled each term is 40 and the average number of students graduating each year is 49. The retention rate is 43% over the last five years with a persistence rate of 61% (Sitting Bull College, 2009).

Statement of Purpose

The purpose of this study was to assess the characteristics and impact of developmental courses on students at SBC enrolled in developmental mathematics and English courses from the summer of 2003 to the spring of 2009. Specifically, the study was seeking relationships that might indicate the contribution of the developmental courses to a student's progress as measured by passing grades in the developmental courses, passing grades in the next level of English and mathematics courses, completion of a certificate or degree program, and/or continued enrollment at the college with progress toward a certificate or degree.

Data on students in the developmental math and English courses at SBC have been collected since the summer of 2003; however, no analysis of the data

that has been gathered exists. The assessment and curriculum committees at the college have questioned whether existing data could be used to assist in determining whether these courses are contributing to the success of the students and whether changes in curriculum or policy are indicated.

Research Questions

The following questions form the basis for answering the issues raised by these committees.

1. What are the demographic characteristics of students who were enrolled in developmental coursework at SBC during the 2003 to 2009 timeframe (i.e., High school diploma or GED, age, gender, COMPASS scores)?
2. How many developmental courses did students need? What percentage of the student population each semester was enrolled in none, one, or two developmental courses?
3. What were the characteristics (in terms of enrollment, completion, and grade distribution) of the courses taken each semester of this timeframe? Did the term of enrollment in a developmental course have an effect on student grades and course completion?
4. How many times did individual students take the developmental course before successfully completing the course?
5. How many semesters was the student enrolled in any coursework? Were the semesters continuous or were there drop out periods?
6. Are the developmental courses at SBC affecting student success? How long has it taken for students in developmental courses to complete a

degree or certificate? If the student has not finished a degree or certificate, is he/she still enrolled in coursework?

Assumptions

A major assumption of the college is that the students who choose to enter college can be successful, as measured by completion of the certificate and degree programs that they pursue. It is assumed that enrolling students in developmental courses will assist the students, who enter without adequate skills in Math and English, to be successful in their college studies.

Additionally, this research was conducted with these basic assumptions:

1. The data collected by the institution were accurate, valid, and reliable.
2. The students in this study were representative of past and future students at SBC.
3. The developmental courses were essentially the same during the timeframe surveyed, regardless of teacher, time of day, or time of year taught.

Delimitations

The research data are limited to SBC students who enrolled in and attended developmental math and English courses from the summer of 2003 through the spring of 2009. Completion of certificate and degree requirements limit some portions of the results to shorter timeframes within this overall time, since students who first took the developmental courses in 2008 and 2009 may not have had enough time in which to complete those requirements.

Significance of the Study

Research on education at tribal colleges is very limited. An analysis of the available statistics will contribute to the knowledge base on developmental education at tribal community colleges. It will also benefit students, faculty, and staff at SBC by providing information for SBC personnel to use for evidence-based decisions in areas such as course, curricular, and support services.

Operational Definitions

The following operational definitions will be used in this study:

1. **Developmental Courses:** Math and English courses that are below college level and do not count for credits toward a certificate or degree. These courses are remedial in nature, that is, the focus of the course and content is to aid the individual student in improving their skill level in the areas of math, reading, and writing.
2. **Course Success:** Completion of a course with a letter grade of C or higher.
3. **Student Success:** Completion of the next level of coursework in English, which is English I (English 110), and/or Mathematics, which is Pre-Algebra (Math 101), with a letter grade of C or higher. Student Success may also be attainment of a degree or certificate from SBC or current enrollment at SBC at the time of this study. This may include enrollment at another college or technical program, if this information is known.
4. **Term:** Refers to a portion of the academic year during which students are enrolled and receive regular instruction. At SBC these are described by

using seasonal words to describe the months of enrollment – spring, summer, and fall.

5. Semester: Refers to a specific term of enrollment in academics that is described with a term and a year.
6. Continuous Enrollment: Enrollment at SBC in coursework from spring to fall to spring terms without including summer terms. Continuous enrollment is both persistence and retention which are terms standardized for use in comparing educational institutions. Persistence describes a student's enrollment fall term to spring term (or one academic year which excludes summers). Retention is a student's enrollment from one fall term to the next fall term (excluding the summer term and including the spring term). Retention describes enrollment from one academic year to the next academic year.

Summary

This chapter provided an overview of the growth of community colleges and tribal colleges. The awareness that not all students who enrolled had adequate skills in mathematics and English led to the provision of developmental courses in these subjects as one solution. Several placement tests were developed to assist with identifying the students who needed additional skills and for use in placement decisions for the students identified.

Native American students are disproportionately placed in developmental courses. Little research is available on the courses and the impact of the courses

on the students who take them. The purpose of this study is to assess the character and impact of these courses at one tribal college

CHAPTER II

REVIEW OF THE LITERATURE

The literature review provides a context for understanding the purpose and assessment of developmental education. The review explores the history of education influential in developmental education; clarifies what defines developmental education; and identifies the most recent research and reports on placement testing, assessment, and evaluation of developmental education.

History of Developmental Education

It is always interesting to read the history of particular topics. Inevitably one must examine the history of the times – including politics, society, economics, and the ideas that abounded and influenced the topic that one is pursuing. Developmental education is no different.

The ideas that led to the concept of developmental education date back to Thomas Jefferson and Andrew Jackson. Thomas Jefferson moved American education away from the European education model with its classic based curriculum. He designed a curriculum that was utilitarian and student-focused (Johnson, 2005). Andrew Jackson was a strong proponent for educating the common person, which expanded education beyond the domain of privileged white males (Johnson). In addition, the Morrill Land-Grant Act of 1862

supplied a way for each state to fund a college aimed at providing education to the general population of the area, specifically those in agriculture and mechanics (National Archives, 2003).

Early colleges such as Harvard, founded in 1636, and Yale, founded in 1701, had entrance criteria that included skill and knowledge requirements. Levine (1978) noted that Harvard required students to speak and read Latin and know Greek grammar. Yale added arithmetic as a requirement about one hundred years later. Because of these requirements, tutoring and college preparatory academies developed. Arendale (2000) included tutoring and college preparatory academies as the first two phases in his six phases of college level developmental education from the mid 1600s to the present.

Developmental education has a formal history in higher education that dates back to the 19th century (Arendale, 2000; Stahl, 2002). Levine (1978) noted that colleges began creating courses to solve the problems that arose as students were admitted who had not met the entrance requirements. Developmental education has often been a response to retention issues at colleges and within programs (Taylor, 2002).

The need for developmental education in the United States has flourished since the 1960s. This mirrors the increased access to higher education, particularly the growth of community colleges with their "open door" policies and mission of providing access to higher education for groups that would otherwise not have such access.

In 2003 the National Center for Educational Statistics estimated that 98% of two year colleges offered developmental courses (U.S. Department of Education, 2003). In fact, such courses are the "norm" at both two-year and four-year institutions (Boyer, Butner, & Smith, 2006, p. 606).

Tribal colleges developed beginning in the 1970s to ensure similar access to educational opportunities for various Native American populations. In 1978, the first Tribally Controlled Community College Assistance Act was signed into law. This law was based on several key components and remains the basis for support for the tribal schools. The key components were a) geographic isolation of the tribes; b) lack of access to higher education opportunities; c) cultural disparities; d) increased student success when education is offered locally in a community setting; e) local tribal control of higher education; and f) no local tax or state funding available to the schools (American Indian Higher Education Consortium, 2010).

Theoretical Background of Developmental Education

Developmental education has been defined and refined under a variety of theories including various learning and developmental theories. During this literature review it has been difficult to find one overall theory. Many researchers in the literature argue for no single theory of developmental education (Chung, 2005; Lundell, Chung, & Higbee, 2005; Lundell, Higbee, Chung, Ghere, & Kinney, 2001; Moss & Yeaton, 2006). However, Chung (2005) suggests that developmental education will continue to be undervalued as long as there is no

overall theory. What has become apparent is that there are many theories being used, particularly practice theories.

Developmental education does have strong ties to John Dewey. Dewey believed that education was "to enable individuals to continue their education and that the object and reward of learning is the continued capacity for growth" (Dewey, 1916, p. 117). Dewey's focus was on the use of education in the present rather than education as something for use in the future. He argued that experience was always the starting point of any educational process (Knowles, Holton, & Swanson, 1998).

A key concept to Dewey's educational system was democracy. He posed the question:

Can we find any reason that does not ultimately come down to the belief that democratic social arrangements promote a better quality of human experience, one which is more widely accessible and enjoyed, than do non-democratic and anti-democratic forms of social life? (1938, p. 34)

He also viewed education, in part, as developmental (Johnson, 2005).

The concept of developmental education as a more holistic approach to student learning began evolving as access to higher education expanded in the 1960s (Kozeracki, 2002). This concept allows developmental programs to function under a variety of theoretical frameworks.

The idea of a mixed theoretical framework for developmental education is best summarized by Lundell et al (2005):

...a plurality of theoretical frameworks is needed in order to make real progress and to grapple successfully with the underappreciated diversity of phenomena that comprise the developmental education contributions... In fact, it may well be this need for a pluralistic approach that helps explain

why more traditional unitary theories have not been embraced by all developmental educators, and why those looking for the emergence of such a singular theoretical framework have concluded that the theoretical state of developmental education is somehow inadequate or in disarray. But it appears to be the case that only by weaving together a number of complementary explanatory frameworks can we adequately understand diverse developmental education students and their variable needs. (pp. 437-438)

Definitions of Developmental Education

As colleges increased access to higher education, a variety of courses and services were developed to bridge the abilities gap of the students entering higher education. Developmental education has included both coursework and a variety of support services such as tutoring, first year college programs, learning centers, financial aid, supplemental instruction, and advising. Various terms were used to refer to the courses and services.

Dotzler (2003) defined the terms remedial and compensatory as used in developmental education. Remedial education has been used to refer to the education needed by students who come to college unprepared and having academic deficiencies. Compensatory education has been used to refer to education needed to bridge the gap experienced by students due to their personal situation such as not graduating from high school and being out of school for several years.

Levine (1978) and Cross (1976) separated remedial education as education to improve the student so that the student could enter a program for which they were not qualified. Cross clarified that compensatory education may

not be necessary for entering a program but rather that it bridged the gap created by deprivations in the student home, family, and earlier studies.

Since the 1970s, developmental education has become the preferred terminology (Arendale, 2002, 2005). Arendale defines developmental education as assuming each person has talents to develop beyond weaknesses in skill areas. The National Association for Developmental Education defines developmental education as encompassing general education and enabling individual students without adequate preparation to have the opportunity to develop skills and knowledge to meet their academic, social, and life goals (National Association for Developmental Education, 2010). The Association also stated that developmental education promotes cognitive and affective growth.

Johnson (2005) further states that developmental education embodies “how a college experience should address the needs” (p. 40) of students who are not adequately prepared to be competitive and successful in higher education. He terms developmental education as “enabling processes.”

Casazza (1999) defined developmental education as a comprehensive process based on a holistic look at the student. This process focuses on the cognitive, social, and emotional growth of the student. It uses learning theory and is not limited to a particular level of student. It assumes that all students have talents or strengths.

Arendale (2005) traced the history of developmental education and the terms used in his article titled “Terms of Endearment: Words that Define and Guide Developmental Education.” In this article, he recommends the use of “new

language that more accurately describes the field. As our practice advances and changes, so must the language to describe it" (p. 76). Arendale advised that there is a need for language that accurately describes what is being done rather than relying on terms that have continued to change meaning in the field of developmental education.

Regardless of the description of developmental education, some authors suggest that community colleges are the central repository of developmental education and of underprepared and disadvantaged students (Bailey & Alfonso, 2005; Boylan, Bonham, Claxton, & Bliss, 1992; Grubb, 2001; Spann, 2000). Kolajo (2004) stated that developmental education is "part and parcel of community colleges programs" (p. 365). Other authors (Grubb, 2001; Kozeracki & Brooks, 2006) have identified developmental education as one of the functions of community colleges. Arendale (2005) pointed out that the distribution of developmental courses in colleges in the United States is unequal and that "public institutions, especially two-year colleges, bear the responsibility" (p. 74) for these courses.

Boylan (2002) noted that while no formal studies were found in the literature, many institutions reported informally that as many as 50% of their graduates took developmental courses. Boylan stressed that the success of developmental education "must be an institutional priority" (p. 7) supported by the members of the institution. Developmental education must be an integral part of the institution's planning efforts. The courses and the academic support services must be integrated as well (Boylan). McCabe (2000) recommended that the

developmental education programs be given a higher priority and greater support administratively and legislatively, particularly at community colleges where these programs were cost effective. McCabe also stated that the success of developmental education students was directly related to the priority given to the program as determined from this study of 25 participating community colleges.

It is developmental education that aids students to move to the level of academic literacy necessary to be successful, whether it is in continuing coursework at a college or moving into the job market. Success is generally measured by completing developmental coursework within a year of enrollment. Success may also be measured by completion of credentials beyond the high school (or General Equivalency Diploma) level, whether this is a certificate or a college degree.

Community colleges have certain advantages over other colleges and universities, because the nature of the student body has dictated the necessity for including developmental education as part of the underlying or basic structure of education (Grubb, 2001). There is also a strong commitment in community colleges to teaching. According to Grubb, "Community colleges may have the greatest chance of doing it [remedial/developmental education] well" (p. 9).

Developmental Education Courses at Sitting Bull College

Sitting Bull College (SBC) is a tribal college located on the Standing Rock Sioux Indian Reservation. Of the students enrolled at the college, 92% are Native American. The student body is 79% single, 62% female, and has an average age of 31 (Sitting Bull College, 2009).

Currently, SBC offers a developmental mathematics course and a developmental English course. The courses are titled Foundations English and Foundations Math and are numbered 010. The courses do not count as credits toward a certificate or degree but they do count as part of determining course load. Students enrolled in these courses may be concurrently enrolled in regular college level courses.

Beginning in the summer of 2009, several changes have occurred to the English course. This study will serve as part of the "before" picture when the results of the changes are compiled.

While students are placed in the Foundations classes based on their COMputer-adaptive Placement Assessment and Support Services (COMPASS) or Test of Adult Basic Education (TABE) scores, all students take a course titled "Psychology of Student Success." The focus of this class is to address other areas of academic support, including how to study, how to manage time, and how to manage finances. The course serves as an introduction to college and college coursework as well as a vehicle for acquainting students with the variety of support services and personnel available at SBC.

Placement Assessment for Developmental Education

"Assessment and placement ... is (sic) one of the most debated aspects of remedial education" (Shults, 2001, p. 4). Mandatory assessment and placement of students evolved in the early 1970s as community colleges adjusted their policies in response to the failure during the 1960s of the approach that student's had a right to fail (McCabe, 2000). Although the debate continues, all colleges do

some form of assessment of college preparedness, whether the indicator is high school GPA, or more formal testing such as college placement exams.

Shults (2001) found that 63% of the community colleges that he surveyed used some form of computerized assessment method. He also found that 58% of the institutions surveyed mandated placement testing of all students. Of the 58% that mandated testing, 75% mandated placement based on the results of the testing.

A more recent study found that 92.4% of the participating institutions surveyed mandated assessment (Gerlaugh, Thompson, Boylan, & Davis, 2007). This assessment was conducted using computer-based testing by 97% of the institutions, with COMPASS being the test used by the majority of the institutions. Placement, based on the assessment, was mandatory at 79% of the participating institutions (Gerlaugh et al.).

COMPASS is one of three commercial assessments used to assign course placement. Each institution that uses COMPASS can set its own cut-scores for placement in developmental courses. According to Mellard and Anderson (2007), COMPASS has an equivalent form reliability range of 0.73 to 0.90. The correlation between course grades of C or higher and COMPASS ranges from 0.63 to 0.72 (Mellard & Anderson, 2007).

SBC instituted the use of COMPASS for all incoming students in the fall of 2003. Over subsequent semesters following initiation of its use, periodic computer problems have led to placement of students in some instances using the TABE, which is another of the commercial assessments. TABE is also used

in a computerized format. The Assessment Committee Chairperson noted that the majority of the students were placed using COMPASS (R. Froelich, personal communication, Spring 2010).

Students Enrolled in Developmental Education

When the preparation of students who enroll in college is examined, a significant problem is noted. Collins (2009) noted that six out of ten students who enroll in higher education need at least one developmental education course.

It is important to note that students coming to college do not come to take developmental courses. Students “take these courses as an initial step on a path elsewhere” (Kozeracki & Brooks, 2006).

It is also important to note that community colleges and tribal colleges admit a high percentage of students who are older than average, are low income, and are from a minority culture. These characteristics contribute to the likelihood that the student will need developmental education.

Statistics from the U.S. Census Bureau (2004) indicate that the education achieved by American Indians is low. In 2004, among American Indians 25 years old and older, roughly 28% had not graduated from high school. The national figure was 11.4% for whites alone. For American Indians living on reservations, the figures are even worse; a third of this age group had not graduated from high school.

Assessment and Evaluation of Developmental Education

The last 20 or 30 years has provided a shift in education to a greater concern with student learning outcomes. This shift has led to an era of emphasis

on assessment by accrediting bodies. However, until the 1990s, there was little information on the demographics and effectiveness of developmental education (Gerlaugh, Thompson, Boylan, & Davis, 2007).

The first national study of developmental education was reported in 1974 by R. Donovan (cited in Boylan & Saxon, 2006). A second study was conducted in 1985 (Boylan & Saxon). National studies on developmental education in community colleges support the conclusion that there has been a lack of sufficient attention given to assessing the effectiveness of developmental education (Kozeracki, 2002). Kozeracki noted that reliable data about the value of developmental education has yet to be generated either regionally or nationally. Grubb (2001) concurred and noted that most states and colleges have not yet evaluated these programs. What has been completed has been conducted primarily at four year institutions.

Meta analyses of developmental education programs have been conducted. The analyses have tried to identify the factors associated with successful outcomes. Arendale (2000) identified the major studies as Noel, Levitz, and Kaufmann reported in 1982; University of Texas reported in 1984; and the National Center for Developmental Education (Fall 1984 to Spring 1990) reported in 1992. In addition, a follow up to the National Center for Developmental Education study titled National Study of Developmental Education II (Fall 2001 to Summer 2003) was reported on in 2007 (Gerlaugh, Thompson, Boylan, & Davis, 2007). The findings from these various studies

confirm that assessment of developmental education is inconsistent at this time and also not comparable across institutions (Grubb, 2001).

It is important to note that assessment is supposed to determine how well something is being accomplished (Angelo & Cross, 1993). For an assessment process to do this, the purpose and objectives must be clearly defined. A characteristic of most of the institutions studied as benchmark institutions for developmental education programs was well defined and disseminated purposes and objectives (Boylan, 2002).

Boylan, Bliss, and Bonham (1997) noted that the strongest relationship to student success was demonstrated by three components from all the components that were examined. These three components were centralization of developmental education, tutor training, and evaluation. Student success in the initial developmental coursework was linked to these three components.

Grubb (2001) examined several evaluation methods from the viewpoint of the methods providing reliable information about the conditions of success and information to improve the programs. The first evaluation method is completion rates for the courses. If these alone are examined, only the success rates of those students who remain in the courses are examined. Grubb stated that "such an approach fails to see whether there are any long-run effects from completion" (p.18).

The second method Grubb (2001) evaluated is comparison of pre-tests and post-tests. He termed the results of this method useless for a number of reasons. These reasons include: a) the results are only available for students

who stay to the end of the course; b) test results can be significantly slanted to the positive, if the weaker students have dropped out; c) comparisons with other institutions are impossible; d) the tests themselves may be objectionable; and e) the results give no statistical information about why the scores are what they are. He also pointed out that there is no guidance about the next steps to take from conducting this type of evaluation.

Grubb (2001) stated that the random assignment methodology, while the most sophisticated approach, repeats many of the problems that he outlined for pretest/posttest comparisons. Grubb provided another approach that has been conducted for a number of years by Miami-Dade Community College. Using this approach, completion rates are calculated for students who do not need remediation courses compared to those who successfully complete all appropriate courses, as well as completion rates for students who need one to three subject areas. While usable data results from this method, he critiques the method as failing to control for a number of characteristics and effects (e.g., test, selection, and/or maturation).

In an extensive review of the research literature in developmental education, Boylan and Saxon (1999) found that almost two-thirds of the research had serious methodological flaws. They found that the literature base was methodologically weak as well.

Grubb (2001) noted that “the evaluation of remedial education is still in its infancy, and no one knows much about what works and what does not” (p. 29). Grubb also noted that the amount of remedial education is important to a number

of important institution outcomes including persistence and completion rates. More recently, Brothen and Wambach (2004) advocated that outcome measures such as retention, grades in the next course, and grades in the college level curriculum remain the best way to evaluate students for the effectiveness of developmental courses.

Arendale (2005) recommended that "it is time to again engage in assessment" (p. 76). Further, he stresses that the assessment in developmental education that is done be reflective of and assess what is going on in this area.

Summary

In this literature review the history of developmental education has been traced along with the evolution of the meaning, terms, and definitions that describe developmental education. The theoretical background and debate surrounding this background has been outlined. This review of literature includes the placement assessment and the developmental education assessment and evaluation research that has been published. The developmental program at SBC is included. There is also a section that presents an overview of the literature on the students who take developmental education.

The literature review and the process of doing this review showed several areas of study of developmental education that are in need of expansion. Among these areas are the literature and the research on evaluation of developmental education of adults, which demonstrates methodological problems in both the literature and the research. Much of the research and literature examines what has been done at four-year institutions and students who have successfully

completed developmental coursework. In addition, this research cannot be compared to the developmental education programs at community colleges, including tribal colleges. There was no literature found on developmental education at tribal colleges.

In the end educators must remember that evaluation is an art form. Certainly, it is easier when there are specific goals written during program development. In the absence of such specifics, the art of evaluation comes to the forefront.

CHAPTER III

METHODS

Purpose

The purpose of this study was to assess the characteristics and impact of developmental courses on students at Sitting Bull College (SBC) enrolled in developmental mathematics and English courses during the summer of 2003 through the spring of 2009. Specifically, the study was seeking relationships that might indicate the contribution of the developmental courses to a student's progress as measured by passing grades in the developmental courses, passing grades in the next level of English and mathematics courses, completion of a certificate or degree program, and/or continued enrollment at the college with progress toward a certificate or degree.

Included in this chapter are details on the design and procedures for the research. The chapter also includes summary information on students who were enrolled in the developmental courses over the study timeframe.

Design

Although this study was originally designed as a correlational study, it was changed to a descriptive study when the nature of the available data was discovered. According to Creswell (2002), a correlational design is used to

identify the direction and association of two or more variables. It is a useful design for explaining complex relationships. This research “does not ‘prove’ a relationship; rather it indicates an association between two or more variables” (p. 379).

A descriptive study, on the other hand, is used to describe, to answer the question “what is.” A researcher is able not only to describe what has been studied but also to organize the data, which allows patterns that may be present to be recognized. Descriptive research bridges the design of both quantitative research and qualitative research (Association for Educational Communications and Technology, 2001).

As the data were compiled for this study, problems emerged. The first obstacle encountered was that the information was not easily accessed in an electronic form. While the data had been stored in a variety of formats, the formats themselves did not necessarily allow direct access to the data. The institutional data coordinator had to examine some electronic records visually and then transfer the data herself, without the use of an electronic query (question), to obtain the answers. For other data, she had to find the written records, which had not yet been transferred to an electronic format.

The second problem encountered was locating useable data. Although much data was known to have been institutionally collected and recorded in various places (e.g., advisor’s notes and informal statements of student’s progress), much of it could not be found or was in “such a mess” (according to the institutional data coordinator) that the data could not be used in this study.

Further, there were inconsistencies in the manner and location for storage of the data that were recovered. Although work has begun institutionally to find and organize the reliable data, it remains unknown when the necessary data will be available for analysis.

Placement test results and placement recommendations are major areas that demonstrate both the difficulty of obtaining the data and the lack of data. All incoming students have been tested for placement using COMputer-adaptive Placement Assessment and Support Services (COMPASS) since the summer of 2003. All graduates have been required to complete the COMPASS testing as well. Yet the Test of Adult Basic Education (TABE) continues to be administered for a variety of reasons including that the internet access needed for COMPASS was not functioning at the time some students arrived to be tested.

Additionally, not every student tested took every section of whichever test was used. The bottom line is that although there were 289 students enrolled in developmental classes during the study timeframe, 157 of the students had COMPASS tested but across the four test sections the number of students tested ranged from 127 to 157 students. The TABE test reflects a range of tests from zero to 79 across the four sections. Of the 18 students graduating, only eight had completed the testing.

Because there was insufficient data on some variables to perform the originally-proposed correlational analyses, this study was redesigned as a descriptive study in order to maintain the integrity of the reported results

Participants

All students who enrolled in developmental mathematics and English courses at SBC from the summer of 2003 through the spring of 2009, and for whom the data were available, were included in this study. There were 459 registered students for the Foundations Math and English courses in this timeframe. The actual number of students, once duplicates were removed, was 289 students.

Institutional review was not initially deemed necessary by the Institutional Review Board Guidelines for both the University of North Dakota and SBC as the study was on existing data already stored by SBC that could be analyzed without identifying individual students. However, an expedited review was later requested by the chair of the SBC institutional review board, because this study would be publicly available as a dissertation upon completion of the study. This review was approved in June 2010.

Procedures

Data collection had already occurred in the records kept by SBC and was stored in multiple sources. With the aid of the Institutional Data Coordinator for SBC, data on all the developmental courses in this timeframe were sorted. In addition, the data on number of students enrolled each semester at the college and the total number of students in each of the courses each semester were compiled.

Students were placed into mathematics courses and English courses based on test results from TABE or COMPASS. These test results were recorded

in a variety of manners, ranging from handwritten and filed to records in an electronic format. When attempts were made to access all of the test scores for these students, a large number of the scores were found to be missing or misplaced. A number of individuals and significant time have been utilized in trying to find the test results for individual students. Test scores in reading were available for 81% of this group of students. For writing, 58% of the scores were available. For the mathematics testing, 52% of the pre-algebra scores and 43% of the algebra scores were available. There were no test scores available for TABE in the Algebra content area. The average score in each content area for both tests and the ranges for each test and content area are in Table 1.

Table 1. Number of Tests Administered, Average Score, and Range of Student Scores by Content Area for the COMPASS and TABE

Content Area	COMPASS			TABE		
	# of Tests	Average Score	Range of Scores	# of Tests	Average Score	Range of Scores
Reading	157	64	19-95	79	8.8	3.1-12.9
Writing	156	30	1-98	15	7.6	12-14
Pre-Algebra	151	26	10-59	1	11.3	11.3
Algebra	127	18	0-46	--	--	--

This study covered a six year period of time with 18 semesters of data gathered. The overall student count during the summer term averaged 101 students. Of these students 3% were in the developmental courses. Developmental courses were not offered the final three summers of the study as well as the second summer. The fall term averaged 296 students with 13.6% of

the students enrolled in the developmental coursework. The spring term averaged 290 students, 12% in developmental coursework.

During this timeframe 289 students enrolled in developmental mathematics or developmental English a total of 459 times. Students took both courses during the same semester only 22% of the time (see Table 2).

Table 2. Number of Students Enrolled at Sitting Bull College, By Semester and By Developmental Course, including Enrollment in One or Two Developmental Courses

Semester	Total	Taking One 010 Class	Taking Two 010 Classes	English 010	Math 010
Summer 2003	105	5	0	0	5
Fall 2003	317	53	17	21	49
Spring 2004	288	39	9	14	34
Summer 2004	92	0	0	0	0
Fall 2004	289	33	13	19	27
Spring 2005	313	28	9	18	19
Summer 2005	105	4	0	0	4
Fall 2005	297	30	7	18	19
Spring 2006	304	19	7	9	17
Summer 2006	95	0	0	0	0
Fall 2006	286	27	3	18	12
Spring 2007	210	24	5	14	15
Summer 2007	112	0	0	0	0
Fall 2007	290	34	14	18	30
Spring 2008	291	27	7	15	19
Summer 2008	96	0	0	0	0
Fall 2008	297	9	3	8	4
Spring 2009	333	25	8	19	14
Average	229	26	9	16	19

Over the course of the study, 39% of the students enrolled for a single semester in any coursework. The remaining students enrolled from two to 16 semesters. The average enrollment per student was four semesters.

Of the students who took the developmental courses, data was available on all 289 of the students. Students with high school diplomas made up 54% of this group; students with General Equivalency Diplomas made up another 27%. The remaining students had no documentation of either diploma.

Gender of the students was split with 60% females and 40% males. The age for students enrolled in these courses ranged from 17 to 64 years of age, with an average age of 26.7 years.

Fall semester of 2009 showed 43 students from this study enrolled in classes. There were also 18 graduates over the course of this study. COMPASS testing results were only available for eight of these graduates.

Data analysis utilized appropriate descriptive statistics. The data were categorized and analyzed for frequency as well as mean, mode, median, and percentage. The current SPSS statistical program (SPSS Student Version 15.0) was used to aid in this analysis.

Summary

This study was originally designed as a relational analysis. It was completed as a descriptive study of six years of data on developmental courses at SBC. The purpose of the study was to assess the characteristics and impact of developmental courses on students at SBC enrolled in developmental mathematics and English courses from the summer of 2003 through the spring of

2009. There were 289 students in these courses for 459 course registrations during this timeframe. The data and the results of the analyses are presented in the next chapter.

CHAPTER IV

RESULTS

Purpose

This study was originally designed as a relational analysis. It was completed as a descriptive study of six years of data on developmental courses at Sitting Bull College (SBC). The purpose of the study was to assess the characteristics and impact of developmental courses on students at SBC enrolled in developmental mathematics and English courses during the summer of 2003 through the spring of 2009. This chapter includes a review of the study and a description and examination of the results of the data analyses.

Outcomes

With the aid of the Institutional Data Coordinator for SBC, data on all of the developmental courses in this timeframe were sorted. In addition, the data on the number of students enrolled each semester at the college and the total number of students in each of the courses each semester were compiled. This process proved to be very labor intensive. Much of the data originally requested could not be located. For example, all incoming students were screened for placement using COMputer-adaptive Placement Assessment and Support Services (COMPASS) testing or Test of Adult Basic Education (TABE) testing.

It was discovered that these results were not uniformly recorded anywhere. Some results had been recorded in several electronic files while some of the results had been recorded by hand and filed in various paper files. It was also discovered that much of these data were missing. While the process of finding the data had begun, it was expected to be well over a year before the results of this data search would be available.

Students who enrolled for a semester before completing their General Equivalency Diploma (GED) could not be tracked after the single semester they were allowed to enroll. There was no means to track whether they had continued preparing for the GED or eventually completed their GED.

The individual student files had many discrepancies as well. Many long hours were spent with the tedious task of comparing and sorting the data to ensure the accuracy of the data used for this analysis.

Demographic Characteristics

Research question one: What are the demographic characteristics of students who were enrolled in developmental coursework at SBC during the 2003 to 2009 timeframe (i.e., High school diploma or GED, age, gender, COMPASS scores)?

During the study period 173 females and 116 males were enrolled at the college in one or both of the Foundations (developmental) classes provided. These students ranged in age from 17 to 64 when they first enrolled at SBC. The average age was 26.7 years. The students were first enrolled at SBC over a 29 year period between the fall of 1980 and the spring of 2009. There were 57

students in the study who had enrolled at SBC for one or more semesters prior to the study time frame (38 females and 19 males).

Of the students in the study, 233 students had either a GED or a high school diploma (see Table 3). There were 77 students who had obtained a GED either prior to enrollment or by the end of the first semester in which they enrolled. There were 156 students with high school diplomas. The diplomas and GEDs were obtained between May 1962 and May 2009.

Table 3. Number and Percentage of Participants by Gender and Entrance Education

	Total Participants	
	#	%
Gender		
Female	173	59.9
Male	116	40.1
Entrance Education		
General Equivalency Diploma	77	26.7
High School Diploma	156	54.0
No Evidence of Either Diploma	56	19.3

There were 56 students who had no documentation of completing either a GED or a diploma. Nine students in this group enrolled for two or three semesters. The average for these nine students was 2.3 semesters. While these nine students would have had to provide some proof of completion of either the GED or a high school diploma to continue, there was nothing documented in the files to which the researcher had access.

It can be assumed that the 45 students in this group who enrolled for only one semester were enrolled under the SBC policy that allows students working on their GED to enroll for one semester of college coursework before they complete their GED. Students must provide proof of GED or a high school diploma before they may enroll a second semester. There were also two who withdrew the first semester they enrolled and would have been allowed to enroll a second semester.

COMPASS and TABE scores are shown in Table 4 with the cut-off scores for each of the content areas separated out by the placement test utilized. The cut-off scores are the scores in a content area used by SBC to determine which course to place a student in. The average of the scores of the students tested in each content area is included in Table 4. In addition, the range of the scores of all students tested in each content area of each placement exam is included.

Course placement was based on scores achieved in each content area. English placement was based on the average of the reading and writing scores. Students with an average score equal or below 50 were placed in English 010 (Foundations English). An average score greater than 50 resulted in placement of the student in college level English (English 110).

Students were placed in Foundations Math (Math 010) with scores of 29 or less on the Pre-Algebra section and five or less on the Algebra content. Students were placed into Pre-Algebra (Math 101) if their Pre-Algebra score was 30 - 39 or their Pre-Algebra score was less than 30 and their Algebra score was 6 - 15.

TABE cut-off scores for placement reflect grade level achievement in the content area. Generally, students who scored below the 12th grade in a content area were placed in the indicated Foundations class.

Table 4. Content Cut-off Scores, Average Scores, and Ranges of Scores in Each Content Area for All Students Tested for Placement by Placement Test

Content Area	COMPASS				TABE			
	# of Tests	Cut-off Score	Average Score	Range of Scores	# of Tests	Cut-off Score	Average Score	Range of Scores
Reading	157	50*	64	19-95	79	12	8.8	3.1-12.9
Writing	156	50*	30	1-98	15	12	7.6	12-14
Pre-Algebra	151	29	26	10-59	1	12	11.3	11.3
Algebra	127	5	18	0-46	--	12	--	--

*The student's total score for reading and writing on the COMPASS tests are averaged and compared to a single cut-off score of 50.

Need for Courses

Research question two: How many developmental courses did students need? What percentage of the student population each semester was enrolled in zero, one, or two developmental courses?

Because of the lack of data and the inconsistency of the available data for the placement test scores, the first part of research question two was dropped from the study. While students were required to take the Foundations Math and English courses if their placement scores placed them in one or both courses, the students were not required to take these Foundations Math and English courses during the first term of their enrollment, although most students did. An

overview of the numbers of students in each course did show that more students had to take development math than English.

Table 5 indicates the average overall student enrollment by term. The average enrollment and percentage is included for those who took zero foundations (010) courses, one foundations course, or two foundations courses. The average for the summer term for the foundation courses is based on the only two summer semesters during this study period when these courses were taught.

Table 5. Average Number and Percent of Students Enrolled in Zero, One, or Two Developmental Courses by Term

Term	Total Enrollment	Zero Courses		One Course		Two Courses	
		#	%	#	%	#	%
Summer	102	96	95	5	5	0	0
Fall	296	255	86	31	11	10	3
Spring	290	255	88	27	9	8	3
Overall	229	202	88	21	9	6	3

Table 6 displays the overall student enrollment by semester. The total enrollment and percentage is included for those who took zero foundations (010) courses, one foundations course, or two foundations courses.

During the timeframe of this study 289 students enrolled in developmental mathematics and developmental English a total of 459 times. Students took both courses during the same semester 102 times.

Table 6. Number and Percent of Students Enrolled in Zero, One, or Two Developmental Courses by Semester

Semester	Total Enrollment	Zero Courses		One Course		Two Courses	
		#	%	#	%	#	%
Summer 2003	105	100	95	5	5	0	0
Fall 2003	317	247	78	53	17	17	5
Spring 2004	288	240	83	39	14	9	3
Summer 2004	92	92	100	0	0	0	0
Fall 2004	289	243	84	33	11	13	5
Spring 2005	313	276	88	28	9	9	3
Summer 2005	105	101	96	4	4	0	0
Fall 2005	297	260	88	30	10	7	2
Spring 2006	304	278	92	19	6	7	2
Summer 2006	95	95	100	0	0	0	0
Fall 2006	286	256	90	27	9	3	1
Spring 2007	210	181	86	24	12	5	2
Summer 2007	112	112	100	0	0	0	0
Fall 2007	290	242	83	34	12	14	5
Spring 2008	291	257	88	27	9	7	3
Summer 2008	85	85	100	0	0	0	0
Fall 2008	297	285	96	9	3	3	1
Spring 2009	333	300	90	25	8	8	2

Course Characteristics

Research question three: What were the characteristics, in terms of enrollment, completion, and grade distribution, of the courses taken each semester of this timeframe? Did the term of enrollment in a developmental course have an effect on student grades and course completion?

During this study only one of the courses in the study was offered on a regular basis during the summer term. Foundations English was never offered and English I was taught once. The Foundations Math course was taught twice. However, Pre-Algebra was taught five of the six summers in the study. All courses were offered every fall and spring term.

Table 7 summarizes the average enrollment by course and by term. The breakdown of this information by semester is in the Appendix.

Table 7. Average Number and Percent of Students Enrolled in Four College Courses by Term

Term	Total Enrollment	Foundations English		English I		Foundations Math		Pre-Algebra	
		#	%	#	%	#	%	#	%
Summer	102	0	0	12	12	5	5	8	8
Fall	296	17	6	54	18	24	8	29	10
Spring	290	15	5	56	19	50	7	35	12
Overall	229	16	7	51	22	19	8	25	11

When the enrollment numbers were compared for the number of students who withdrew and the number of students who completed each of the courses the average percentage of students who withdrew overall was 18.3%. The percentage who completed was 81.7% (see Table 8). Completion numbers included those students who failed the course with a D or F. These students did complete the course, although they received a failing grade.

The withdrawal rate from the foundations classes averaged 20.0%. The rate for the courses one level higher was 16.5%. Completion rates were 80.0% for the foundations courses and 83.5% for the higher level English and math courses.

When subject areas were compared, the withdrawal rates and completion rates overall were almost the same. English had a withdrawal rate of 18% and a completion rate of 82%. Math had a withdrawal rate of 19% and a completion rate of 81%.

Table 8. Number and Percent of Students Who Withdrew from or Completed Four College Courses

Course	Total Enrollment	Withdrew		Completed	
		#	%	#	%
Foundations English	16	3	19	13	81
English I	52	9	17	43	83
Foundations Math	19	4	21	15	79
Pre-Algebra	25	4	16	21	84

Grade distributions for the four college courses in the study were summarized in Table 9. The fail rate with a grade of D or F for the foundations classes averaged 40%. The next level math and English courses had a fail rate of 34%. The English courses had a combined failure rate of 34.5% versus the Math courses with a 39.5% failure rate.

The passing grades of A, B, and C were examined. Distribution of these passing grades in both math courses occurred evenly across the three

categories. In the English courses the grade of A occurred most frequently, followed by B grades.

Table 9. Average Number and Percent of Students per Term by Grade Distribution for Four College Courses

Course	Total Enrollment	Withdrawn		Completed							
		#	%	Failed		Passed					
				D/F	%	C		B		A	
						#	%	#	%	#	%
Foundations English	16	3	19	6	38	1	6	2	12	4	25
English I	52	9	17	16	31	6	12	9	17	12	23
Foundations Math	19	4	21	8	42	2	11	2	10	3	16
Pre-Algebra	24	4	17	9	37	4	17	4	17	3	12

In Foundations English, 57% of the students who enrolled in the courses over the six-year period either withdrew or failed the course. Foundations Math course withdrawal or failure rate was higher at 63% of the students. The English I courses had an overall withdrawal and failure percentage of 48%. Pre-Algebra had a rate of 54%.

An examination by term showed that students enrolled in the spring term were more likely to complete their coursework than withdraw. The student outcomes of withdrawal and completion by course and term are summarized in Table 10. Grade distribution for each course by term is summarized in Table 11. This includes the students who completed the course but did not pass (i.e., who failed the course with a D or F).

Table 10. Number and Percent of Students Who Withdrew from or Completed Four College Courses by Term

Course	Total Enrollment	Withdrew		Completed	
		#	%	#	%
Foundations English	16	3	19	13	81
Summer	--*	--	--	--	--
Fall	17	3	18	14	82
Spring	15	2	13	13	87
English I	52	9	17	43	83
Summer	12	0	0	12	100
Fall	54	10	18	44	82
Spring	56	9	16	46	82
Foundations Math	19	4	21	15	79
Summer	5	1	20	4	80
Fall	23	5	22	18	79
Spring	19	3	16	16	84
Pre-Algebra	25	4	16	21	84
Summer	8	1	13	7	87
Fall	28	5	18	23	82
Spring	35	5	14	30	86

* Not offered

Table 11. Number and Percent of Students in Four College Courses per Term by Grade Distribution

Course	Total Enrollment	Failed		Passed					
		D/F #	%	C #	%	B #	%	A #	%
Foundations English	16	6	38	1	6	2	13	4	25
Summer	--*	--	--	--	--	--	--	--	--
Fall	17	6	35	1	6	2	12	5	29
Spring	15	7	47	1	7	3	20	3	20
English I	52	16	30	6	12	9	17	12	23
Summer	12	3	25	4	33	3	25	2	17
Fall	54	15	28	8	15	10	19	12	22
Spring	56	19	34	5	9	9	16	14	25
Foundations Math	19	8	42	2	11	2	11	3	16
Summer	5	2	40	1	20	2	40	1	20
Fall	23	5	22	3	13	4	17	10	44
Spring	19	9	47	3	16	2	11	2	11
Pre-Algebra	25	9	36	4	16	4	16	3	12
Summer	8	3	38	1	13	1	13	2	25
Fall	29	10	35	5	17	4	14	4	14
Spring	35	7	20	5	14	6	17	1	3

* Not offered

Student Persistence

Research questions four and five: How many times did individual students take the developmental course before successfully completing the course? How many semesters was the student enrolled in any coursework? Were the semesters continuous or were there drop out periods?

The number of semesters a student took a course before being successful as measured by the student receiving a C or higher is shown in Table 12.

Students took each course from one semester to four semesters before they were successful. Success on the first attempt occurred for 48% of the students. Of the remaining students who were successful, 1%, made two attempts, 0.8% made three attempts, and 0.3% (two students) made four attempts.

Table 12. Number and Percent of Students by Number of Semesters Necessary to Pass Four College Courses

Semesters Taken	Foundations English		English I		Foundations Math		Pre-Algebra	
	#	%	#	%	#	%	#	%
One	80	14	83	55	90	40	56	51
Two	5	3	9	6	9	4	4	3
Three	0	0	2	1	3	1	1	1
Four	0	0	2	1	0	0	0	0

For the foundations courses together, 43.5% of the students succeeded the first semester they were enrolled in the course during this study timeframe. This rate increased to 53% of the students in the college-level English courses and Pre-Algebra. When compared by subject, 51% of the students in English were successful and 46% of the mathematics students were successful.

Over the course of the study, 110 of the study students enrolled for a single semester. The remaining 179 students enrolled from 2 to 16 semesters. The average for these students was four semesters of enrollment.

Students who had received a GED were enrolled at SBC an average of 3.2 semesters with a range of one to sixteen semesters. High school graduates were enrolled an average of 3.4 semesters with a range of one to thirteen semesters. Students who had no documentation of either a GED or high school diploma averaged 1.3 semesters of enrollment with a range of one to three semesters.

Student enrollment was not continuous. The enrollment reflected summers off as well as other breaks in the enrollment.

Student Success

Research question six: Are the developmental courses at SBC affecting student success? How long has it taken for students in developmental courses to complete a degree or certificate? If the student has not finished a degree or certificate, is he/she still enrolled in coursework?

Fall semester of 2009 showed 43 students from this study enrolled in classes. This was only 15% of the students who had enrolled in a developmental course during the six year study period.

Table 13. Number and Percent of Students with Graduation and Continued Enrollment Status by Entrance Education

Entrance Education	Total Enrollment	Graduated		Enrolled Fall 2009		Graduated & Still Enrolled	
		#	%	#	%	#	%
General Equivalency Diploma	77	4	5	9	12	3	4
High School Diploma	156	7	4	25	16	4	3

Table 13 displays the graduation and continued enrollment in the Fall 2009 semester numbers for participants in this study. The table includes the student outcome separated out by entrance education – a GED or high school diploma.

There were 191 students in the study group who had started coursework by the spring of 2006 that would have allowed them three years to complete graduation requirements for the certificates and associate degrees offered at SBC. Ten of the graduates enrolled during semesters in the first three years of the study. This represented 5% of the students who started coursework during the first three years of the study.

Eight of the students completed the graduation requirements within the last three years of the study. This represented 8% of the 98 students who enrolled in developmental coursework during the last three years of the study. There were only 18 graduates over the entire course of this study. This represented 6% of the students who took developmental coursework during the study period.

It took these 18 graduates an average of 9.6 semesters to complete the requirements during the study period. The students were in classes from 5 to 16 semesters to complete graduation requirements.

Only 43 students from the study were enrolled in the fall of 2009. This represented 15% of the students who took developmental coursework during the study period. These students had been enrolled from 1 to 16 semesters. The

average number of semesters of enrollment for these students was 4.8 semesters.

Seven of the graduates remained enrolled in the fall of 2009. They had been enrolled an average of 9.6 semesters. The range was 6 to 16 semesters during the study period.

Summary

This study was a quantitative analysis of six years of data on developmental courses at SBC. The purpose of the study was to describe the characteristics and impact of developmental courses on students at SBC enrolled in developmental mathematics and English courses during the summer of 2003 through the spring of 2009. There were 289 students in these courses for 459 course registrations during this timeframe. The next chapter includes the discussion, conclusions, and recommendations for this study.

CHAPTER V

DISCUSSION AND CONCLUSIONS

The purpose of this study was to describe the characteristics and impact of developmental courses on students enrolled in developmental mathematics and English courses at a small mid-Western tribal college. This was a quantitative, descriptive study of the courses and the students.

All students who enrolled in developmental mathematics and English courses at Sitting Bull College (SBC) during the summer of 2003 through the spring of 2009 were included in this study. There were 459 students registered for the Foundations Math and English courses in this timeframe. The actual number of students, once duplicates were removed, was 289 students.

In this chapter a discussion of the study results is provided. The conclusions and recommendations based on the results are presented as well.

Discussion

The research on developmental education is in the early stages. Until the 1990's little information was available. Much of the research and literature that has been completed has been primarily at four-year institutions. Little to nothing has been conducted and reported for community colleges where the majority of developmental courses are taught. The scarcity of research on this subject at tribal colleges prompted this study.

The need for developmental education is the greatest among the Native American Indian population. As noted in the first two chapters of this dissertation tribal colleges have a student body that is highly representative of the students who are enrolled in developmental coursework. Ambler (2002) states, "Tribal colleges and universities serve many students whom non-Indian colleges likely would not recruit. While some non-tribal institutions choose only the top SAT scores, tribal colleges accept students who have been told they will never amount to anything" (p. 6).

Demographic Characteristics

The average age of the students in developmental coursework at SBC when they first enrolled at the college is younger than the average age at the college overall: 26.7 years versus the student body average age of 31. Females constitute 60% of the developmental course enrollees which is essentially the same as the general college population average of 62% female.

It was expected that a third of the SBC students who entered would not have graduated from high school based on the national statistics. The study group had a 46% rate of students who had not graduated from high school. This was higher than predicted and much higher than the national 15% figure cited in the literature review.

Course Needs

The problem with the missing placement testing data was discovered midway through the data gathering phase. The institution has started the process of searching for these data, but it is not yet available.

Without the placement testing data, there was no way to determine how many developmental courses each student needed. SBC does require students to take the developmental courses they place in but does not require that they take the courses during the student's first semester of enrollment.

An examination of the courses these students actually registered for reflected that Foundations Math was taken more often than Foundations English. The overall average was 8.3% registered in the developmental math course versus 7.0% in the developmental English, which was the expected finding.

The actual number of students in developmental classes in the fall semesters was slightly higher than the spring semesters. This reflects that the fall semesters had a slightly higher number of new enrollees at the college. The percentages of students enrolled in the developmental courses during the spring and fall semesters were comparable. The developmental courses have not been offered during the summer term since the summer of 2003, with the exception of Foundations Math which was offered one time (during the summer of 2005). Pre-Algebra (Math 101) was the only course offered regularly during the summer term. Students did not take both developmental courses together 80% of the time, regardless of semester.

Course Success

When the courses were examined in terms of enrollment, completion and grade distribution, the withdrawal rate for all courses was 18.3%. However, when the developmental classes were compared to the next level Math and English courses, the average withdrawal rate was higher at 20%. The next level of

coursework had a withdrawal rate of 16.5%. Foundations Math had the highest average withdrawal and lowest completion rate at 21% withdrawal and 79% completion.

Both Foundation courses had the highest failure rates when the grade distribution was examined. Math was the highest at 42%. Foundations English had a failure rate of 38%. English I had the lowest failure rate at 31%.

These findings are expected. Students in Foundations courses are already identified as not prepared for college level coursework. Students are identified for placement into these courses but there is no further differentiation for these students. Some of the students placed in these courses needed a little work in the area while other students needed considerably more help. In addition, I expected the math findings based on my experiences working with the nursing students on drug calculations and the amount of math phobia expressed in the hallways and classrooms and to me as an advisor at the college.

Foundations English students had an overall failure rate of 38% and a 44% pass rate. Students enrolled in the spring term had a greater chance of receiving a D or F at 47% (35% for the fall term). The completion rate showed little difference between the spring and fall term, but students who passed were more likely to receive an A.

Foundations Math students had a 42% chance of failing overall. There was a difference between the fall and the spring terms for grade distribution. The fall term failure rate averaged 22%, with 43% of the students who completed

receiving an A. The spring term failure rate for students averaged 47% with the grades evenly distributed over the three passing grades.

In English I the failure rate was 30%. The pattern of doing better in the fall and an increase in failures in the spring is noticeable once again. The failure rate average for the fall was 28% with the remaining students passing most frequently with a letter grade of A. In the spring the failure rate climbed to 34%, with the grade of A being the most frequent passing grade.

Pre-Algebra had an overall failure rate of 36%. The failure rates reversed terms for this course. The students were more likely to pass this class in the spring than in the fall. The failure rate dropped from 35% for the fall to 20% for the spring term. Passing grades were evenly distributed in the fall term. In the spring the grades were evenly split between the letter grade B and the grade of C.

While there are several possible explanations for the differences between terms for passing and failure rates, these explanations would be conjecture at this time. Students are often encouraged to repeat courses they have failed in the fall immediately in the spring with the rationale that the recent exposure will assist the student to do better the next time. This does not hold true for the fall as the break over the summer months would lengthen the time since exposure to the content.

In addition, students who do not do well in their overall coursework in the fall would be on probation in the spring. If they continued to do poorly they are

suspended the next term. The earliest these students would be able to return would be the following spring term.

It was interesting to note that there were students who attempted English I or Pre-Algebra and did not complete or failed who dropped back and picked up the foundations course for that subject. While there is no way to know from the data gathered, it might have been student choice or advisor or instructor recommended.

Terms of Enrollment

Students took these four courses from one to four times before they were successful. English I was the only course in which there were four recorded attempts to pass before the student was successful. The students were more likely to be successful the first time in the more advanced classes with the averages at 55% for English I and 51% for Pre-Algebra. Foundations Math remained the least successful course offering at 40% on the first attempt.

During this study period, only 50% of the students who enrolled in Foundations English were successful in completing the course with a passing grade. For English I, this completion success average rose to 63%; Foundations Math students averaged a 46%; and the Pre-Algebra students had a completion success average of 55%. These findings reflect that students in the more advanced classes of English I and Pre-Algebra have been identified as prepared for this level of coursework or completed coursework to prepare them for the course.

When the number of terms a student enrolled in during the study timeframe was examined, 38% of the study group enrolled a single semester. Because the range was from one semester to sixteen semesters, a median was determined. The median enrollment was for two semesters. The mean was four semesters. There were also previous semesters of enrollment for 20% of the study group. These previous terms of enrollment were not included in the study.

Student enrollment was examined based on prior education. The median term of enrollment was two terms for students who had a General Equivalency Diploma (GED) and for students who had a high school diploma. The median for the group without either a GED or diploma was one term. This finding for the group without a GED or diploma was expected as these students would not be allowed to enroll for another semester until they provide proof of completing their GED or a diploma. It was interesting that there was no difference between the students with a GED and those with a diploma.

Student enrollment during the study was not continuous. Summer course offerings were very limited which was reflected in the pattern of enrollment. The summer term is also not included in persistence and retention calculations.

When the summer semesters were removed there remained a pattern of breaks. On examination these breaks appear to reflect the academic probation and suspension policies. Further analysis to verify this would require the semester grade point averages of each student.

Degree Attainment or Continuing Enrollment

There were only 18 graduates from this group of students in the six year period of the study. Interestingly, eight of these graduates completed their degree requirements in three years or less. Only four of the graduates had enrolled in semesters prior to the study period. One of these four had enrolled the semester before the start of the timeframe. This was an interesting finding at a time when colleges and universities now expect students to take six years to complete what has been a four year degree.

There were 43 students who had been retained to the fall of 2009 semester. This represents 15% of the study group. There are seven duplicates in these numbers. These are students who completed degree requirements and graduated but who remained enrolled in the fall of 2009. This reflects the four year degree offerings available at SBC. Students receive a two year degree and then continue their education. At the end of six years, 19% of the students who enrolled in developmental coursework had completed a degree or certificate and/or remained enrolled.

These results would lend credence to the findings in the literature review that question the use of degree or certificate completion and/or continued enrollment as measures of success for developmental education. McCabe (2000), in particular, has numerous writings that would support other variables beyond the college curriculum as measures of success, such as employment and earnings.

What about the students who come to school for other reasons, including that they have always wanted to go to college, or the course sounded interesting, or even the reason of getting paid to be in school? Did the students who did not complete or continue achieve their purposes for attending the classes they did?

Additional Findings

When the data was examined, there were some additional findings that were not included in chapter four because the study was a descriptive study. There were 66 pairs of English courses (where the same student had completed both the Foundations English course and English I course). For the math courses there were 73 instances where a student had completed the developmental course and then taken Pre-Algebra. A statistical analysis looking for relationships between the pairs was done.

There was a positive correlation between the foundations class a student enrolled in and the student's success in the next level of coursework. For the paired English courses statistical significance was at the $p = 0.05$ level (two tailed). For the math courses this significance was at the $p = 0.01$ level (two tailed). These findings do not indicate a cause and effect relationship, but the findings support a relationship of some sort.

Conclusions

While Native Americans are disproportionately placed in developmental coursework, there have been few studies examining this. There is also very little literature and research on developmental education at tribal colleges. This study was a descriptive study of the students and courses at one tribal college. The

study does provide support for the use of other measures of success. It also supports the need for additional research exploring the relationships and other variables, such as the scoring used with placement testing, which affect or are affected by the student.

Recommendations

Based on the results of this study, this researcher has several recommendations. While SBC has collected quite a bit of data over time, the inconsistency of the recording and storage locations of the data, as well as the difficulties encountered when trying to retrieve data, highlight the need to have a way to store, track, and easily retrieve these data. SBC does have a person in charge of the data - the institutional data coordinator.

SBC will be implementing a new student records management system in the Fall of 2010. This new system has the capability to track extensive data. This capability should not be ignored. Rather, the data that is being kept and tracked should be stored in such a way that data does not get lost and is more easily retrieved than has been done with the present system. Doing this will allow SBC employees and students to make timely and relevant decisions based on examination of the collected data.

There is other data that will not go into this student record management system. I would recommend that the college examine how other types of data are collected, recorded, and stored. If indicated, a policy and procedure should be developed to protect and preserve these other data.

It would be interesting to explore the reasons for the differences between the spring and fall terms for passing and failure rates in the courses studied. It would also be interesting to look for patterns across the terms in other courses and across majors.

As of the summer semester of 2009, the English instructors for Foundations English (English 010) began to require a one hour writing session in the computer lab once a week as part of the coursework. This is structured coursework using computer based support materials that provide writing drills for students to utilize to work on their writing skills. The findings from this study are part of the pre-implementation data for this change. The students involved in these courses should be followed to see what effect this change (to a required computer lab) has on their skills as well as on their persistence, retention and completion rates.

Another study should be done once the COMputer-adaptive Placement Assessment and Support Services and Test of Adult Basic Education test scores are centralized. This study would provide an informed way to examine the cut-off scores currently used for placement at SBC. The findings from such a study could provide details to support informed decision making on the manner and scores that are used by personnel at SBC to place students in coursework. The findings may also suggest curricular changes affecting all SBC students.

The pairing of two separate skills — reading and writing-- to determine placement in a single English course needs to be examined. Currently, placement is based on the average of the enrolling student's scores in reading

and writing. Yet, these are distinctly different skills. A study of the placement test scores could shed light on the validity of using the pairing of the scores for placement rather than separating the scores and the courses for placement. Decisions regarding the foundations courses could be made based on data rather than the "Let's try this" approach. This might include a recommendation to split the current developmental course (English 010) into a reading course and a writing course.

I would recommend that SBC do additional tracking of the students who enroll in developmental coursework. These students are already at risk. This tracking could include attendance patterns with earlier interventions, tutoring usage, and weekly or even daily grade reports and feedback. With additional tracking appropriate advisement, support, and interventions could be utilized to increase student success and completion of degree or certificate requirements. Expansion of this study to include additional variables and feedback loops could provide students and their advisors with more timely information to assist the student and their advisor with planning their time at SBC.

I would suggest that this study be expanded to examine the retention and persistence patterns of the individual students correlated with the semester and the cumulative grade point average. This will provide information on the patterns of student enrollment with regard to the current probation and suspension policies. While these policies have been implemented for a number of reasons, the reasons have revolved around addressing student behaviors and financial

considerations. The current policies include probation, suspension for one term, suspension for a year, and finally suspension for three years.

I would recommend that the next step in research be pursued. This was a descriptive study; the next step would be to look for explanations. The additional findings presented in this chapter support the recommendation to examine the data further for explanations as there was statistical significance noted with the sample examined.

Summary

One placement test and one study cannot possibly tell the entire story of the students who are placed in developmental coursework. This study provides a beginning to examine what occurs at one tribal college. It will provide the assessment and curriculum committees at SBC with information to assist in making decisions and in recommending areas to examine in retention and course and curriculum development. There are recommendations for further study and for development from this study.

This research may also serve as an incentive to study other areas of the curriculum and of the support services at tribal colleges. It is certainly past time for tribal colleges to stop relying on research from institutions that are unlike the tribal college. It is time for tribal colleges to do and present their own research and develop their own evidence-based solutions that work with the populations that these colleges serve.

Appendix

Number and Percent of Students Enrolled in Four College Courses by Semester

Semester		Total Enrollment	Foundations English		English I		Foundations Math		Pre-Algebra	
			#	%	#	%	#	%	#	%
Summer	2003	105	0	0	12	11	5	5	6	6
Fall	2003	317	21	7	64	20	49	15	24	8
Spring	2004	288	14	5	50	17	34	12	49	17
Summer	2004	92	0	0	0	0	0	0	9	10
Fall	2004	289	19	7	52	18	27	9	24	8
Spring	2005	313	18	6	63	20	19	6	54	17
Summer	2005	105	0	0	0	0	4	4	10	10
Fall	2005	297	18	6	46	15	19	6	32	11
Spring	2006	304	9	3	55	18	17	6	22	7
Summer	2006	95	0	0	0	0	0	0	11	12
Fall	2006	286	18	6	52	18	12	4	36	13
Spring	2007	210	15	7	73	35	14	7	35	17
Summer	2007	112	0	0	0	0	0	0	4	4
Fall	2007	290	18	6	58	20	30	10	26	9
Spring	2008	291	15	5	49	17	19	7	28	10
Fall	2008	297	8	3	51	17	4	1	30	10
Spring	2009	333	19	6	44	13	14	4	24	7
Average		229	16	7	51	22	19	8	25	11

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