A STUDY OF THE EFFECT OF DIFFERING BACKGROUND

FACTORS ON THE LEVELS OF ACHIEVEMENT OF STUDENTS IN

BUSINESS PROGRAMS AT A COMMUNITY COLLEGE

by

Cyril Kesten

An Abstract

Of a thesis submitted in partial fulfillment of the requirements

for the degree of

Master of Education in the

Department of Mathematics and Natural Sciences

The University of Manitoba

October, 1977

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ABSTRACT

The problem of this study was to determine if students, who with certain background factors and who are enrolled in business programs at Red River Community College, achieve significantly different grades and grade point averages in the courses at Red River Community College than do students enrolled in the same business programs but who have different background factors.

The background factors considered were: (a) high school business education experience; (b) method of entry into Red River Community College; and (c) sex of the student.

The population considered was students who had graduated from high school and had subsequently completed the first two semesters in one of five business programs at Red River Community College during the three year period considered.

Data concerning the student's high school history, the student's academic record at Red River Community College and the student's sex were obtained from the Red River Community College files.

Three-way analysis of variance was used to compare grades and grade point averages of students differentiated by these independent factors: (1) Sex; (2) high school business education experience; (3) direct or indirect entry to Red River Community College.

Major conclusions of this study were:

1. High school experience in business education has little or no effect on the overall performance (grade point average) of a student in the first two terms of a business course at Red River Community College.

2. High school experience in specific business courses has
    little or no effect on a student's performance in related
    courses in the first two terms of a business program
    at Red River Community College.

3. There is little, if any, differentiation between male and
    female students in overall performance (grade point
    average) or in individual course performance in the first two
    terms of business programs at Red River Community College.

4. A delay of some period of time in entering Red River
    Community College after graduation from high school has a
    positive effect on the overall performance (grade point
    average) and individual course performance of students in
    business programs.

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Introduction

Business education in Manitoba has greatly increased over the past few years as the need for skills in the business areas has grown. More business education programs have appeared in Manitoba high schools. The programs in the community colleges have also developed to a great extent.

In the ten-year period 1962 to 1972, the number of business education teachers in Manitoba rose from 119 to 217. Three distinct areas of teacher specialization in business education have been developed: accounting, secretarial, and marketing.[1] Data processing facilities and courses have also been established across the Province.

Six regional comprehensive high schools were built at different locations in Manitoba under a Federal Act which provided monies. These regional comprehensive schools are housed in large modern buildings and use the most modern equipment available. These schools are comprehensive in program providing both vocational and academic course offerings. All have well developed business education programs.

This increase in the availability of business education programs in the Manitoba high schools has encouraged more and more students to

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[1]Province of Manitoba, Minister of Education, Department of Education, 1971-1972 Annual Report, (Winnipeg: Queen's Printer for Manitoba, 1972).

take business education in high school. In this same ten-year period
(1962 to 1972), the student enrollment in the vocational business educa-
tion programs has grown from 1,586 to 5,664.[2] The number of students
enrolled in a business education course as an elective increased to
39,928 by 1973,[3] an increase of 125% over the enrollment in 1968.

Annual reports of the Vocational Branch of the Department of
Education have indicated that these high school programs are not merely
survey type programs but do teach skills which can be used for: personal
use, summer and career employment, or post-secondary education.[4]

I. M. Dryden, Provincial supervisor of business education programs
in Manitoba, stated:

> Business education in its broadest sense provides
> specialized instruction for those who plan to
> become wage earners in business, a background of
> business understanding to develop a degree of
> economic competency and personal use skills for
> all pupils, and the basic and background instruc-
> tion for those who have an interest in pursuing
> post-secondary education.[5]

The Canadian Association of Business Education Teachers, more
specifically stated that business education should try "to assist students
in further education and especially in business and related fields."[6]

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[2]Province of Manitoba, Minister of Education, Department of
Education, Report of the Department of Education for the Year Ending
June 30, 1962. (Winnipeg, Queen's Printer for Manitoba, 1962).

[3]I. M. Dryden, "Business Education in Manitoba Secondary Schools,",
Manitoba Spectra, Vol. II, No. 1 (February, 1975), pp. 3-16.

[4]Province of Manitoba, Minister of Education Department of Education,
1968-69 Annual Report, (Winnipeg: Queen's Printer for Manitoba, 1969),
pp. 49-50.

[5]Dryden, Loc. Cit.

[6]Canadian Association of Business Education Teachers, "Philosophy
for Business Education," Manitoba Spectra, Vol. III, No. 1 (January,
1976), p. 36.

The community college programs also provide business education in Manitoba. Manitoba has three community colleges--the Assiniboine Community College (ACC) at Brandon, the Keewatin Community College (KCC) at The Pas and Red River Community College (RRCC) at Winnipeg.

The growth of Red River Community College is illustrated by the increase in instructors from 1961-62, to 1971-72. In 1961-62, 40 instructors were involved in all of the colleges programs while in 1971-72, 336 instructors were employed with 177 in applied arts, business and teacher education areas.[7] In 1948, 3 courses were offered in the business area--bookkeeping, shorthand refresher, and typewriting as part of the fourteen course calendar.[8] In recent years many courses concerning every segment of business have been offered.

The community colleges have offered wide varieties of courses and attracted many different categories of students. This attraction of large numbers of students (26,406 in 1971-72)[9] was due in part to the philosophy of the governmental department which controlled the community colleges. This philosophy, which set up the community colleges as a "skills provider" in their early years, has modified its purpose to fit the following statement:

> The community college division provides a range of
> courses for students on a full and part-time basis
> that are post public high school and non-university
> in nature. The colleges are designed to serve a
> broad spectrum of adult clientele interested in
> career education and personal development, including
> youth leaving the public school system, economically,

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[7]Province of Manitoba, Minister of Colleges and University Affairs, Community College Division, Review and Development Section, A History of Community Colleges in Manitoba, (Winnipeg, Queen's Printer for Manitoba, 1973), p. 28.

[8]Ibid. p. 32.

[9]Ibid. p. 62.

> socially, or educationally disadvantaged adults,
> unemployed or marginally employed members of the
> labour force, apprentices, and individuals from
> the general public interested in pursuing studies
> in vocational or technical education.[10]

Thus the community college has provided services useful to high school graduates who came to the colleges directly from high school; to high school graduates who had graduated in the past and who felt the need for further training; and to students who had not graduated from high school.

In order to enter Red River Community College, these students were required to meet the basic requirements in the programs in which they were interested. These basic entrance requirements did not generally take into account prior training in the business subjects according to the information given in the 1975-77 calendar. In many cases, high school graduation or an equivalent (General Educational Development Test) was required and in some cases, a completed grade 11 was required.[11] However, no mention was made of required prerequisite courses or experience.

Statement of Problem

The problem of this study was to determine if students, who with certain background factors and who are enrolled in business programs at Red River Community College, achieve significantly different grades and grade point averages in the courses at Red River Community College than do students enrolled in the same business programs but who have different background factors.

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[10]Ibid. p. 9.

[11]Province of Manitoba, Minister of Colleges and University Affairs, Red River Community College, 1975-77, p. 43.

The background factors considered were: (a) high school business education experience; (b) method of entry into Red River Community College; and (c) sex of the student.

Questions and Hypotheses

Questions

When the stated objectives of the high school business education programs and the apparent disregard of prior experience in placing students at Red River Community College were considered together, answers to the following questions were needed:

1) How did students in business programs at Red River Community College who had taken business education courses in high school compare in terms of grade point average on courses taken at Red River Community College with students in the same business programs at Red River Community College who had not taken business education courses in high school?

2) How did students in business programs at Red River Community College who had taken certain business education courses in high school compare in terms of grades in related courses at Red River Community College with students in business programs at Red River Community College who had not taken related business education courses in high school?

3) What were the influences of the following factors on the differences found?
   a. sex
   b. direct entry to Red River Community College upon graduation from high school
   c. indirect entry to Red River Community College upon graduation from high school.

Hypotheses

Possible answers to the above questions give rise to a number of hypotheses. These, stated in null hypothesis form, are:

1. There will be no significant difference in first term grade point average for students enrolled in Business Accountancy, who were classified according to three factors: sex, entry to Red River Community College and high school business education background.

2. There will be no significant difference in first term grade point average for students enrolled in Business Administration, who were classified according to three factors: sex, entry to Red River Community College, and high school business education background.

3. There will be no significant difference in first term grade point average for students enrolled in Computer Analyst/ Programmer, who were classified according to three factors: sex, entry to Red River Community College, and high school business education background.

4. There will be no significant difference in first term grade point average for students enrolled in Secretarial Science, who were classified according to three factors: sex, entry to Red River Community College, and high school business education background.

5. There will be no significant difference in second term grade point average for students enrolled in Business Accountancy, who were classified according to three factors: sex, entry to Red River Community College, and high school business education background.

6. There will be no significant difference in second term grade point average for students enrolled in Business Administration, who were classified according to three factors: sex, entry to Red River Community College, and high school business education background.

7. There will be no significant difference in second term grade point average for students enrolled in Computer Analyst/ Programmer, who were classified according to three factors: sex, entry to Red River Community College, and high school business education background.

8. There will be no significant difference in second term grade point average for students enrolled in Secretarial Science, who were classified according to three factors: sex, entry to Red River Community College, and high school business education background.

9. There will be no significant difference in grade received in ACNT-160 (Accounting) by students who were enrolled in Business Accountancy, classified according to three factors: sex, entry to Red River Community College, and high school business accounting background.

10. There will be no significant difference in grade received in ACNT-164 (Mathematics) by students who were enrolled in Business Accountancy, classified according to three factors: sex, entry to Red River Community College, and high school business mathematics background.

11. There will be no significant difference in grade received ADMN-217 (Data Processing) by students who were enrolled in Business Accountancy, classified according to three factors: sex, entry to Red River Community College, and high school data processing background.

12. There will be no significant difference in grade received in ADMN-106 (Business Law) by students who were enrolled in Business Accountancy, classified according to three factors: sex, entry to Red River Community College, and high school business law background.

13. There will be no significant difference in grade received in ACNT-260 (Accounting) by students who were enrolled in Business Accountancy, classified according to three factors: sex, entry to Red River Community College, and high school accounting background.

14. There will be no significant difference in grade received in ACNT-261 (Accounting) by students who were enrolled in Business Accountancy, classified according to three factors: sex, entry to Red River Community College, and high school accounting background.

15. There will be no significant difference in grade received in ADMN-101 (Accounting) by students who were enrolled in Business Administration, classified according to three factors: sex, entry to Red River Community College, and high school accounting background.

16. There will be no significant difference in grade received in ADMN-102 (Economics) by students who were enrolled in Business Administration, classified according to three factors: sex, entry to Red River Community College, and high school economics background.

17. There will be no significant difference in grade received in ADMN-106 (Business Law) by students who were enrolled in Business Administration, classified according to three factors: sex, entry to Red River Community College, and high school business law background.

18. There will be no significant difference in grade received in ADMN-110 (Business Mathematics) by students who were enrolled in Business Administration, classified according to three factors: sex, entry to Red River Community College, and high school business mathematics background.

19. There will be no significant difference in grade received in ADMN-201 (Accounting) by students who were enrolled in Business Administration, classified according to three factors: sex, entry to Red River Community College, and high school accounting background.

20. There will be no significant difference in grade received in ADMN-202 (Economics) by students who were enrolled in Business Administration, classified according to three factors: sex, entry to Red River Community College, and high school economics background.

21. There will be no significant difference in grade received in ADMN-217 (Data Processing) by students who were enrolled in Business Administration, classified according to three factors: sex, entry to Red River Community College, and high school data processing background.

22. There will be no significant difference in grade received in ADMN-210 (Business Mathematics) by students who were enrolled in Business Administration, classified according to three factors: sex, entry to Red River Community College, and high school business mathematics background.

23. There will be no significant difference in grade received in CBOM-140 (Accounting) by students who were enrolled in Clerical Bookkeeping, classified according to three factors: sex, entry to Red River Community College, and high school accounting background.

24. There will be no significant difference in grade received in CBOM-144 (Business Mathematics) by students who were enrolled in Clerical Bookkeeping, classified according to three factors: sex, entry to Red River Community College, and high school business mathematics background.

25. There will be no significant difference in grade received in CBOM-243 (Data Processing) by students who were enrolled in Clerical Bookkeeping, classified according to three factors: sex, entry to Red River Community College, and high school data processing background.

26. There will be no significant difference in grade received in CBOM-224 (Business Mathematics) by students who were enrolled in Clerical Bookkeeping, classified according to three factors: sex, entry to Red River Community College, and high school business mathematics background.

27. There will be no significant difference in grade received in CBOM-240 (Accounting) by students who were enrolled in Clerical Bookkeeping, classified according to three factors: sex, entry to Red River Community College, and high school accounting background.

28. There will be no significant difference in grade received in ADMN-101 (Accounting) by students who were enrolled in Computer Analyst/Programmer Program, classified according to three factors: sex, entry to Red River Community College, and high school accounting background.

29. There will be no significant difference in grade received in PROG-101 (Data Processing) by students who were enrolled in Computer Analyst/Programmer Program, classified according to three factors: sex, entry to Red River Community College, and high school data processing background.

30. There will be no significant difference in grade received in PROG-110 (Business Mathematics) by students who were enrolled in Computer Analyst/Programmer Program, classified according to three factors: sex, entry to Red River Community College, and high school business mathematics background.

31. There will be no significant difference in grade received in ADMN-111 (Economics) by students who were enrolled in Computer Analyst/Programmer Program, classified according to three factors: sex, entry to Red River Community College, and high school economics background.

32. There will be no significant difference in grade received in ADMN-201 (Accounting) by students who were enrolled in Computer Analyst/Programmer Program, classified according to three factors: sex, entry to Red River Community College, and high school accounting background.

33. There will be no significant difference in grade received in PROG-201 (Data Processing) by students who were enrolled in Computer Analyst/Programmer Program, classified according to three factors: sex, entry to Red River Community College, and high school data processing background.

34. There will be no significant difference in grade received in PROG-210 (Business Mathematics) by students who were enrolled in Computer Analyst/Programmer Program, classified according to three factors: sex, entry to Red River Community College, and high school business mathematics background.

35. There will be no significant difference in grade received in ADMN-101 (Accounting) by students who were enrolled in Secretarial Science, classified according to three factors: sex, entry to Red River Community College, and high school accounting background.

36. There will be no significant difference in grade received in ADMN-111 (Economics) by students who were enrolled in Secretarial Science, classified according to three factors: sex, entry to Red River Community College, and high school economics background.

37. There will be no significant difference in grade received in ADMN-201 (Accounting) by students who were enrolled in Secretarial Science, classified according to three factors: sex, entry to Red River Community College, and high school accounting background.

Definitions

The following are definitions of the terms used in this study:

1) Direct Entry Student	-	An individual enrolled in a program at Red River Community College in the same calendar year as graduated from high school.
2) Indirect Entry Student	-	An individual who enrolled in a program at Red River Community College at least one year after graduating from high school.
3) Program	-	A program referred to a complete one or two year offering of courses at Red River Community College which led to the issuance of a certificate or diploma such as the Computer Analyst/ Programmer Program.
4) Course	-	A course is the constituent sections of study of each program designated by a combination of letters and numbers, such as ACNT-160.
5) Business Education	-	"That area of education which develops skills, attitudes and understandings essential for the successful direction of business relationships."[12]

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[12]C. V. Good, Ed., Dictionary of Education (Third Edition, New York: McGraw Hill, 1973), p. 75.

Delimitations

This study was delimited by the following factors:

1) The study was confined to a comparison of teacher-assessed grades.

2) The study was confined to high school graduates enrolled in Business Accountancy, Business Administration, Clerical Book-keeping, Computer Analyst/Programmer, and Secretarial Science for the period September, 1972 - June, 1974.

3) The study was confined to those students who had completed, successfully or unsuccessfully, the first two terms of the program of study prescribed for their particular Red River Community College program.

4) The study was confined to the information found in the files available at Red River Community College.

Limitations

This study was limited by the following factors:

1) The findings in this study are limited in that any comparison of teacher assessed grades has inherent limitations--eg. teacher bias, student attitude, motivation, etc.

2) The findings in this study are limited in that no consideration was given to factors which influence grades--eg. motivation, environment, teachers, etc.--other than those which are listed in the Statement of Problem.

Organization of Thesis

The delineation of the problem and its supporting rational are presented in this chapter. Chapter two contains a review of the litera-ture pertinent to this study. Chapter three describes the research procedures used and the fourth chapter presents the results of the analysis of variance statistical treatment of the data presented in chapter three. The final chapter, five, summarizes the findings and presents conclusions, recommendations, and suggestions for further study.

Chapter 2

REVIEW OF RELATED LITERATURE

Introduction

A study of selected professional literature in education revealed
reports which fell into three basic areas of interest. These were:
the purposes and functions of community colleges; the purpose and function
of secondary schools; and, the effect of certain student backgrounds
and characteristics on their performance in a post-secondary setting.

The Community College

Background and Functions - Canada

Virtually the only comprehensive analysis of Canadian community
colleges was performed by Campbell.[1] This report (1971) discusses the
lack of research concerning the Canadian community college movement and
the inaccessibility of much of the information about these institutions.
The difficulty in obtaining pertinent information is magnified by the
different methods and emphases of recordkeeping in the different provinces.

Education in Canada is a societal function that is controlled by the
individual Provincial governments. It is for this reason that the
specifics of the growth and development of the community colleges which

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[1]Gordon Campbell, Community Colleges in Canada, (McGraw-Hill, Co.,
1971), p. xviii.

affect the present day functions and goals are different from province
to province. However, because of some common historical influences, the
influence of the federal government and the dialogue between provinces,
some overall generalizations can be made about Canada's community colleges.

The present form of Canada's community colleges evolved out of
junior colleges, most of which had been church established and adminis-
tered.[2] However, Mitchener[3] indicated that even though an institution
could be considered a junior college if it offered less than the first
degree and more than high school, several post high school technical
institutes were invariably excluded. Ultimately, these technical schools
had an important impact on the present day community college.

These junior colleges, technical schools, and other colleges more
recently established have evolved into institutions which bear names
such as Community College (Manitoba), Colleges of Applied Arts and
Technology (Ontario), and Colleges D'Enseignement General et Professionnel
(Quebec). These institutions with such diverse names generally can be
defined as "non degree granting public or private insitutions offering
vocational or university parallel studies or both in programs of one, two,
or three years' duration."[4]

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[2] Ibid., p. 5.

[3] R. D. Mitchener, "Junior College in Canada," Junior College Journal,
Vol. III, No. 7 (March, 1960), pp. 407-408.

[4] Campbell, op. cit., p. 7.

Campbell[5] maintains the functions of these institutions are to:

1. offer technical programs (preparation and retraining)
2. offer university parallel courses
3. offer continuing education to serve adult part-time students
4. offer counseling services
5. offer programs to improve the civic, cultural, and recreational aspects of the community.

He also implies that the goals of these institutions should be to:

1. have liberal admissions policies
2. be of use to university bound and vocational preparation students
3. serve the entire community
4. be accessible financially and geographically
5. be of help to students in need of counseling
6. have a faculty who are flexible enough to respond to the demands of business, the community at large, and the students.

Background and Functions - Manitoba

The Department of Colleges and University Affairs[6] of the Government of Manitoba has published a brief history and description of Manitoba's community colleges. This document indicates that the community colleges had their roots in the vocational training institutions organized in the Manitoba schools early in the twentieth century.

By 1966, these training schools had evolved into The Manitoba Institute of Technology in Winnipeg, The Manioba Vocational Center in Brandon, and The Northern Manitoba Vocational Center at The Pas.

On December 15, 1969, the vocational centers were officially designated community colleges.

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[5] Ibid., p. 8.

[6] Government of Manitoba, Department of College and University Affairs, Community Colleges Division, Review and Development, A History of Community Colleges in Manitoba.

The change in the goals and philosophies of these institutions
follows the change in their environment and their names. Prior to 1960,
the basic goals of Manitoba's non-university, post-secondary educational
institutions was "to provide training that would equip individuals with
marketable skills that would enable them to compete effectively for job
openings available in Manitoba."[7] The philosophy was 'learn to earn'.

The goals of the vocational insitutions underwent a gradual tran-
sition until the new philosophy was recognized as moving toward a more
generalizable type of education and the names were changed to community
college.

The philosophy of Manitoba's community colleges is represented in a
statement of the Manitoba Community Colleges Council:

> The Manitoba Community College system is an organ-
> ization of learning environments responsive to the
> needs of the community, offering flexible, technical,
> and liberal education programs of a type and variety
> which will inspire and enable individuals to develop
> themselves to the fullest and thereby contribute to
> the enrichment of their community.
> The programs, on a full or part-time basis, provide
> continuing education, retraining, and upgrading for
> individuals seeking personal and occupational
> development.
> Instruction may be carried out with accreditation in
> any effective location; on the campus or in other
> locations such as industrial or commercial sites,
> urban or rural centers, remote communities, or
> through correspondence, the communications media, or
> any combination of these.[8]

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[7]Ibid., p. 5.

[8]Ibid., p. 7.

The community college's specific objectives are:

a. to help adults, who are at a disadvantage because they are
    lacking in basic communications, computational and problem-
    solving skills, to gain sufficient educational competencies
    for entry into occupational skills training, or further
    education.

b. to assist individuals who are potential new entrants to the
    labor force, labor force participants wishing to upgrade or
    to develop new skills, to acquire the foundation skills for
    entry into specific occupations of their choice; and to pro-
    vide apprentices with the theoretical training required for
    the attainment of journeyman status.

c. to meet particularized development needs of individuals as
    defined by industry, agriculture, and the business sectors
    and the general public which are not met through traditional
    institutionally oriented training, by providing evening and
    special courses and industry-based arrangements.

d. to make resources, facilities, and staff competencies
    available to support community development and recreational
    needs and to provide consultative assistance to public agencies.[9]

The Community College - United States

The community college in the United States has had considerably more

attention paid to it than has been the case in Canada. The overwhelming

influence the United States has had on Canada in all areas is once again

evidenced in the area of education which the community colleges occupy.

Research studies such as Medsker and Tillery[10] and others describe in

great detail the student, faculty, physical layouts, and administration

of community colleges. Most of the literature concerned with the goals

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[9] Ibid., p. 8.

[10] L. L. Medsker, D. Tillery, Breaking the Access Barrier, (McGraw-
Hill, 1971).

and functions of the community college, however, consists of general discussions of the nature and use of the community college concept. In the cases cited below the frequency and similarity of the concepts discussed leads to the notion that these concepts are in fact based on observed reality.

Although Palinchak asserts that "definitive statements about the philosophy and function of the two-year college are hard to find"[11], a search of the literature uncovers several attempts to produce such statements.

Palinchak[12] suggests that the goals of higher education be:

1. universal access to as much relevant higher education as students can handle

2. the existence of a great variety of institutions and programs

3. freedom from financial constraints in selecting educational institutions

4. academic freedom

5. efficiency and equity in allocating the costs of higher education.

In agreement with these goals, Blocker, Plummer, and Richardson have defined the community college as a "comprehensive two-year college which offers post high school education programs to meet the needs of the community."[13] Thornton presents a very similar definition. He

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[11]R. Palinchak, The Evolution of the Community College, (Scarecrow Press, 1973), p. 1.

[12]Ibid., p. 125.

[13]Clyde E. Blocker, Robert H. Plummer, R. C. Richardson, The Two-Year College: A Social Synthesis, (Englewood Cliffs, N.J., Prentice-Hall, Inc., 1965), p. 23.

states that a community college is a "free public two-year educational
institution that attempts to meet the post high school educational needs
of its local community."[14]

Background - United States

These definitions reflect the influences of the community college's
history. The Carnegie Commission on Higher Education[15]reports that the
community college evolved in the United States out of a tradition of
small colleges and academies prevalent at the turn of the century. At
this time the concept of the bifurcated university was strongly advocated
by such people as William Rainey Harper, the president of the University
of Chicago and the so-called 'Father of the Junior College', and other
well-known university presidents. This set the stage for the development
of colleges which offered university courses which paralleled those
offered in the first two years of a four-year university.

Blocker, Plummer, and Richardson[16]believe that because the heritage
of the community college is based on this transfer function performed by
the original junior colleges; the transfer of students to universities
has become an important part of the present day community college structure.

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[14]James W. Thornton, Jr. The Community Junior College, (2nd ed.),
(New York, John Wiley & Sons, Inc., 1966), p. 277.

[15]The Carnegie Commission on Higher Education, The Open-Door College-
Policies for Community Colleges. (New York, McGraw-Hill Book Company,
1970), p. 9.

[16]Blocker, op. cit., p. 31.

The combination of this lower division institution and the rapidly expanding comprehensive high schools gradually evolved into what is now commonly know as the community college.[17]

Goals and Functions - United States

These community colleges have been described in the literature as possessing certain characteristics and performing certain functions which allow them to achieve their goals.

Thornton[18] believes that today's community colleges are based on the following principles:

1. A democratic society cannot exist without a well-educated citizenry.

2. Education should be provided for all citizens who desire and can profit from further study.

These principles are characterized by Edmund Gleazer, Executive Director of the American Association of Junior and Community Colleges, who states that the "major assignment of the community college is to extend educational opportunity."[19]

This goal of providing extended educational opportunities is expanded by Crawford[20], who states that a goal of the community colleges

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[17]Carnegie Commission, op. cit., p. 11.

[18]Thornton, op. cit., p. 33.

[19]Edmund J. Gleazer, Jr. This is the Community College, (Houghton, Mifflin Company, 1968), p. 46.

[20]Ferris N. Crawford, A Twentieth Century Institution - The Community College, Address Delivered at Southwestern College Agreement, Battle Creek, Michigan, November 16, 1961, cited by Clyde E. Blocker, Robert H. Plummer and R. C. Richardson, The Two-Year College: A Social Synthesis, (Englewood Cliffs, N.J., Prentice-Hall, Inc., 1965), p. 33.

should be to include:

1. liberal arts and science courses
2. vocational and technical programs
3. programs for adults and other non-day students
4. guidance and counseling
5. cultural, civic, recreational, and other community betterment projects.

Gleazer[21] believes that a goal of the community college is to fill

the needs expressed by the community. These needs include:

1. career development
2. individual development
3. family development
4. institutional services.

The Carnegie Commission[22] set the following goals for American

community colleges:

1. open access to all public community colleges
2. the removal of all financial barriers to enrollment
3. a state plan for development of community colleges in every state
4. comprehensive programs which provide meaningful learning opportunities in all public two-year institutions of higher learning
5. a community college within commuting distance of every potential student
6. low or no tuition in community colleges
7. adaption of occupational programs to changing manpower requirements and full opportunities for continuing adult education.

In order to achieve these goals the literature suggest that certain

characteristics be present in the community college structure. Field[23]

basically covers the whole area in this list of basic characteristics.

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[21] Edmund J. Gleazer, "After the Boom...What Now For the Community College?", Community and Junior College Journal.

[22] Carnegie Commission, op. cit., p. 51.

[23] Ralph R. Field, The Community College Movement, (New York, McGraw-Hill Book Company, 1962), p. 63.

He suggests that the community college ought to be:

1. democratic
2. comprehensive
3. community oriented
4. dedicated to life-long learning
5. adaptable

The goals and characteristics just described must be reflected in the day-to-day functionings of the community college. It is to this end that Thornton[24] describes the functions of a community college. He believes that today's community colleges should have as their functions:

1. occupational education at a post high school level
2. general education for all categories of its students
3. transfer or professional education
4. part-time education
5. community service
6. the guidance and counseling of students.

Summary

The community college concept presented here depicts these colleges to be open-door, democratic institutions interested in allowing a student to achieve his goal. This is reflected in the concentration on the guidance of entering students into programs which can realistically be achieved by the student considering the student's level of achievement and experience.

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[24]Thornton, op. cit., p. 59.

Secondary Education

Purposes of Secondary Education - General

Hefty described the necessity of defining the purposes of secondary education in a succinct manner when he stated that "any institution the purpose of which is not specific is likely to be ineffective."[25]

The purposes of secondary education are difficult to state because they are dictated by the society in which they are created. North American society is so diverse and is undergoing such constant change that the concise purposes of the secondary schools are very elusive.

Hefty isolates three areas from which tremendous pressure is exerted upon the secondary schools. These areas are: the legislatures, the courts, and political power organizations.[26]

As early as the turn of the century, Stout declared that the purpose of secondary education was 'social efficiency', which he defined as "fitness on the part of the individual to meet the demands which society will make upon him."[27] These demands, as Stout outlined them included preparation for college, civic, and vocational demands.

Since Stout's time, professional and governmental agencies have attempted to codify the purposes of the high school.

In 1918, the Seven Cardinal Principles were delineated after

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[25]J. C. Hefty, "Charting the Purposes of Secondary Education: An Imperative and Exigent Task," The North Central Association Quarterly, Vol. 49, No. 3, (Winter, 1975), p. 345.

[26]Ibid., p. 346.

[27]John Elbert Stout, The High School, Its Functions, Organization, and Administration, (Chicago, D. C. Heath & Co., 1914), p. 319.

assessing the needs of youth, the current status of the high schools,

and the perceived social purposes of secondary education. These seven

principles were:

1. Health
2. Command of fundamental processes
3. Vocational efficiency
4. Worthy home membership
5. Citizenship
6. Worthy use of leisure
7. Ethical character[28]

Always recognizing the need to reevaluate and update, the National

Education Association instructed their Educational Policies Commission

in 1938, to determine what the nature of the purposes of secondary

education was at that time. The statement that resulted highlighted the

following purposes:

1. Self realization
2. Human relationships
3. Economic efficiency
4. Civic responsibility[29]

In 1960, The President's Commission on National Goals[30] recommended

that the high schools preserve and strengthen the tradition of encouraging

each student to attain his maximum potential.

A study which analyzed the published statements of thirty-seven

states was conducted by the National Commission on the Reform of

Secondary Education in 1973. It determined that there were two basic

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[28] Commission on the Reorganization of Secondary Education, Cardinal Principles of Secondary Education, (United States Office of Education, Bulletin 35, 1918), p. 10.

[29] Education Policy Commission, The Purposes of Education in American Democracy, (Washington D.C., National Education Association and American Association of School Administrators, 1938), p. 157.

[30] The President's Commission on National Goals, Goals For Americans, (Prentice-Hall, Inc., 1960), p. 84.

types of goals for secondary education as perceived by the states.

These goals and the subgoals included in each were:

1. Content Goals

    a. Communication skills
    b. Computational skills
    c. Proficiency in critical and objective thinking
    d. Occupational competency
    e. Understanding of the environment
    f. Economic understanding
    g. Citizenship

2. Process Goals

    a. Knowledge of self
    b. Appreciation of others
    c. Ability to adjust to change
    d. Understanding and respect for law and authority
    e. Clarification of values
    f. Appreciation of the achievements of man.[31]

Alexander, Saylor, and Williams, authors of a widely used principles

of secondary education text summarized the functions of the secondary

schools as being:

1. universal education
2. developement of individual potentials
3. transmission of the cultural heritage
4. development of socially acceptable system of values
5. use of intelligence in decision-making and action
6. provide the basis for continual personal development
7. enhancement of the life of the social group
8. preparation for adulthood.[32]

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[31]The National Commission on the Reform of Secondary Education, The Reform of Secondary Education: A Report to the Public and the Profession (New York, McGraw Hill, 1973), pp. 31-34.

[32]W. M. Alexander, J. Galen Saylor, E. L. Williams, The High School, Today, and Tomorrow, (Hall, Rinehart, & Winston, Inc., 1971), p. 129.

Purposes of Secondary Education - Manitoba

In 1971, the Core Committee examined the secondary school system in Manitoba and made the following statements concerning the eight basic goals and principles which they believe should be integral parts of the philosophy of Manitoba's schools.

Concerning the needs of the individual, the Core Committee stated that, "the needs of the individual are central and constitute the focal point for the efforts of the school."[33]

The student should have some freedom in choosing the kind of desired education and exercise some responsibility in making those choices. The Committee states that "young people would come to understand the need to assume responsibility for their own decisions, the need to rely on themselves, not others, the need to perceive the essential relationship between choice and responsibility."[34]

Learning and knowledge play an important place in the functions of the secondary school. The Committee believes that because of the vast amount of knowledge that has accumulated, high schools "must be selective in its programming of the disciplines." However, it goes on to say that "the system must give, also, added emphasis to the essential principles of learning, and to developing the ability and desire to learn independently."[35]

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[33] Government of Manitoba, Department of Education, The Core Committee Report, p. 8.

[34] Ibid., p. 9.

[35] Ibid., p. 10.

Concerning values, the schools must "provide the means that will, on the one hand, enable students to examine the premises that underly these conventional values, and, on the other hand, to be sensitive to the different value systems that exist within our society."[36]

The fifth goal of secondary schools as stated by the Core Committee is summed up in the following statement: "The school always has some responsibility for personal and social development by making provision for a variety of opportunities to develop self-confidence, individual initiative and responsibility to self and society, in a setting in which experiences will help each student learn and enjoy physical and recreational activity and to accept himself and others."[37]

Employment is considered in the following manner: "One of the school's goals must be to help prepare young people to enter some useful area of employment, whether this employment be immediate or following further education or training in a post-secondary institution."[38]

The Core Committee believes that evaluation is an important function of the secondary school, but "there must be developed evaluative techniques which have been cooperatively evolved by both the evaluator and those being evaluated."[39]

"Finally, the task of the school program must be the goal of enabling young people to understand and appreciate the heritage of the past, and yet to avoid falling back on tradition as an excuse to resist change."[40]

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[36] Ibid., p. 10.

[37] Ibid.

[38] Ibid.

[39] Ibid.

[40] Ibid.

Purposes of Secondary Education - Business Education

Business education as part of the secondary school curriculum has maintained its place as an attractive alternative or supplement to the other programs offered. Loomis, Lide and Johnson[41] in their study of the secondary school's program of study found great increases in the course offerings and particularly in the non-academic fields of business education.

The literature reveals that the specific goals, purposes, and philosophies are diverse and in many cases, all encompassing. However, as the concern here is on the relationship between secondary business education and post-secondary achievement in business programs, these goals and philosophies will be emphasized.

The National Business Education Association has issued a number of policy statements concerning the various areas of business education. In many of these reference has been made to the potential usefulness of secondary business education in advanced studies in business. A prevailing view upon which these statements may have been based was enunciated by Crank and Crank: "it seems logical to expect that one important phase of education for business on the secondary school level should be the building of a foundation for advanced study in the areas of bookkeeping and accounting, marketing and distribution, business and industrial management, business and corporation finance or economics."[42]

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[41]A. K. Loomis, E. S. Lide, Lamar B. Johnson, The Program of Studies, National Survey of Secondary Education, Monograph No. 19, (Washington D.C., 1933).

[42]Crank and Crank, "New Perspectives in Education for Business," NBEA Yearbook, (Washington D.C., 1963), p. 30.

The policy statements of the NBEA as reported in the 'This We Believe' series, include the following statements concerning secondary business education and post-secondary studies:

1. Business career education in the secondary school may serve as preparation for advance study in business.[43]

2. Business education achieves its goals through...background instruction to assist students in preparing for professional careers requiring advanced study.[44]

3. Business education is desirable for students who plan programs requiring post-secondary and higher education in the field of business.[45]

Roman believes that business education has two basic sets of aims or objectives - basic business education and technical competency education. These can be broken down into the following areas:

1. Vocational competency
2. Business economic understanding
3. Consumer understandings - skills and attitudes
4. Human relation knowledges - skills and attitudes
5. Fundamental processes of communication and computation
6. Personal use competencies
7. Building of a foundation for advanced study.[46]

In Manitoba the business education community responds to policy statements accepted by the Manitoba Business Education Teachers' Association and by the Provincial government as expressed by the Provincial supervisors of business education.

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[43]National Business Education Association, Delta Pi Epsilon and the American Vocational Association, This We Believe About the Role of Business Education in Career Education, (Washington D.C., March, 1973).

[44]National Business Education Association, Delta Pi Epsilon, This We Believe About Business Education in the Secondary School, (Washington D.C.).

[45]Ibid.

[46]John C. Roman, The Business Curriculum, Monograph No. 100, (Chicago, Illinois, 1966), pp. 8-12.

These sources have stated the purposes of business education as being:

1. to develop in all students an understanding of our economic system
2. to assist students to acquire the basic skills and knowledge and attitudes for employment in business
3. to assist students in further education and especially in business and related fields.[47]

Dryden has stated that "business education in its broadest sense provides specialized instruction for those who plan to become wage earners in business, a background of business understanding to develop a degree of economic competency and personal use skills for all pupils, and the basic and background instruction for those who have an interest in pursuing post-secondary education."[48]

Summary

Secondary education attempts to prepare students for their future life and for personal well-being. Business education at the secondary level specifically attempts to prepare students for the future which is going to be associated with the business world. This association will either be direct, as evidenced by a student immediately becoming employed after high school; or indirect, as evidenced by a student going on to post-secondary business education. The philosophy of secondary business education has been to prepare students for both possibilities.

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[47]Canadian Association of Business Education Teachers, "Philosophy for Business Education," Manitoba Spectra, Vol. III, No. 1, (January, 1976), p. 36.

[48]I. M. Drydren, "Business Education in Manitoba Secondary Schools," Manitoba Spectra, Vol. II, No. 1 (February, 1975), p. 3.

Student Background and Characteristics

Another area of concern was the effect of certain student character-
istics and experiences on the student's achievement. Relative age, sex,
and prior academic experience of the student are factors which the liter-
ature has shown can have an effect on the student's achievement.

Age

As this study is concerned with the achievement of normally aged
college students and the achievement of older students, several studies
are presented which compare these two groups of students.

"Adults return to school because they want to change and enhance
their lives. Their mood is one of urgency, and their capacity is one
of maturity."[49]

This statement by Bicknell is supported by many studies which have
looked at the older student's intellectual capabilities and their perfor-
mance in academic settings.

Sorenson in 1933[50] and Dyer in 1956[51] both assert, as conclusions of
their studies, that the differences in the achievement of adult and
'normal' students are very slight.

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[49] J. H. Bicknell, "The older Student Experience in Higher Education,"
The Journal of the National Association for Women Deans, Administrators,
and Counselors, Vol. 39, No. 1 (Fall, 1975), p. 19.

[50] H. Sorenson, Adult Abilities (Minneapolis: University of Minnesota
Press, 1933).

[51] J. P. Dyer, Ivory Towers in the Market Place, (Indianapolis,
Bobbs-Merrill Company, Inc. 1956).

More recently, Stephen and Wheeler[52] studied adult students in attendance at junior colleges and discovered that students twenty-three years old or older generally earned higher grade point averages and in particular students forty years old and older exhibited the highest levels of academic performance.

These studies are typical of research into adult students' achievement levels. The most recent studies generally agree that adult students will attain higher levels of achievement than their younger counterparts. This phenomenon, Bicknell[53] believes is as a result of the following factors:

1. changes in one's self-concept
2. role of previous experience
3. readiness to learn
4. an orientation to learning.

Sex

Achievement differentiated by sex should be considered in terms of comparative advantages in intellectual functions. Anastasi[54], while reporting the comparative advantages given below, remarks on the significant amount of overlap. This is a direct result of the immense individual differences found within each sex. Anastasi reports that males surpass females on standard achievement test items which require numerical reasoning, spatial aptitude and the retention of certain facts in

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[52] W. F. Stephen and J. C. Wheeler, "Facts and Figures," Adult Leadership, (December, 1969), pp. 171-172.

[53] Bicknell, op. cit., p. 18.

[54] A. Anastasi, Differential Psychology (3rd ed.), (New York: The MacMillan Company, 1958), p. 453.

subjects such as history, geography, and science. She also reports that

females surpass males on items which require verbal abilities, memory,

perceptual speed, and accuracy.

It would appear that this comparative advantage displayed on

standardized achievement tests would translate into differentiation in

school performance. De Cecco and Crawford[55], however, state that in

actual school performance females consistently surpass males and that

this phenomenon is consistent through college. Attempts to explain are

as yet in the theoretical stage.

Academic Experience

Many research studies have attempted to ascertain the most beneficial

background for a student to attain to ensure success in a given subject.

Several of the studies in various areas are reported here with emphasis

on the subjects in business education.

Harris[56]studied 221 entering freshmen who registered for mathematics

and who had varying backgrounds. Using college grades in mathematics

as a criterion measure of success, he found that age, sex, and time lapse

between high school and college indicated low or marginal significance.

He, however did indicate that the best predictive variable for success in

first year college mathematics was the last grade earned in high

school mathematics.

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[55]J. P. De Cecco and W. R. Crawford, The Psychology of Learning and Instruction, 2nd ed., (Englewood Cliffs, Prentice-Hall, Inc., 1974), p. 516.

[56]S. L. Harris, Factors Associated With Student Achievement in First Year College Mathematics at Selected Public Junior Colleges in Mississippi, (Unpublished Ph.D. dissertation, University of Southern Mississippi, 1974).

Studies concerned with the affect of high school chemistry upon achievement in college chemistry have been conducted by various researchers over an extended period of time. Ogden[57] reports 24 such studies during the time period 1923-1967. Most studies dealt with establishing appropriate prediction models based on prior experience in chemistry. Ogden summarizes the studies by indicating that most found high school chemistry to be of value in preparing for college chemistry. However, the exact magnitude of the value was hard to establish because of the wide discrepancies among the studies.

Extensive research has been performed in the area concerning the effect of prior experience in accounting (ie. high school courses taken) with achievement in beginning college accounting.

In 1955, Barbour[58] found that students believed that high school bookkeeping was a benefit to those students who go on to take college accounting and that bookkeeping teachers agree with the students on this point. In the study, Barbour's data confirmed the students' belief by finding that students with a background in bookkeeping do make significantly higher grades in first semester accounting.

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[57]W. R. Ogden, "The Affect of High School Chemistry Upon Achievement in College Chemistry: A Summary", School Science and Mathematics, Vol. LXXVI, No. 668, (February, 1976), p. 122-126.

[58]E. H. Barbour, The Effect of the Study of High School Bookkeeping upon Achievement in Elementary College Accounting, (Unpublished Ph.D. dissertation, Ohio State University, 1955).

Larsen's[59] study in 1957 and Smith's[60] in 1968 support Barbour's
conclusions.

Stumbaugh[61] carried this line of research further when he attempted
to determine the effect of high school bookkeeping and college algebra
on a course in elementary accounting. He found that for his population,
the group which obtained backgrounds in both college algebra and high
school bookkeeping attained the highest level of success.

Herlong[62], after establishing equivalency regarding achievement
and mental ability among three years of elementary accounting students
at a junior college, found that there was no significant difference
between the achievement in college elementary accounting of those students
who had studied high school bookkeeping and those students who had not
studied the course.

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[59]T. M. Larsen, "A Study of the Student Personnel Records at
East Carolina College as Relates to Prediction in Elementary Accounting,"
(Unpublished Ph.D. dissertation, University of Minnesota, 1957).

[60]J. W. Smith, "Articulation of High School Bookkeeping and
College Elementary Accounting," (Unpublished Ph.D. dissertation, University
of Oklahoma, 1968).

[61]C. C. Stumbaugh, "The Effect of College Algebra and High School
Bookkeeping on Achievement in the Second Course of Elementary
Accounting," (Unpublished Ph.D. dissertation, University of Oklahoma,
1975).

[62]J. K. Herlong, "A Comparison of the Effects of High School
Bookkeeping on Final Elementary Accounting Grades of Students at
Gadsden State Junior College," (Unphblished Ed.D. dissertation,
University of Alabama, 1974).

Summary

This review of literature has indicated that community colleges attempt to provide education for its students based on the students' needs and abilities. It has also shown that secondary education, encompassing business education, is committed to preparing students for a voctional future, a societal future, and an academic future. Achievement in this academic future, the literature has revealed, is also substantially affected by attributes unique to the student - such as experience, age, and sex.

Chapter 3

METHOD OF STUDY

Introduction

This study compares the grades received by various classifications of students, in order to determine the validity of the hypotheses presented in chapter one. This was done by selecting particular groups of students at Red River Community College, finding and recording various facts about each student and then analyzing these findings.

Population

It was decided to study students who had graduated from a high school, who had enrolled in one of five business programs at Red River Community College, and who had successfully or unsuccessfully completed the first two semesters of their program. The dates of enrollment were restricted to September, 1972 to June, 1974. The programs studied and the students selected in each are presented in Table 3.1.

Table 3.1

The Programs Investigated at Red River Community College
and the
Number of Students Selected in Each

Program	Number of Students
Business Accountancy	152
Business Administration	421
Clerical Bookkeeping	108
Computer Analyst/Programmer	113
Secretarial Science	149

Data Collection

After the criteria for selecting the students were established, special worksheets for recording data were designed for each program. Data concerning the students who met the criteria in each program were obtained in the files provided by the registrar's office at Red River Community College and when found were recorded on the worksheets. This data consisted of three basic types - high school information, community college information, and the sex of the student.

The year of high school graduation and whether or not the student had taken certain high school courses in Business Education was determined by examining the high school transcripts available in the files at Red River Community College. This information was recorded on the worksheets for each student in each program.

The information gathered concerning the student's experience at Red River Community College was date of entry to the program, first term grade point average, second term grade point average, and the marks received in selected courses (Tables 3.2 to 3.6). A comparison of the

high school graduation dates and the date of entry into the community college program allowed for the determination of whether or not the student has entered Red River Community College directly upon graduating from high school.

The sex of the student was also recorded on the worksheets. The number of students in each of the categories described above is summarized in the table numbered 3.8 to 3.14.

Table 3.2

Courses Considered in Business Accountancy

Accounting	ACNT 160
Business Mathematics	ACNT 164
Introduction to Computers	ADMN 217
Business Law I	ADMN 106
Accounting	ACNT 260
Cost Accounting	ACNT 261

Table 3.3

Courses Considered in Business Administration

Accounting	ADMN 101
Economic Principles	ADMN 102
Business Law I	ADMN 106
Financial Mathematics	ADMN 110
Accounting	ADMN 201
Economic Principles	ADMN 202
Financial Mathematics	ADMN 210
Introduction to Computers	ADMN 217

Table 3.4

Courses Considered in Clerical Bookkeeping

Accounting	CBOM 140
Business Mathematics	CBOM 144
Data Processing	CBOM 243
Business Mathematics	CBOM 244
Accounting	CBOM 240

Table 3.5

Courses Considered in Computer Analyst/Programmer

Accounting	ADMN 101
Data Processing Programming 1	PROG 101
Data Processing Mathematics 1	PROG 110
Economic Principles	ADMN 111
Accounting	ADMN 201
Data Processing Programming 2	PROG 201
Data Processing Mathematics 2	PROG 210

Table 3.6

Courses Considered in Secretarial Science

Accounting	ADMN 101
Economic Principles	ADMN 111
Accounting	ADMN 201

Statistical Analysis of the Data

The data which were recorded on the worksheet as described in the previous section were then punched on data processing cards. The information which was punched on the data processing cards consisted of the program number, the sex of the student, grade received in the high school subjects, Accounting, Economics, Data Processing, Business Mathematics, or Business Law, first term grade point average, second term grade point average, and the marks received in the courses of interest in each program. (See Tables 3.2 to 3.6)

The statistical analysis was performed on the two distinct sections of the study as reflected in the questions(comparison of grade point averages and comparison of courses grades).

The first analysis concerned itself with a comparison of the grade point averages of students in four programs at Red River Community College differentiated by three independent factors (Table 3.7).

Table 3.7

Plan of Three Factor Analysis of Variance Using Grade Point Average

	Direct	Indirect
M A L E	Any high school business education subjects	Any high school business education subjects
	No high school business education subjects	No high school business education subjects
F E M A L E	Any high school business education subjects	Any high school business education subjects
	No high school business education subjects	No high school business education subjects

Table 3.8

Numerical Description of Classifications

	Business Accountancy		Business Administration		Clerical Bookkeeping	
	N		N		N	
	Male	Female	Male	Female	Male	Female
Number	152		421		108	
	71	81	369	52	2	106
Taken	75		167		35	
	36	39	145	22	1	34
Not Taken	77		254		73	
	35	42	224	30	1	72
Direct	62		179		45	
	23	39	153	26	0	45
Indirect	90		242		63	
	48	42	216	26	2	61

Table 3.8 (continued)

Numerical Description of Classifications

	Business Accountancy		Business Administration		Clerical Bookkeeping	
	N		N		N	
	Male	Female	Male	Female	Male	Female
Taken & Direct		38		89		17
	14	24	76	13	0	17
Taken & Indirect		37		78		18
	22	15	69	9	1	17
Not Taken & Direct		24		90		28
	9	15	77	13	0	28
Not Taken & Indirect		53		164		45
	26	27	147	17	1	44

Table 3.8 (continued)

Numerical Description of Classifications

	Computer Analyst/ Programmer		Secretarial Science	
	N		N	
	Male	Female	Male	Female
Number	113		149	
	69	44	0	149
Taken	39		45	
	24	15	0	45
Not Taken	74		104	
	45	29	0	104
Direct	49		118	
	22	27	0	118
Indirect	64		31	
	47	17	0	31

Table 3.8 (continued)

Numerical Description of Classifications

	Computer Analyst/ Programmer		Secretarial Science	
	N		N	
	Male	Female	Male	Female
Taken & Direct	24		42	
	14	10	0	42
Taken & Indirect	15		3	
	10	5	0	3
Not Taken & Direct	25		76	
	8	17	0	76
Not Taken & Indirect	49		28	
	37	12	0	28

The number of students in each category of Tale 3.7 for each program is presented in Table 3.8.

The second analysis was a comparison of the grades achieved in certain courses at Red River Community College by students differentiated by three independent factors (Table 3.9).

Table 3.9

Plan of Three Factor Analysis of Variance using Course Grades

	Direct	Indirect
M A L E	Taken related high school subject	Taken related high school subject
	Not taken related high school subject	Not taken related high school subject
F E M A L E	Taken related high school subject	Taken related high school subject
	Not taken related high school subject	Not taken related high school subject

The number of students in each category of Table 3.9 for each course in the programs of interest are shown in Tables 3.10-3.14.

The ANOVA subprogram of the Statistical Package for Social Scientists (SPSS)[1] was used to perform an analysis of variance on a

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[1] Norman H. Nie, et. al., Statistical Package for the Social Sciences, 2nd ed., (New York: McGraw-Hill Book Company, 1975), p. 410.

Table 3.10

Numerical Description of Classifications
Business Accountancy

	Accounting		Economics		Data Processing	
	N		N		N	
	Male	Female	Male	Female	Male	Female
Taken	51		34		5	
	21	30	20	14	3	2
Not Taken	101		118		147	
	50	51	51	67	68	79
Taken & Direct	30		12		5	
	12	18	6	6	3	2
Taken & Indirect	21		22		0	
	9	12	14	8	0	0
Not Taken & Direct	32		50		57	
	11	21	17	33	20	37
Not Taken & Indirect	69		68		90	
	39	30	34	34	48	42

Table 3.10 (continued)

Numerical Description of Classifications
Business Accountancy

	Business Law		Business Mathematics	
	N		N	
	Male	Female	Male	Female
Taken		29		7
	15	14	1	6
Not Taken		123		145
	56	67	70	75
Taken & Direct		13		6
	6	7	1	5
Taken & Indirect		16		1
	9	7	0	1
Not Taken & Direct		49		56
	17	32	22	34
Not Taken & Indirect		74		89
	39	35	48	41

Table 3.11

Numerical Description of Classifications
Business Administration

	Accounting		Economics		Data Processing	
	N		N		N	
	Male	Female	Male	Female	Male	Female
Taken	74		105		12	
	64	10	89	16	10	2
Not Taken	347		316		409	
	305	42	280	36	359	50
Taken & Direct	41		60		7	
	37	4	49	11	5	2
Taken & Indirect	33		45		5	
	27	6	40	5	5	0
Not Taken & Direct	138		119		237	
	116	22	104	15	211	26
Not Taken & Indirect	209		197		172	
	189	20	176	21	148	24

Table 3.11 (continued)

Numerical Description of Classifications
Business Administration

	Business Law		Business Mathematics	
	N		N	
	Male	Female	Male	Female
Taken	79		5	
	70	9	5	0
Not Taken	342		416	
	299	43	364	52
Taken & Direct	43		1	
	39	4	1	0
Taken & Indirect	36		4	
	31	5	4	0
Not Taken & Direct	136		178	
	114	22	152	26
Not Taken & Indirect	206		238	
	185	21	212	26

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Table 3.12

Numerical Description of Classifications
Clerical Bookkeeping

	Accounting		Economics		Data Processing	
	N		N		N	
	Male	Female	Male	Female	Male	Female
Taken		20		19		4
	1	19	0	19	0	4
Not Taken		88		89		104
	1	87	2	87	2	102
Taken & Direct		10		8		2
	0	10	0	8	0	2
Taken & Indirect		10		11		2
	1	9	0	11	0	2
Not Taken & Direct		35		37		43
	0	35	0	37	0	43
Not Taken & Indirect		53		52		61
	1	52	2	50	2	59

Table 3.12 (continued)

Numerical Description of Classifications
Clerical Bookkeeping

	Business Law		Business Mathematics	
	N		N	
	Male	Female	Male	Female
Taken		17		2
	0	17	0	2
Not Taken		91		106
	2	89	2	104
Taken & Direct		7		2
	0	7	0	2
Taken & Indirect		10		0
	0	10	0	0
Not Taken & Direct		38		43
	0	38	0	43
Not Taken & Indirect		53		63
	2	51	2	61

Table 3.13

Numerical Description of Classifications
Computer Analyst/Programmer

	Accounting		Economics		Data Processing	
	N		N		N	
	Male	Female	Male	Female	Male	Female
Taken	16		11		20	
	10	6	7	4	11	9
Not Taken	97		102		93	
	59	38	62	40	58	35
Taken & Direct	9		2		17	
	4	5	2	0	9	8
Taken & Indirect	7		9		3	
	6	1	5	4	2	1
Not Taken & Direct	40		47		32	
	18	22	20	27	13	19
Not Taken & Indirect	57		55		61	
	41	16	42	13	45	16

Table 3.13 (continued)

Numerical Description of Classifications
Computer Analyst/Programmer

	Business Law N		Business Mathematics N	
	Male	Female	Male	Female
Taken	12		2	
	9	3	1	1
Not Taken	101		111	
	60	41	68	43
Taken & Direct	7		2	
	5	2	1	1
Taken & Indirect	5		0	
	4	1	0	0
Not Taken & Direct	42		47	
	17	25	21	26
Not Taken & Indirect	59		64	
	43	16	47	17

Table 3.14

Numerical Description of Classifications
Secretarial Science

	Accounting		Economics		Data Processing	
	N		N		N	
	Male	Female	Male	Female	Male	Female
Taken		22		12		3
	0	22	0	12	0	3
Not Taken		127		137		146
	0	127	0	137	0	146
Taken & Direct		22		11		3
	0	22	0	11	0	3
Taken & Indirect		0		1		0
	0	0	0	1	0	0
Not Taken & Direct		96		107		115
	0	96	0	107	0	115
Not Taken & Indirect		31		30		31
	0	31	0	30	0	31

Table 3.14 (continued)

Numerical Description of Classifications
Secretarial Science

	Business Law		Business Mathematics	
	N		N	
	Male	Female	Male	Female
Taken		24		4
	0	24	0	4
Not Taken		125		145
	0	125	0	145
Taken & Direct		22		4
	0	22	0	4
Taken & Indirect		2		0
	0	2	0	0
Not Taken & Direct		96		114
	0	90	0	114
Not Taken & Indirect		29		31
	0	29	0	31

three-dimensional design. The hypothesis tested in this design was the hypothesis of no three-way interaction between the three variables of sex, entry, and background (refer to chapter one). The statistical package examined the two-way interaction and the main effects. Significant results of these analyses will also be reported in chapter four.

Summary

Appropriate data was gathered from available files at Red River Community College so that an analysis of variance could be performed on the various classifications of students. These classifications are reflected in the tables presented in the chapter in numerical form and are presented in percentage form in appendix A.

The results of the analysis of variance with accompanying significance levels are presented in the following chapter.

Chapter 4

RESULTS

The questions posed in chapter one can now be answered by examining
the hypotheses which are related to each question in each program
studied. The question relating to the effect of sex and entry to Red
River Community College on the criterion factors was assumed to be
intimately related to the other two questions and as such was not
considered separately.

Question 1 - How did students in business programs at Red River Community
College who had taken business education courses in high school compare
in terms of grade point average with students in the same business program
at Red River Community College who had not taken business education
courses in high school? What were the influences of sex and method of
entry to Red River Community College on the differences found?

Hypothesis 1 - There will be no significant difference in first term
grade point average for students enrolled in Business Accountancy, who
were classified according to three factors: sex, entry to Red River
Community College and high school business education background.

Table 4.1

ANOVA - Hypothesis 1

	Sum of Squares	DF	F	Significance of F
3-way interaction	84.931	1.0	1.144	0.287
Main Effects:				
Entry	812.795	1.0	10.951	0.001 *
Sex	775.418	1.0	10.447	0.002 *

Multiple Classification Analysis

	N	Deviation	Grand Mean
Entry:			
Direct	62	-2.88	75.68
Indirect	90	1.99	75.68
Sex:			
Male	71	-2.45	75.68
Female	81	2.15	75.68

* - significance at 0.05

The data collected to support or reject Hypothesis 1 indicates that the hypothesis be accepted for all possible combinations of the factors involved except the main effects of entry and sex. The effects indicate that indirect students generally maintain higher grade point averages in

the first term of Business Accountancy and that female students also generally maintain higher grade point averages in the first term of Business Accountancy.

Hypothesis 2 - There will be no significant difference in second term grade point average for students enrolled in Business Accountancy, who were classified according to three factors: sex, entry to Red River Community College and high school business education background.

Table 4.2

ANOVA - Hypothesis 2

	Sum of Squares	DF	F	Significance of F
3-way interaction	53.851	1.0	0.241	0.999

The data collected to support or reject Hypothesis 2 indicates that the hypothesis be accepted for all possible combinations of the factors involved.

Hypothesis 3 - There will be no significant difference in first term grade point average for students enrolled in Business Administration, who were classified according to three factors: sex, entry to Red River Community College and high school business education background.

Table 4.3

ANOVA - Hypothesis 3

	Sum of Squares	DF	F	Significance of F
3-way interaction	0.658	1.0	1.034	0.311
Main Effects:				
Entry	3.798	1.0	5.966	0.014 *
Sex	2.413	1.0	3.790	0.049 *

Multiple Classification Analysis

	N	Deviation	Grand Mean
Entry:			
Direct	179	-0.11	2.61
Indirect	242	0.08	2.61
Sex:			
Male	369	-0.03	2.61
Female	52	0.20	2.61

* - significance at 0.05

The data collected to support or reject Hypothesis 3 indicates that the hypothesis be accepted for all possible combination of the factors involved except the main effects of entry and sex. The effects indicate that indirect students generally maintain higher grade point averages in the first term of Business Administration and that female students also generally maintain higher grade point averages in the first term of Business Administration.

Hypothesis 4 - There will be no significant difference in second term grade point average for students enrolled in Business Administration, who were classified according to three factors: sex, entry to Red River Community College, and high school business education background.

Table 4.4

ANOVA - Hypothesis 4

	Sum of Squares	DF	F	Significance of F
3-way interaction	1.086	1.0	1.769	0.181
Main Effects:				
Entry	2.475	1.0	4.031	0.043 *
Background	6.651	1.0	10.832	0.001 *

Multiple Classification Analysis

	N	Deviation	Grand Mean
Entry:			
Direct	179	-0.09	2.34
Indirect	242	0.07	2.34
Background:			
Yes	167	-0.16	2.34
No	254	0.10	2.34

* - significance at 0.05

The data collected to support or reject Hypothesis 4 indicates that the hypothesis be accepted for all possible combinations of the factors involved except the main effects of entry and background. The effects indicate that indirect students generally maintain higher grade point averages in the second term of Business Administration and that students with no background in high school business education also generally maintain higher grade point averages in the second term of Business Administration.

Hypothesis 5 - There will be no significant difference in first term grade point average for students enrolled in Computer Analyst/Programmer, who were classified according to three factors: sex, entry to Red River Community College and high school business education background.

Table 4.5

ANOVA - Hypothesis 5

	Sum of Squares	DF	F	Significance of F
3-way interaction	0.970	1.0	2.295	0.129

The data collected to support or reject Hypothesis 5 indicates that the hypothesis be accepted for all possible combinations of the factors involved.

Hypothesis 6 - There will be no significant difference in second term grade point average for students enrolled in Computer Analyst/Programmer, who were classified according to three factors: sex, entry to Red River Community College, and high school business education background.

Table 4.6

ANOVA - Hypothesis 6

	Sum of Squares	DF	F	Significance of F
3-way interaction	0.492	1.0	0.729	0.999
2-way interaction:				
Entry, Background	3.709	1.0	5.501	0.020 *

Multiple Classification Analysis

	N	Deviation	Grand Mean
Entry:			
Direct	49	-0.06	2.81
Indirect	64	0.05	2.81
Background:			
Yes	39	-0.03	2.81
No	74	0.02	2.81

* - significance at 0.05

The data collected to support or reject Hypothesis 6 indicates that the hypothesis be accepted for all possible combinations of the factors

involved except the two-way interaction of entry and background. The two-way interaction indicates that indirect students with no background in high school business education generally maintain higher grade point averages in the second term of Computer/Analyst Programmer.

Hypothesis 7 - There will be no significant difference in first term grade point average for students enrolled in Secretarial Science, who were classified according to three factors: sex, entry to Red River Community College, and high school business education background.

Table 4.7

ANOVA - Hypothesis 7

	Sum of Squares	DF	F	Significance of F
2-way interaction	0.308	1.0	0.728	0.999

The data collected to support or reject Hypothesis 7 indicates that the hypothesis be accepted for all possible combinations of the factors involved.

Hypothesis 8 - There will be no significant difference in second term grade point average for students enrolled in Secretarial Science, who were classified according to three factors: sex, entry to Red River Community College and high school business education background.

Table 4.8

ANOVA - Hypothesis 8

	Sum of Squares	DF	F	Significance of F
2-way interaction	0.002	1.0	0.003	0.999

The data collected to support or reject Hypothesis 8 indicates that the hypothesis be accepted for all possible combinations of the factors involved.

Question 2 - How did students in business programs at Red River Community College who had taken business education courses in high school compare in terms of grades in related courses at Red River Community College with students in the same business programs at Red River Community College who had not taken related business education courses in high school? What were the influences of sex and method of entry to Red River Community College on the differences found?

Hypothesis 9 - There will be no significant difference in grade received in ACNT-160 (Accounting) by students who were enrolled in Business Accountancy, classified according to three factors: sex, entry to Red River Community College and high school accounting background.

Table 4.9

ANOVA - Hypothesis 9

	Sum of Squares	DF	F	Significance of F
3-way interaction	30.422	1.0	0.325	0.999
Main Effects:				
Entry	614.572	1.0	6.573	0.011 *
Sex	810.927	1.0	8.673	0.004 *

Multiple Classification Analysis

	N	Deviation	Grand Mean
Entry:			
Direct	62	-2.54	74.69
Indirect	90	1.75	74.69
Sex:			
Male	71	-2.50	74.69
Female	81	1.80	74.69

* - significance at 0.05

The data collected to support or reject Hypothesis 9 indicates that the hypothesis will be accepted for all possible combinations of the factors involved except the main effects of entry and sex. The effects indicate that indirect students generally maintain higher grades in ACNT 160 and that female students also generally maintain higher grades in ACNT 160.

Hypothesis 10 - There will be no significant difference in grade received in ACNT 260 (Accounting) by students who were enrolled in Business Accountancy, classified according to three factors: sex, entry to Red River Community College, and high school accounting background.

Table 4.10

ANOVA - Hypothesis 10

	Sum of Squares	DF	F	Significance of F
3-way interaction	7.933	1.0	0.041	0.999
Main Effects:				
Entry	1247.877	1.0	6.528	0.011 *

Multiple Classification Analysis

	N	Deviation	Grand Mean
Entry:			
Direct	61	-3.62	65.02
Indirect	84	2.63	65.02

* - significance at 0.05

The data collected to support or reject Hypothesis 10 indicates that the hypothesis will be accepted for all possible combinations of the factors involved except the main effect of entry. The effect indicates that indirect students generally maintain higher grades in ACNT 260.

Hypothesis 11 - There will be no significant difference in grade received
in ACNT 261 (Accounting) by students who were enrolled in Business
Accountancy, classified according to three factors: sex, entry to Red
River Community College, and high school accounting background.

Table 4.11

ANOVA - Hypothesis 11

	Sum of Squares	DF	F	Significance of F
3-way interaction	15.381	1.0	0.060	0.999
Main Effects:				
Entry	1108.171	1.0	4.342	0.037 *

Multiple Classification Analysis

	N	Deviation	Grand Mean
Entry:			
Direct	61	-3.41	72.28
Indirect	84	2.48	72.28

* - significance at 0.05

The data collected to support or reject Hypothesis 11 indicates that
the hypothesis will be accepted for all possible combinations of the
factors involved except the main effect of entry. The effect indicates
that indirect students generally maintain higher grades in ACNT 261.

Hypothesis 12 - There will be no significant difference in grade received in ADMN 10 (Accounting) by students who were enrolled in Business Administration, classified according to three factors: sex, entry to Red River Community College and high school accounting background.

Table 4.12

ANOVA - Hypothesis 12

	Sum of Squares	DF	F	Significance of F
3-way interaction	0.481	1.0	0.404	0.999
Main Effects:				
Entry	9.790	1.0	8.210	0.004 *
Background	20.045	1.0	16.809	0.001 *
Sex	17.890	1.0	15.003	0.001 *

Multiple Classification Analysis

	N	Deviation	Grand Mean
Entry:			
Direct	179	-0.18	2.14
Indirect	242	0.13	2.14
Background:			
Yes	74	0.48	2.14
No	347	-0.10	2.14
Sex:			
Male	369	-0.08	2.14
Female	52	0.55	2.14

* - significance at 0.05

The data collected to support or reject Hypothesis 12 indicates that the hypothesis will be accepted for all possible combinations of the factors involved except the main effects of entry, background and sex. The effects indicate that indirect students generally maintain higher grades in ADMN 101, that female students generally maintain higher grades in ADMN 101 and that students with a background in high school business education also generally maintain higher grades in ADMN 101.

Hypothesis 13 - There will be no significant difference in grade received in ADMN 201 (Accounting) by students who were enrolled in Business Administration, classified according to three factors: sex, entry to Red River Community College and high school accounting background.

Table 4.13

ANOVA - Hypothesis 13

	Sum of Squares	DF	F	Significance of F
3-way interaction	3.697	1.0	3.206	0.070

The data collected to support or reject Hypothesis 13 indicates that the hypothesis will be accepted for all possible combinations of the factors involved.

Hypothesis 14 - There will be no significant difference in grade received in CBOM 140 (Accounting) by students who were enrolled in Clerical Bookkeeping, classified according to three factors: sex, entry to Red River Community College, and high school accounting background.

Table 4.14

ANOVA - Hypothesis 14

	Sum of Squares	DF	F	Significance of F
2-way interaction	2.694	2.0	2.056	0.131

The data collected to support or reject Hypothesis 14 indicates that the hypothesis will be accepted for all possible combinations of the factors involved.

Hypothesis 15 - There will be no significant difference in grade received in CBOM 240 (Accounting) by students who were enrolled in Clerical Bookkeeping, classified according to three factors: sex, entry to Red River Community College, and high school accounting background.

Table 4.15

ANOVA - Hypothesis 15

	Sum of Squares	DF	F	Significance of F
2-way interaction	1.639	2.0	0.730	0.999

The data collected to support or reject Hypothesis 15 indicates that the hypothesis will be accepted for all possible combinations of the factors involved.

Hypothesis 16 - There will be no significant difference in grade received in ADMN 101 (Accounting) by students who were enrolled in Secretarial Science, classified according to three factors: sex, entry to Red River Community College, and high school accounting background.

Table 4.16

ANOVA - Hypothesis 16

	Sum of Squares	DF	F	Significance of F
Main Effects	0.886	2.0	0.430	0.999

The data collected to support or reject Hypothesis 16 indicates that the hypothesis will be accepted for all possible combinations of the factors involved.

Hypothesis 17 - There will be no significant difference in grade received in ADMN 201 (Accounting) by students who were enrolled in Secretarial Science, classified according to three factors: sex, entry to Red River Community College, and high school accounting background.

Table 4.17

ANOVA - Hypothesis 17

	Sum of Squares	DF	F	Significance of F
Main Effects	2.622	2.0	0.957	0.999

The data collected to support or reject Hypothesis 17 indicates that the hypothesis will be accepted for all possible combinations of the factors involved.

Hypothesis 18 - There will be no significant difference in grade received in ADMN 101 (Accounting) by students who were enrolled in Computer Analyst/ Programmer Program, classified according to three factors: sex, entry to Red River Community College, and high school accounting background.

Table 4.18

ANOVA - Hypothesis 18

	Sum of Squares	DF	F	Significance of F
3-way interaction	0.105	1.0	0.149	0.999
2-way interaction:				
Entry, Background	3.241	1.0	4.590	0.033 *
Main Effects:				
Sex	5.376	1.0	7.613	0.007 *

* - significance at 0.05

Multiple Classification Analysis

	N	Deviation	Grand Mean
Entry:			
Direct	49	-0.16	3.14
Indirect	64	0.13	3.14
Background:			
Yes	16	0.18	3.14
No	97	-0.03	3.14
Sex:			
Male	69	-0.18	3.14
Female	44	0.29	3.14

The data collected to support or reject Hypothesis 18 indicates that the hypothesis will be accepted for all possible combinations of the factors involved except the two-way interaction of entry and background and the main effect of sex. The effects indicate that indirect students with backgrounds in high school business education generally maintain higher grades in ADMN 101 and that female students also generally maintain higher grades in ADMN 101.

Hypothesis 19 - There will be no significant difference in grade received in ADMN 201 (Accounting) by students who were enrolled in Computer Analyst/Programmer Program, classified according to three factors: sex, entry to Red River Community College, and high school accounting background.

Table 4.19

ANOVA - Hypothesis 19

	Sum of Squares	DF	F	Significance of F
3-way interaction	0.819	1.0	0.877	0.999

The data collected to support or reject Hypothesis 19 indicates that the hypothesis will be accepted for all possible combinations of the factors involved.

Hypothesis 20 - There will be no significant difference in grade received in ADMN 102 (Economics) by students who were enrolled in Business Administration, classified according to three factors: sex, entry to Red River Community College, and high school economics background.

Table 4.20

ANOVA - Hypothesis 20

	Sum of Squares	DF	F	Significance of F
3-way interaction	1.416	1.0	1.355	0.243

The data collected to support or reject Hypothesis 20 indicates that the hypothesis will be accepted for all possible combinations of the factors involved.

Hypothesis 21 - There will be no significant difference in grade received in ADMN 202 (Economics) by students who were enrolled in Business Administration, classified according to three factors: sex, entry to Red River Community College, and high school economics background.

Table 4.21

ANOVA - Hypothesis 21

	Sum of Squares	DF	F	Significance of F
3-way interaction	0.652	1.0	0.486	0.999

The data collected to support or reject Hypothesis 21 indicates that the hypothesis will be accepted for all possible combinations of the factors involved.

Hypothesis 22 - There will be no significant difference in grade received in ADMN 111 (Economics) by students who were enrolled in Secretarial Science, classified according to three factors: sex, entry to Red River Community College, and high school economics background.

Table 4.22

ANOVA - Hypothesis 22

	Sum of Squares	DF	F	Significance of F
2-way interaction	0.748	1.0	0.682	0.999

The data collected to support or reject Hypothesis 22 indicates that the hypothesis will be accepted for all possible combinations of the factors involved.

Hypothesis 23 - There will be no significant difference in grade received in ADMN 111 (Economics) by students who were enrolled in Computer Analyst/Programmer Program, classified according to three factors: sex, entry to Red River Community College, and high school economics background.

Table 4.23

ANOVA - Hypothesis 23

	Sum of Squares	DF	F	Significance of F
2-way interaction	0.660	3.0	0.284	0.999

The data collected to support or reject Hypothesis 23 indicates that the hypothesis will be accepted for all possible combinations of the factors involved.

Hypothesis 24 - There will be no significant difference in grade received in ADMN 217 (Data Processing) by students who were enrolled in Business Accountancy, classified according to three factors: sex, entry to Red River Community College, and high school data processing background.

Table 4.24

ANOVA - Hypothesis 24

	Sum of Squares	DF	F	Significance of F
2-way interaction	113.229	2.0	0.394	0.999
Main Effects:				
Entry	716.386	1.0	4.980	0.026 *
Background	680.105	1.0	4.728	0.030 *
Sex	667.759	1.0	5.642	0.031 *

Multiple Classification Analysis

	N	Deviation	Grand Mean
Entry:			
Direct	51	-3.02	76.07
Indirect	73	2.11	76.07
Background:			
Yes	5	11.85	76.07
No	119	-0.50	76.07
Sex:			
Male	56	-2.61	76.07
Female	68	2.15	76.07

* - significance at 0.05

The data collected to support or reject Hypothesis 24 indicates that the hypothesis will be accepted for all possible combinations of the factors involved except the main effects of entry, background, and sex. The effects indicate that indirect students generally maintain higher grades in ADMN 217, that female students generally maintain higher grades in ADMN 217, and that students with a background in high school business education also generally maintain higher grades in ADMN 217.

Hypothesis 25 - There will be no significant difference in grade received in ADMN 217 (Data Processing) by students who were enrolled in Business Administration, classified according to three factors: sex, entry to Red River Community College, and high school data processing background.

Table 4.25

ANOVA - Hypothesis 25

	Sum of Squares	DF	F	Significance of F
2-way interaction	1.122	3.0	0.301	0.999

The data collected to support or reject Hypothesis 25 indicates that the hypothesis will be accepted for all the possible combinations of the factors involved.

<u>Hypothesis 26</u> - There will be no significant difference in grade received in CBOM 243 (Data Processing) by students who were enrolled in Clerical Bookkeeping, classified according to three factors: sex, entry to Red River Community College, and high school data processing background.

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Table 4.26

ANOVA - Hypothesis 26

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	Sum of Squares	DF	F	Significance of F
2-way interaction	0.348	1.0	0.404	0.999
Main Effects:				
Background	12.036	1.0	13.949	0.001 *

Multiple Classification Analysis

	N	Deviation	Grand Mean
Background:			
Yes	4	-1.70	2.91
No	103	0.07	2.91

* - significance at 0.05

The data collected to support or reject Hypothesis 26 indicates that the hypothesis will be accepted for all possible combinations of the factors involved except the main effect of background. The effect indicates that students with no background in high school business education generally maintain higher grades in CBOM 243.

Hypothesis 27 - There will be no significant difference in grade received in PROG 101 (Data Processing) by students who were enrolled in Computer Analyst/Programmer Program, classified according to three factors: sex, entry to Red River Community College, and high school data processing background.

Table 4.27

ANOVA - Hypothesis 27

	Sum of Squares	DF	F	Significance of F
3-way interaction	0.057	1.0	0.085	0.999
Main Effects:				
Background	9.401	1.0	12.429	0.001 *

Multiple Classification Analysis

	N	Deviation	Grand Mean
Background:			
Yes	20	0.54	3.16
No	93	-0.12	3.16

* - significance at 0.05

The data collected to support or reject Hypothesis 27 indicates that the hypothesis will be accepted for all possible combinations of the factors involved except the main effect of background. The effect

indicates that students with a background in high school business education generally maintain higher grades in PROG 101.

Hypothesis 28 - There will be no significant difference in grade received in PROG 201 (Data Processing) by students who were enrolled in Computer Analyst/Programmer Program, classified according to three factors: sex, entry to Red River Community College, and high school data processing background.

Table 4.28

ANOVA - Hypothesis 28

	Sum of Squares	DF	F	Significance of F
3-way interaction	0.716	1.0	0.612	0.999
2-way interaction:				
Entry, Sex	5.649	1.0	4.827	0.029 *

Multiple Classification Analysis

	N	Deviation	Grand Mean
Entry:			
Direct	49	-0.10	2.95
Indirect	64	0.08	2.95
Sex:			
Male	69	-0.01	2.95
Female	44	0.01	2.95

* - significance at 0.05

The data collected to support or reject Hypothesis 28 indicates that the hypothesis will be accepted for all possible combinations of the factors involved except the two-way interaction of entry and sex. The two-way interaction indicates that indirect, female students generally maintain higher grades in PROG 201.

Hypothesis 29 - There will be no significant difference in grade received in ACNT 164 (Mathematics) by students who were enrolled in Business Accountancy, classified according to three factors: sex, entry to Red River Community College, and high school business mathematics background.

Table 4.29

ANOVA - Hypothesis 29

	Sum of Squares	DF	F	Significance of F
2-way interaction:				
Entry, Background	529.027	1.0	4.436	0.035 *
Main Effects:				
Entry	740.501	1.0	6.209	0.013 *

* - significance at 0.05

Multiple Classification Analysis

	N	Deviation	Grand Mean
Entry:			
Direct	61	-2.77	75.59
Indirect	90	1.88	75.59
Background:			
Yes	7	0.27	75.59
No	144	-0.01	75.59

The data collected to support or reject Hypothesis 29 indicates that the hypothesis be accepted for all possible combinations of the factors involved except the two-way interaction of entry and background and the main effect of entry. The effects indicate that indirect students with no background in high school business education generally maintain higher grades in ACNT 164.

Hypothesis 30 - There will be no significant difference in grade received in ADMN 110 (Business Mathematics) by students who were enrolled in Business Administration, classified according to three factors: sex, entry to Red River Community College, and high school business mathematics background.

Table 4.30

ANOVA - Hypothesis 30

	Sum of Squares	DF	F	Significance of F
2-way interaction	4.034	2.0	1.178	0.309
Main Effects:				
Entry	8.054	1.0	4.705	0.029 *

Multiple Classification Analysis

	N	Deviation	Grand Mean
Entry:			
Direct	179	-0.16	3.15
Indirect	242	0.12	3.15

* - significance at 0.05

The data collected to support or reject Hypothesis 30 indicates that the hypothesis be accepted for all possible combinations of the factors involved except the main effect of entry. The effect indicates that indirect students generally maintain higher grades in ADMN 110.

Hypothesis 31 - There will be no significant difference in grade received in ADMN 210 (Business Mathematics) by students who were enrolled in Business Administration, classified according to three factors: sex, entry to Red River Community College, and high school business mathematics background.

Table 4.31

ANOVA - Hypothesis 31

	Sum of Squares	DF	F	Significance of F
2-way interaction	1.108	2.0	0.365	0.999
Main Effects:				
Entry	6.175	1.0	4.067	0.042 *

Multiple Classification Analysis

	N	Deviation	Grand Mean
Entry:			
Direct	123	-0.17	1.99
Indirect	187	0.11	1.99

* - significance at 0.05

The data collected to support or reject Hypothesis 31 indicates that the hypothesis be accepted for all possible combinations of the factors involved except the main effect of entry. The effect indicates that indirect students generally maintain higher grades in ADMN 210.

Hypothesis 32 - There will be no significant difference in grade received in CBOM 144 (Business Mathematics) by students who were enrolled in Clerical Bookkeeping, classified according to three factors: sex, entry to Red River Community College, and high school business mathematics background.

Table 4.32

ANOVA - Hypothesis 32

	Sum of Squares	DF	F	Significance of F
Main Effects	2.025	3.0	0.975	0.999

The data collected to support or reject Hypothesis 32 indicates that the hypothesis will be accepted for all possible combinations of the factors involved.

Hypothesis 33 - There will be no significant difference in grade received in CBOM 244 (Business Mathematics) by students who were enrolled in Clerical Bookkeeping, classified according to three factors: sex, entry to Red River Community College, and high school business mathematics background.

Table 4.33

ANOVA - Hypothesis 33

	Sum of Squares	DF	F	Significance of F
Main Effects:				
Entry	5.309	1.0	5.400	0.021 *

Multiple Classification Analysis

	N	Deviation	Grand Mean
Entry:			
Direct	43	-0.27	2.87
Indirect	61	0.19	2.87

* - significance at 0.05

The data collected to support or reject Hypothesis 33 indicates that the hypothesis be accepted for all possible combinations of the factors involved except the main effect of entry. The effect indicates that indirect students generally maintain higher grades in CBOM 244.

Hypothesis 34 - There will be no significant difference in grade received in PROG 110 (Business Mathematics) by students who were enrolled in Computer Analyst/Programmer Program, classified according to three factors: sex, entry to Red River Community College, and high school business mathematics background.

Table 4.34

ANOVA - Hypothesis 34

	Sum of Squares	DF	F	Significance of F
2-way interaction	1.792	2.0	1.423	0.244
Main Effects:				
Entry	2.785	1.0	4.921	0.036 *

Multiple Classification Analysis

	N	Deviation	Grand Mean
Entry:			
Direct	49	-0.19	2.83
Indirect	64	0.15	2.83

* - significance at 0.05

The data collected to support or reject Hypothesis 34 indicates that the hypothesis be accepted for all possible combinations of the factors involved except the main effect of entry. The effect indicates that indirect students generally maintain higher grades in PROG 110.

Hypothesis 35 - There will be no significant difference in grade received in PROG 210 (Business Mathematics) by students who were enrolled in Computer Analyst/Programmer Program, classified according to three factors: sex, entry to Red River Community College, and high school business mathematics background.

Table 4.35

ANOVA - Hypothesis 35

	Sum of Squares	DF	F	Significance of F
2-way interaction	2.992	2.0	1.386	0.253

The data collected to support or reject Hypothesis 35 indicates that the hypothesis be accepted for all possible combinations of the factors involved.

Hypothesis 36 - There will be no significant difference in grade received in ADMN 106 (Business Law) by students who were enrolled in Business Accountancy, classified according to three factors: sex, entry to Red River Community College, and high school business law background.

Table 4.36

ANOVA - Hypothesis 36

	Sum of Squares	DF	F	Significance of F
3-way interaction	4.423	1.0	0.046	0.999
Main Effects:				
Entry	859.555	1.0	8.887	0.004 *
Sex	559.929	1.0	5.789	0.017 *

Multiple Classification Analysis

	N	Deviation	Grand Mean
Entry:			
Direct	62	-2.89	72.08
Indirect	88	2.03	72.08
Sex:			
Male	69	-2.12	72.08
Female	81	1.81	72.08

* - significance at 0.05

The data collected to support or reject Hypothesis 36 indicates that the hypothesis be accepted for all possible combinations of the factors involved except the main effects of entry and sex. The effects indicate that indirect students generally maintain higher grades in ADMN 106 and that female students also generally maintain higher grades in ADMN 106.

Hypothesis 37 - There will be no significant difference in grade received in ADMN 106 (Business Law) by students who were enrolled in Business Administration, classified according to three factors: sex, entry to Red River Community College, and high school business law background.

Table 4.37

ANOVA - Hypothesis 37

	Sum of Squares	DF	F	Significance of F
3-way interaction	0.049	1.0	0.052	0.999

The data collected to support or reject Hypothesis 37 indicates that the hypothesis be accepted for all possible combinations of the factors involved.

Summary

These hypotheses are related to the questions posed in chapter one and when considered as a total will provide possible answers to those questions. The results of the analysis of the data pertaining to these hypotheses were presented in the previous section of this chapter and will be summarized and evaluated in the following chapter.

Chapter 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary of the Study

This study was conducted in order to determine if students at Red
River Community College were differentiated by grades and grade point
averages on the basis of prior experience in a business education depart-
ment at a Manitoba high school, their sex, and the time of entry into
Red River Community College's business programs.

Questions concerning the influence of the factors on the grades and
grade point averages of Red River Community College's students were posed
and hypotheses were constructed in order to determine possible answers.

Data concerning grade point averages, grades, and high school back-
grounds were gathered from the files at Red River Community College on
students enrolled in the business programs. This set of data was processed
and analyzed using a three-way analysis of variance to determine if the
proposed hypotheses were supported or rejected.

Summary of the Findings

The findings of the study as presented in the previous chapter are
organized around the two basic questions posed in chapter one. The presen-
tation in this section will aggregate and summarize the results of the
analysis.

Question 1 - How did students in business programs at Red River Community College who had taken business education courses in high school compare in terms of grade point average with students in the same business program at Red River Community College who had not taken business education courses in high school? What were the influences of sex and method of entry to Red River Community College on the differences found?

First Term Grade Point Average

1. Students with a background of business education at high school generally achieved first term grade point averages at the same level as students without a background of business education at high school.

2. Female students generally achieved first term grade point averages that were the same as or better than male students' grade point averages.

3. Indirect students generally achieved first term grade point averages that were the same as or better than direct students' grade point averages.

Second Term Grade Point Average

1. Students with a background of business education at high school generally achieved second term grade point averages at the same level or lower than students without a background of business education at high school.

2. Female students generally achieved second term grade point averages that were the same as male students' grade point averages.

3. Indirect students generally achieved second term grade point averages that were the same as or better than direct students' grade point averages.

Question 2 - How did students in business programs at Red River

Community College who had taken business education courses in high

school compare in terms of grades in related courses at Red River

Community College with students in the same business programs at Red

River Community College who had not taken related business education

courses in high school? What were the influences of sex and method

of entry on the differences found?

Summary by Program

Business Accountancy

1. Students with high school experience in related subjects
    generally achieved grades in the courses investigated
    that were the same as or better than the grades achieved
    by students who did not have high school experience in
    the related subjects (1 of 6 instances had significant
    differences).

2. Female students generally achieved grades in the courses
    investigated that were the same as or better than male
    students' grades in the courses investigated (3 of 6
    instances had significant differences).

3. Indirect students generally achieved better grades in
    the courses investigated than did direct students (6
    of 6 instances had significant differences).

Business Administration

1. Students with high school experience in related subjects
    generally achieved grades in the courses investigated
    that were the same as or better than the grades achieved
    by students who did not have high school experience in
    the related subject (2 of 8 instances had significant
    differences).

2. Female students generally achieved grades in the course
    investigated that were the same as or better than male
    students' grades in the courses investigated (2 of 8
    instances had significant differences).

3. Indirect students generally achieved grades in the courses investigated that were the same as or better than direct students' grades in the courses investigated. (3 of 8 instances had significant differences).

Computer/Analyst Programmer

1. Students with high school experience in related subjects generally achieved grades in the courses investigated that were the same as or better than the grades achieved by students who did not have high school experience in the related subjects (1 of 7 instances had significant differences).

2. Female students generally achieved grades in the courses investigated that were the same as or better than male students' grades in the courses investigated (2 of 7 instances had significant differences).

3. Indirect students generally achieved grades in the courses investigated that were the same as or better than direct students' grades in the courses investigated (2 of 7 instances had significant differences).

Secretarial Science

1. All students investigated were female; therefore, no comparisons with male students could be made.

2. Students with high school experience in related subjects generally achieved grades in the courses investigated that were the same as the grades achieved by students who did not have high school experience in the related subjects (0 of 3 instances had significant differences).

3. Indirect students generally achieved grades in the courses investigated that were the same as direct students' grades in the courses investigated (0 of 3 instances had significant differences).

Clerical - Bookkeeping

1. Students with high school experience in related subjects generally achieve grades in the courses investigated that were the same as or poorer than the grades achieved by students who did not have high school experience in the related subjects (1 of 5 instances had significant differences).

2. Female students generally achieved grades in the courses investigated that were the same as male students' grades in the courses investigated (0 of 5 instances had significant differences).

3. Indirect students generally achieved grades in the courses investigated that were the same as or better than direct students' grades in the courses investigated (1 of 5 instances had significant differences).

Summary by Subject

These findings can also be summarized in terms of the individual courses that were investigated in the programs. The findings concerning accounting, economics, data processing, business mathematics, and business law are presented below.

Accounting

1. Students with high school experience in accounting generally achieved grades in accounting at Red River Community College that were the same as or better than the grades achieved by students with no high school experience in accounting (2 of 11 instances had significant differences).

2. Female students generally achieved grades in accounting that were the same as or better than male students' grades in accounting (3 of 11 instances had significant differences).

3. Indirect students generally achieved grades in accounting that were the same as or better than direct students' grades in accounting (5 of 11 instances had significant differences).

Economics

1. Students with high school experience in economics generally achieved grades in economics at Red River Community College that were the same as the grades achieved by students with no high school experience in economics (0 of 4 instances had significant differences).

2. Female students generally achieved grades in economics that were the same as male students' grades in economics (0 of 4 instances had significant differences).

3. Indirect students generally achieved grades in economics that were the same as direct students' grades in economics (0 of 4 instances had significant differences).

Data Processing

1. Students with high school experience in data processing generally achieved grades in data processing at Red River Community College that were the same as or better than the grades achieved by students with no high school experience in data processing with the exception of the CBOM 243 course in which students with high school experience in data processing generally achieved grades that were lower than students with no high school experience in data processing (3 of 5 instances had significant differences).

2. Female students generally achieved grades in data processing that were the same as or better than male students' grades in data processing (2 of 5 instances had significant differences).

3. Indirect students generally achieved grades in data processing that were the same as or better than direct students' grades in data processing (2 of 5 instances had significant differences).

Business Mathematics

1. Students with high school experience in business mathematics generally achieved grades in business mathematics at Red River Community College that were the same as or better than the grades achieved by students with no high school experience in business mathematics (1 of 7 instances had significant differences).

2. Female students generally achieved grades in business mathematics that were the same as male students' grades in business mathematics (0 of 7 instances had significant differences).

3. Indirect students achieved grades in business mathematics that were the same as or better than direct students' grades in business mathematics (5 of 7 instances had significant differences).

Business Law

1. Students with high school experience business law generally achieved grades in business law at Red River Community College that were the same as the grades achieved by students with no high school experience in business law (0 of 2 instances had significant differences).

2. Female students generally achieved grades in business law that were the same as or better than male students' grades in business law (1 of 2 instances had significant differences).

3. Indirect students generally achieved grades in business law that were the same as or better than direct students' grades in business law (1 of 2 instances had significant differences).

Conclusions and Recommendations

The conclusions stated below are based on a specific population of students who had graduated from a high school, enrolled in a business program at Red River Community College between September, 1972 and June, 1974, and had completed the first two semesters of their program.

Conclusion 1 - High school experience in business education has little or no effect on the overall performance (grade point average) of a student in the first two terms of a business course at Red River Community College.

Conclusion 2 - High school experience in specific business courses has little or no effect on a student's performance in related courses in the first two terms of a business program at Red River Community College.

These conclusions have serious implications for the high school business education community. In effect they state that business education students are not being prepared for post-secondary business

programs any better than students in other programs. This implies that a student with many science (or English or foreign language or industrial arts) courses and no business education courses in high school will generally achieve as well in a post-secondary business program as a student who has a major in business education at the high school level. This is a serious implication because it can then be inferred that business educators are not achieving one of their own publicly stated objectives.

These conclusions also support the position Red River Community College has taken in regard to prior high school business education experience. As this experience seems to have little or no effect on a student's perfomrance at Red River Community College it rightfully need not be considered in initial student placement in business programs.

Conclusion 3 - There is little, if any, differentiation between male and female students in overall perfomrance (grade point average) or in individual course performance in the first two terms of business programs at Red River Community College.

This conclusion indicates that there is no basis for restricting the entrance into a business program or obstructing the progress of students in business programs based solely on the achievement levels of one sex or the other. It also suggests that the sex stereotyping of business programs such as the accounting and secretarial programs should not be based on the inherent capabilities of one sex over the other.

Conclusion 4 - A delay of some period of time in entering Red River Community College after graduation from high school has a positive effect on the overall performance (grade point average) and individual course performance of students in business programs.

Students who do not enter Red River Community College directly upon graduating from high school (indirect students) receive markedly higher grades on individual courses and as a result, earn markedly higher grade point averages during the first two terms of the business programs. This incidence of higher achievement can possible be explained by one of, or a combination of, the following factors: maturity, experience, and teacher bias.

Indirect students are generally older (from one year to 50 years) than those students who come to Red River Community College directly from high school (direct students). These older students may have developed a more mature attitude toward their education which may manifest itself in higher levels of motivation, positive attitudes toward learning, or more will-power (longer spans of concentration). Students who have stepped out of the academic world may be better able to recognize the benefits of an education and as such, attempt to take advantage of all possible opportunities.

Another factor working alone or in combination with the other two, may be the experience the students realized in the period of time between high school and entry to Red River Community College. This could be experience in two different areas. First, the student may have gone on to another type of post-secondary institution and developed a more extensive background in the field, or learned to be a better

student, or both. The second type of experience a student may have gained in that time period may be of a vocational nature. That is to say her or she may have been employed in a position in which he or she may have gained knowledge and experience which were directly applicable to the program at Red River Community College.

The last factor, which studies such as Rosenthal and Jacobsen's Pygmalion in the classroom[1] have shown to be of great influence on student achievement, concerns itself with the expectations of the teacher. Teachers may expect older, more mature-looking students to be high achievers and this expectation may be represented in two ways. Students, as has been shown in the literature, tend to fulfill teacher expectations. Thus, the older, indirect student may actually achieve better grades as a reaction to the teacher's expectations. On the other hand, the teacher's expectations of higher grades by indirect students may result in unconscious bias by the teacher when assessing the achievement of the students.

Recommendations

The following recommendations for further research were suggested by this study:

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[1]R. Rosenthal and L. Jacobsen, Pygmalion in the Classroom: Teacher Expectation and Pupils' Intellectual Development, (New York: Holt, Rinehart and Winston, 1968).

1. The changing conditions at both the high school level and the community college level demand that studies such as this one be replicated every few years in order to maintain current data and to reflect change.

2. The goals and objectives of classroom business education teachers should be studied and compared to the goals, objectives, and philosophies stated by umbrella organizations such as the Canadian Association of Business Education Teachers and the Manitoba Business Education Teachers' Association.

3. Teaching ideas and techniques appropriate to the achievement of preparing students for post-secondary business programs should be created, studied, and made available to classroom business education teachers.

4. Studies concerning the effectiveness of the high school business education community in achieving their stated goals other than those dealt with in this study should be initiated and the results should provide the basis for further improvement of the teaching of business education.

5. Further studies should be conducted to determine why programs such as Secretarial Science are populated primarily by female students and why programs such as Business Administration are populated primarily by male students, and what can be done to make the student populations more balanced in each program.

6. Further studies should be conducted to determine if males and females generally achieve the same success in employment after graducation from a business program at Red River Community College.

7. Business educators should make known the fact that performance in the business courses does not depend on sex. For example, the encouragement of suitable females into programs which train for management, such as Business Administration; or the encouragement of suitable males into programs which have been primarily 'women's' programs, such as Secretarial Science, should be a major concern of the business education community.

8. Studies of this type should be conducted to learn if this tendency of students who do not enter Red River Community College immediately upon graduation from high school persist over time.

9. Studies concerned with the length of time between high school and Red River Community College should be conducted to find if there is a correlation with achievement.

10. Studies concerned with the activities of indirect students between high school and Red River Community College should be conducted to find if there is a correlation with achievement.

11. Studies concerned with the attitudes of direct and indirect students at Red River Community College should be conducted to find if there is a correlation with achievement.

12. Studies should be conducted to determine if direct and indirect students generally achieve the same success in employment after graduation from a business program at Red River Community College.

13. Studies should be conducted to establish the significance of teacher expectation in business programs at Red River Community College.

14. Studies concerned with the abilities and interest of students in high school business education programs should be conducted to determine if these students are similar to students in other programs in terms of aptitudes and attitudes.

APPENDIX A

Table 1A

Percentage Description of Classifications

	Business Accountancy		Business Adminstration		Clerical Bookkeeping	
	N		N		N	
	Male	Female	Male	Female	Male	Female
Number	100.00		100.00		100.00	
	46.71	53.29	87.65	12.35	1.85	98.15
Taken	49.34		39.67		32.41	
	48.00	52.00	86.83	13.17	2.86	97.14
Not Taken	50.66		60.33		67.59	
	45.45	54.55	88.19	11.81	1.37	98.63
Direct	40.79		42.52		41.67	
	37.10	62.90	85.47	14.53	0.00	100.00
Indirect	59.21		57.48		58.33	
	53.33	46.67	89.26	10.74	3.17	96.83
Taken & Direct	25.00		21.14		6.35	
	36.84	63.16	85.39	14.61	0.00	100.00

Table 1A (continued)

Percentage Description of Classifications

	Business Accountancy		Business Administration		Clerical Bookkeeping	
	N		N		N	
	Male	Female	Male	Female	Male	Female
Taken & Indirect	24.34		18.53		16.67	
	59.46	40.54	88.46	11.54	5.56	94.44
Not Taken & Direct	15.79		21.38		25.93	
	37.50	62.50	85.56	14.44	0.00	100.00
Not Taken & Indirect	34.87		38.95		41.67	
	49.06	50.94	89.63	10.37	2.22	97.78

Table 1A (continued)

Percentage Description of Classifications

	Computer Analyst/ Programmer		Secretarial Science	
	N		N	
	Male	Female	Male	Female
Number		100.00		100.00
	61.06	38.94	0.00	100.00
Taken		34.51		30.20
	61.54	38.46	0.00	100.00
Not Taken		65.49		69.80
	60.81	39.19	0.00	100.00
Direct		43.36		79.19
	44.90	55.10	0.00	100.00
Indirect		56.64		20.81
	73.44	26.56	0.00	100.00
Taken & Direct		21.24		28.19
	58.33	41.67	0.00	100.00

Table 1A (continued)

Percentage Description of Classifications

	Computer Analyst/ Programmer		Secretarial Science	
	N		N	
	Male	Female	Male	Female
Taken & Indirect	13.27		2.01	
	66.67	33.33	0.00	100.00
Not Taken & Direct	22.12		51.01	
	32.00	68.00	0.00	100.00
Not Taken & Indirect	43.36		18.79	
	75.51	24.49	0.00	100.00

Table 2A

Percentage Description of Classifications
Business Accountancy

	Accounting		Economics		Data Processing	
	N		N		N	
	Male	Female	Male	Female	Male	Female
Taken	33.55		22.37		3.29	
	41.18	58.82	58.82	41.18	60.00	40.00
Not Taken	66.45		77.63		96.71	
	49.50	50.50	43.22	56.78	39.46	53.74
Taken & Direct	19.74		7.89		3.29	
	40.00	60.00	50.00	50.00	60.00	40.00
Taken & Indirect	13.82		14.47		0.00	
	42.86	57.14	63.64	36.36	0.00	0.00
Not Taken & Direct	21.05		32.89		37.50	
	34.37	65.62	34.00	66.00	35.09	64.91
Not Taken & Indirect	45.39		44.74		59.21	
	56.52	43.48	50.00	50.00	53.33	46.67

Percentage Description of Classifications
Business Accountancy

	Business Law		Business Mathematics	
	N		N	
	Male	Female	Male	Female
Taken	19.08		4.61	
	51.72	48.28	14.29	85.71
Not Taken	80.92		95.39	
	45.53	54.47	48.28	51.72
Taken & Direct	8.55		3.95	
	46.15	53.85	16.67	83.33
Taken & Indirect	10.53		0.66	
	56.25	43.75	0.00	100.00
Not Taken & Direct	32.24		36.84	
	34.69	65.31	39.29	60.71
Not Taken & Indirect	48.68		58.55	
	52.70	47.30	53.91	46.07

Table 3A

Percentage Description of Classifications
Business Adminstration

	Accounting		Economics		Data Processing	
	N		N		N	
	Male	Female	Male	Female	Male	Female
Taken	17.58		24.94		2.85	
	86.49	13.51	84.76	15.24	83.33	16.67
Not Taken	82.42		75.06		97.15	
	87.90	12.10	88.61	11.39	87.78	12.22
Taken & Direct	9.74		14.25		1.66	
	90.24	9.76	81.67	18.33	71.43	28.57
Taken & Indirect	7.84		10.69		1.19	
	81.82	18.18	87.39	12.61	89.03	10.97
Not Taken & Direct	32.78		28.27		56.29	
	84.06	15.94	87.39	12.61	89.03	10.97
Not Taken & Indirect	49.64		46.79		40.86	
	90.43	9.57	89.34	10.66	86.05	13.95

Table 3A (continued)

Percentage Description of Classifications
Business Administration

	Business Law		Business Mathematics	
	N		N	
	Male	Female	Male	Female
Taken	18.76		1.19	
	88.61	11.39	100.00	0.00
Not Taken	81.24		98.81	
	87.43	12.57	87.50	12.50
Taken & Direct	10.21		0.24	
	90.70	9.30	100.00	0.00
Taken & Indirect	8.55		0.95	
	86.11	13.89	100.00	0.00
Not Taken & Direct	32.20		42.28	
	83.82	16.18	85.39	14.61
Not Taken & Indirect	48.93		56.53	
	89.81	10.19	89.08	10.92

Table 4A

Percentage Description of Classifications
Clerical Bookkeeping

	Accounting		Economics		Data Processing	
	N		N		N	
	Male	Female	Male	Female	Male	Female
Taken	18.52		17.59		3.70	
	5.00	95.00	0.00	100.00	0.00	100.00
Not Taken	81.48		82.41		96.30	
	1.14	98.86	2.25	97.75	1.92	98.08
Taken & Direct	9.26		7.41		1.85	
	0.00	100.00	0.00	100.00	0.00	100.00
Taken & Indirect	9.26		10.19		1.85	
	10.00	90.00	0.00	100.00	0.00	100.00
Not Taken & Direct	32.41		34.26		39.81	
	0.00	100.00	0.00	100.00	0.00	100.00
Not Taken & Indirect	49.07		48.15		56.48	
	1.89	98.11	3.85	96.15	3.28	96.72

Table 4A (continued)

Percentage Description of Classifications
Clerical Bookkeeping

	Business Law		Business Mathematics	
	N		N	
	Male	Female	Male	Female
Taken		15.74		1.85
	0.00	100.00	0.00	100.00
Not Taken		84.26		98.15
	2.20	97.80	1.89	98.11
Taken & Direct		6.48		1.85
	0.00	100.00	0.00	100.00
Taken & Indirect		9.26		0.00
	0.00	100.00	0.00	100.00
Not Taken & Direct		35.19		39.81
	0.00	100.00	0.00	100.00
Not Taken & Indirect		49.07		58.33
	3.77	96.23	3.17	96.83

Table 5A

Percentage Description of Classifications
Computer Analyst/Programmer

	Accounting		Economics		Data Processing	
	N		N		N	
	Male	Female	Male	Female	Male	Female
Taken	14.16		9.73		17.70	
	62.50	37.50	63.64	36.36	55.00	45.00
Not Taken	85.84		90.27		82.30	
	60.82	39.18	60.78	39.22	62.37	37.63
Taken & Direct	7.96		1.77		15.04	
	44.44	55.56	100.00	0.00	52.04	52.94
Taken & Indirect	6.19		7.96		2.65	
	85.71	14.29	55.56	44.44	66.67	33.33
Not Taken & Direct	35.40		. 41.59		28.32	
	45.00	55.00	42.55	57.45	40.62	59.37
Not Taken & Indirect	50.44		48.67		53.98	
	71.93	28.07	76.36	23.64	73.77	26.23

Table 5A (continued)

Percentage Description of Classifications
Computer Analyst/Programmer

	Business Law		Business Mathematics	
	N		N	
	Male	Female	Male	Female
Taken	10.62		1.77	
	75.00	25.00	50.00	50.00
Not Taken	89.38		98.23	
	59.41	40.59	61.26	38.74
Taken & Direct	6.19		1.77	
	71.43	28.57	50.00	50.00
Taken & Indirect	4.42		0.00	
	80.00	20.00	0.00	100.00
Not Taken & Direct	37.17		41.59	
	40.48	59.52	44.68	55.32
Not Taken & Indirect	52.21		56.64	
	72.88	27.12	73.44	26.56

Table 6A

Percentage Description of Classifications
Secretarial Science

	Accounting		Economics		Data Processing	
	N		N		N	
	Male	Female	Male	Female	Male	Female
Taken		14.77		8.05		2.01
	0.00	100.00	0.00	100.00	0.00	100.00
Not Taken		85.23		91.95		97.99
	0.00	100.00	0.00	100.00	0.00	100.00
Taken & Direct		14.77		7.38		2.01
	0.00	100.00	0.00	100.00	0.00	100.00
Taken & Indirect		0.00		0.67		0.00
	0.00	100.00	0.00	100.00	0.00	100.00
Not Taken & Direct		64.43		71.81		77.18
	0.00	100.00	0.00	100.00	0.00	100.00
Not Taken & Indirect		20.81		20.13		20.81
	0.00	100.00	0.00	100.00	0.00	100.00

<u>Table 6A</u> (continued)

Percentage Description of Classifications
Secretarial Science

	Business Law		Business Mathematics	
	N		N	
	Male	Female	Male	Female
Taken		16.11		2.68
	0.00	100.00	0.00	100.00
Not Taken		83.89		97.32
	0.00	100.00	0.00	100.00
Taken & Direct		14.77		2.68
	0.00	100.00	0.00	100.00
Taken & Indirect		1.34		0.00
	0.00	100.00	0.00	100.00
Not Taken & Direct		64.43		76.51
	0.00	100.00	0.00	100.00
Not Taken & Indirect		19.46		20.81
	0.00	100.00	0.00	100.00

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