



Predictors of student persistence among technical programs at Montana State University-Northern
by Virgil Carolus Hawkinson

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Education
Montana State University

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Abstract:

The purpose of this study was to identify predictors of persistence, as measured by semester credit hours earned, for students enrolled in technical programs at Montana State University-Northern (MSUN) from Fall semester 1993 to Spring semester 1997. Based on data provided by the Registrar, a list of student background variables and organizational measures of academic achievement was identified to help compare predictors of persistence for each program of study. Correlation and stepwise regression analyses confirmed the statistical significance that eight variables predicted persistence in various technical programs at MSUN. These eight variables were college grade point average, ACT composite scores, ACT math scores, ACT science scores, ACT reading scores, high school grade point average, high school rank and number of semesters enrolled at MSUN.

PREDICTORS OF STUDENT PERSISTENCE AMONG TECHNICAL PROGRAMS
AT MONTANA STATE UNIVERSITY-NORTHERN

by

Virgil Carolus Hawkinson

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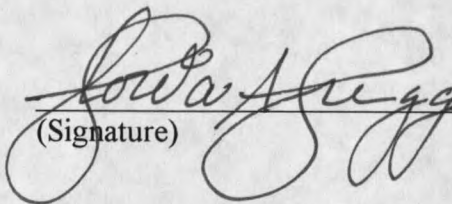
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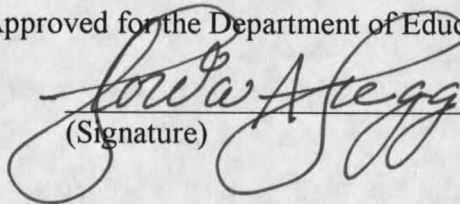
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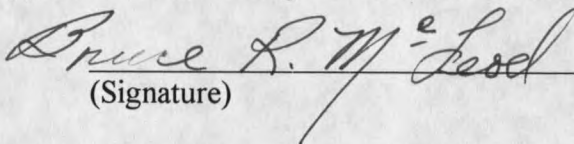
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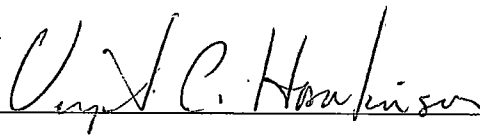

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ABSTRACT

The purpose of this study was to identify predictors of persistence, as measured by semester credit hours earned, for students enrolled in technical programs at Montana State University-Northern (MSUN) from Fall semester 1993 to Spring semester 1997. Based on data provided by the Registrar, a list of student background variables and organizational measures of academic achievement was identified to help compare predictors of persistence for each program of study. Correlation and stepwise regression analyses confirmed the statistical significance that eight variables predicted persistence in various technical programs at MSUN. These eight variables were college grade point average, ACT composite scores, ACT math scores, ACT science scores, ACT reading scores, high school grade point average, high school rank and number of semesters enrolled at MSUN.

CHAPTER 1

INTRODUCTION

Studies of student persistence have been conducted at many post-secondary institutions and the authors of these studies have reported varying results. The purpose of this study was to identify predictors of persistence for students enrolled in technical programs at Montana State University-Northern (MSUN). MSUN, at the time of this study, served 2,000 students from four Indian reservations and a rural area in Northcentral Montana of nearly 32,000 square miles. MSUN is a statewide resource for technology education and has undergraduate technical programs that provide transfer opportunities for Montana's colleges of technology, tribal colleges, and community colleges (Montana State University-Northern Catalog, 1997).

MSUN admits graduating high school seniors with a 2.5 high school GPA and an ACT composite test score above 20, or SAT combined verbal and math scores of 930 or higher, or rank in the upper half of their high school graduating class. Students over the age of 21, part-time students,

transfer students and students enrolling in certificate or associate's degree programs are exempt from these requirements (Montana State University-Northern Catalog, 1997).

At the time this study was conducted, technical programs encompassed vocational/technical degrees (auto body, auto mechanics, diesel mechanics, drafting, farm mechanics, machining, railroad operations, and welding), technical management degrees (agriculture, computer information systems, manufacturing technology, and water quality), and engineering technology degrees (civil and electronics). These technical programs had diverse requirements for manual skills, levels of mathematical and scientific abstraction, and interdisciplinary studies. Any attempt to apply predictors of success from previous studies was complicated by variation among MSUN vocational/technical, technical management, and engineering technology programs regarding mission, goals, leadership styles of program faculty, academic expectations, and accreditation requirements.

Problem Statement

MSUN has a graduation rate considerably lower than the national average of its peer institutions which causes financial problems as a result of its enrollment driven funding. Students enter academic programs with a variety of family backgrounds and academic experiences which may influence their expectations, commitment to education, and ability to persist. Studies on attrition suggest student background characteristics are related to persistence and that students may leave an academic program for multiple and disparate reasons (Cope & Hannah, 1975; Pantages & Creedon, 1978; Spady, 1970; Tinto, 1975). Leaving an academic program may be due to a mismatch between the student and the institution, a temporary condition due to finances or personal problems, or a result of changing goals (Tinto, 1975).

Retention of students from fall 1996 to school year 1997-98 in technical majors ranged from 25% to 100% (MSUN registrar, 1998). These data are shown in Table 1.

Table 1. Retention From Fall 1996 to School Year 97-98 by Major.

Major	Number of students	Retention
Ag Mechanics A.S.	10	80%
Ag Mechanics B.S.	11	82%
Ag Technology A.S.	25	72%
Autobody A.S.	13	31%
Auto Mechanics A.S.	24	71%
Auto Mechanics B.S.	32	94%
Auto Mechanics B.T.	3	67%
Civil Eng. Tech. A.S.	4	100%
Civil Eng. Tech. B.S.	15	60%
Civil Tech. B.S.	3	67%
Computers A.S.	11	55%
Computers B.A.	36	69%
Diesel Tech. A.S.	19	74%
Diesel Tech. B.S.	58	83%
Diesel Tech. B.T.	4	25%
Drafting A.S.	21	76%
Drafting B.S.	49	78%
Electronics A.S.	9	67%
Electronics B.S.	32	60%
Manufacturing A.S.	2	50%
Manufacturing B.S.	13	62%
Metals Tech. A.S.	6	33%
Railroad Operations A.S.	1	100%
Water Quality A.S.	11	55%
Water Quality B.S.	8	63%

Note. A.S. = Associate of Science Degree; B.S. = Bachelor of Science Degree
B.T. = Bachelor of Technology Degree.

Clearly, some technical programs did considerably better and some did considerably worse than the institutional average of 68% retaining their students from Fall semester of 1996 to the Fall semester of the following school year.

Need for the Study

MSUN had an average graduation rate of 28.2% for a six year cohort beginning Fall semester 1988 compared to an average graduation rate of 42.5% with its peer institutions

(AASCU, 1995). This difference in graduation rate suggests a need to study persistence at MSUN.

Initial attrition research centered on psychological attributes that defined the dropout-prone student. This line of inquiry resulted in few significant results and contradictory profiles (Pantages and Creedon, 1978).

Nationally, student attrition has remained fairly constant at about 45% for the past century (Tinto, 1982a). Tinto (1982b, 1989) estimated that 57% of all freshmen leave college without completing a degree. Porter (1989) indicated that only 15.5% of students at four year institutions graduate in four years and Johnson (1994) reported that 42% of full-time students who entered a university in 1985 failed to get a degree from that university within five years.

Beal & Noel's (1980) national survey indicated that retention rates vary from one type of post-secondary institution to another and by programs within institutions. Consequently, one can not necessarily apply predictors of success found in previous and more generic retention studies of large urban institutions, vocational schools, community colleges, or liberal arts colleges as predictors of success in technical majors at MSUN.

There were few studies of different disciplines within comprehensive institutions that could help differentiate predictors of success among diverse majors. Hativa and Marinovich (1995) found that "issues related to disciplinary differences continue to be vaguely defined and underexplored". Of the literally thousands of studies of teaching, learning, and teacher evaluation in higher education, very few have examined disciplinary differences" (p. 2).

Academic disciplines exist in different types of colleges and universities, and the distinctive missions of these institutions may work to enhance or diminish the significance of different predictors of success. Thus, the distinctive disciplinary perspectives regarding undergraduate education curriculum noted by Lattuca and Stark (1994, 1995) must be considered within the institutional context where respective disciplines exist, as those differences are not consistent across the diverse types of colleges and universities. To neglect disciplinary or institutional context is to risk an incomplete, and potentially misleading, picture of undergraduate education in American higher education (Smart & Ethington, 1995).

