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THE UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

A STUDY OF THE ELEMENTARY ACCOUNTING ACHIEVEMENT OF JUNIOR COLLEGE TRANSFER STUDENTS IN SELECTED INSTITUTIONS OF HIGHER EDUCATION IN OKLAHOMA

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the

degree of

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BY

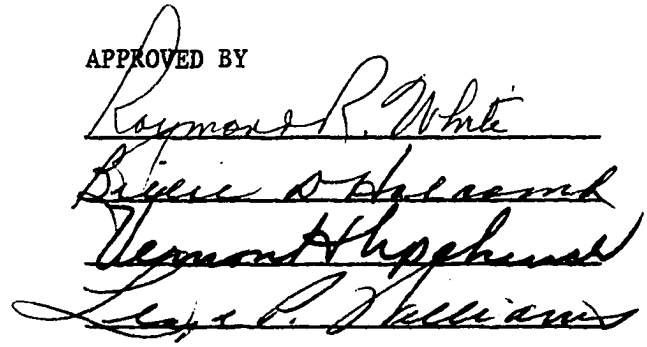
LORREN HAYS BEAVERS

Norman, Oklahoma

1974

A STUDY OF THE ELEMENTARY ACCOUNTING ACHIEVEMENT OF JUNIOR COLLEGE TRANSFER STUDENTS IN SELECTED INSTITUTIONS OF HIGHER EDUCATION IN OKLAHOMA

APPROVED BY



DISSERTATION COMMITTEE

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A STUDY OF THE ELEMENTARY ACCOUNTING ACHIEVEMENT OF JUNIOR COLLEGE TRANSFER STUDENTS IN SELECTED INSTITUTIONS OF HIGHER EDUCATION IN OKLAHOMA

CHAPTER I

THE PROBLEM

Introduction

There has been increased emphasis placed upon the importance of providing educational opportunities beyond the high school level in recent years. During the 1960's enrollments in American colleges and universities went from 3.8 million to more than 8.4 million. The percentage of higher education enrollments increased at a rate nine times that of the increase in the population, five times that of public school enrollments, and two times that of high school graduates.[1] As tremendous increases in enrollments occurred nationally, Oklahoma also had significant growth in higher education during the decade of the sixties. Enrollments in Oklahoma public institutions more than doubled during this period of time increasing from about 45,000 to 92,000.[2]

---

[1] Oklahoma State Regents for Higher Education, Oklahoma Higher Education--A State Plan for the 70's (State Capitol, Oklahoma City, Oklahoma, July, 1971), p. 31.

[2] Ibid.

This increased demand for higher education has caused the expansion of educational opportunities below the four-year college and university level. Junior and community colleges in Oklahoma, as nationally, have made significant strides in developing facilities and educational programs to help meet the increased demands for education at the post high school level. Ricciardi, in the first issue of the Junior College Journal, stated:

> . . . a fully organized junior college aims to meet the needs of the community in which it is located, including preparation for institutions of higher learning, liberal arts education for those who are not going beyond graduation from the junior college, vocational training for particular occupations usually designated as semiprofessional vocations, and short courses for adults with special interests.[1]

Some of the factors associated with the increased growth of junior colleges are the increasing numbers of high school graduates, growth in the percentage of college-age persons seeking college opportunities, and the increasing popularity of adult continuing education and community service programs.[2] Other reasons commonly cited for the rapid development of junior colleges are their convenient accessibility, low tuition expense and the open door admissions policy of most junior and community colleges.[3]

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[1]Nicholas Ricciardi, "Vital Junior College Problems in California," Junior College Journal, I (1930), p. 24.

[2]Vincent Glenn, "Junior College--Senior College Articulation in the '70's," College and University, XLVI, No. 4 (1971), p. 591.

[3]James H. White, "Transfer from Junior to Senior Colleges--A Survey of Current Policies," ERIC Document No. ED011775, (June 1, 1967), pp. 1-9.

The state legislature has recognized the need for lower-division educational opportunities in Oklahoma. This legislative body has been active in meeting this need by funding the development of new junior colleges within the state and increasing the appropriations of monies for the expansion of schools already in existence. In 1967 the Oklahoma Legislature passed Senate Bill No. 2 which enabled municipalities to petition for the establishment of local community junior colleges. The 1969 legislature was also very active in passing junior college legislation. During that session of the legislature, House Bill No. 1156 was passed which amended the 1967 Senate Bill No. 2. This bill provided:

> . . . that a community junior college may be established in a community consisting of a geographical area whose boundaries are not coextensive with those of one or more cities, counties, towns and/or school districts, if the population of such area is not less than seventy-five thousand (75,000) and the net assessed valuation in such areas is not less than seventy-five million dollars ($75,000,000.00) to be determined by the State Regents, and an application therefore is made by petition signed by not less than five percent (5%) of the legal voters residing in such area.[1]

As a result of legislation passed during the latter part of the 1960's, two new junior colleges came into existence in the Oklahoma City area and one in the Tulsa area. Additional support was also realized by some two-year schools already established.

As more students enroll in the junior colleges of Oklahoma, the demands of the four-year institutions may also be increased. This is achieved as students transfer into these senior institutions after completion of part or all of the program at the two-year schools.

---

[1]Oklahoma State Regents for Higher Education, Junior College Education in Oklahoma--A Report of a State-Wide Study (State Capitol, Oklahoma City, Oklahoma, February, 1970), p. 2.

These students increase the demand for upper-division courses as they pursue the baccalaureate degree. In A Plan for the 70's, the Oklahoma State Regents for Higher Education indicated that growth in student enrollment at the two state universities should take place primarily at the upper-division and graduate levels during the decade of the 1970's.[1] Also, the public two-year colleges in Oklahoma should provide access for the bulk of the increase in lower division student enrollment during this period of time.[2]

In 1970, the Oklahoma Regents for Higher Education issued a report of a state-wide study of junior college education in Oklahoma. In this report the functions of the junior colleges at the lower division level were specifically stated. The academic courses must be designed to:

1. Provide basic general education;
2. Provide for transfer credit to institutions offering advanced programs;
3. Provide technical-vocational education to prepare students for entry into employment after completing the junior college programs; and
4. Provide compensatory instruction for the students whose high school preparation has not qualified him for college-level work.[3]

As the students finish the prescribed program of the junior colleges and transfer to senior colleges to complete degree requirements so comes the problem of transferability of course work completed at the

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[1]Oklahoma State Regents for Higher Education, Oklahoma Higher Education--A State Plan for the 70's, p. 11.

[2]Ibid., p. 13.

[3]Oklahoma State Regents for Higher Education, Junior College Education in Oklahoma, p. 19.

two-year schools. As a result of this problem, the Regents have established a policy on transferability. This policy provides that courses taught at the junior-college level may be transferable to a senior-level institution providing the courses were taken at an accredited junior college and are given no higher transfer credit than the level in which the transfer courses were taught.

The two-year institutions have played and are playing an increasingly important role in providing educational opportunities in business. They are serving both as technical-vocational schools and as preparatory institutions from which students transfer to the business programs in the four-year colleges and universities. In both of these capacities the junior colleges are meeting important social needs.[1]

Since the business programs of the four-year institutions of the State of Oklahoma attract a high percentage of student enrollment, it seems only natural that schools of business in four-year institutions attract many junior college transfers. Because of the nature of the discipline, the problem of transferability into accounting at senior-level institutions from junior colleges can be particularly acute. Accounting is an area of sequential development; consequently the next course in the degree program depends upon the successful completion of the preceding course. Therefore, it is important that students master the basic fundamentals in each course. There must be a commonality of course content whether the course is taken at a two-year school and transferred to a four-year school or taken at the senior-level school.

---

[1]Robert Aaron Gordon and James Edwin Howell, Higher Education for Business (New York City: Columbia University Press, 1959), p. 239.

Purpose of the Study

For many years accounting educators, practicing accountants and various professional accounting organizations have been interested in improving the educational programs in accounting at the collegiate level. The American Accounting Association has stated the purposes of an accounting education to be those which prepare students for careers in accounting and in related fields, prepare students to deal effectively with the problems they will face as practicing members of their profession, and prepare them to be responsible citizens of the social and economic community in which they live.[1]

In 1967 the American Institute of Certified Public Accountants (AICPA) published a study dealing with the preparation of the Certified Public Accountant (CPA).[2] This study has conceived the beginning CPA as a professional specialist, serving a useful function in a changing environment. For the CPA to be successful, he must understand accounting as a measurement process with its concepts and methodologies. In order to achieve in the real world of accounting, his accounting knowledge must be both general and specific. The AICPA has recommended a beginning CPA have a "common body of knowledge." This body of knowledge consists of a study of accounting, the humanities, economics and behavioral science, law, mathematics, statistics, probability, and the functional fields of business.[3]

---

[1] C. A. Moyer, et al., "Report of the Committee on Educational Standards," The Accounting Review, XXXIX (April, 1964), p. 447.

[2] Robert H. Roy and James H. MacNeill, Horizons for a Profession (New York: American Institute of Certified Public Accountants, Inc., 1967), p. 214.

[3] Ibid., p. 11.

As can be noted in the educational objectives of both the American Accounting Association and the American Institute of Certified Public Accountants, the accountant's educational program must be a blending of general education and specialized education in the field of accounting.

It is in intermediate accounting that most students first encounter this specialized education through an in-depth study of accounting concepts and principles. It is also at this level that most students enrolled have decided to pursue the field of accounting as their major in attaining a degree. A prerequisite for enrollment in intermediate accounting is the successful completion of the courses in elementary accounting principles. Consequently, intermediate accounting should be one of the first accounting courses taken by junior college transfer students pursuing the study of accounting at senior-level schools.

The purpose of this study was to measure and compare achievement in elementary accounting principles of junior college transfer and four-year native or non-transfer students enrolled in first semester intermediate accounting at selected four-year colleges and universities in Oklahoma. This investigation was made to provide data to indicate whether or not a difference exists in the basic elementary accounting knowledge attained by students taking accounting principles at two-year and four-year schools.

A further consideration was to determine if there is a difference in the final grade achievement in first semester intermediate accounting of those students who have had elementary accounting principles at two-year institutions as compared to the final grade achievement of those students who have had elementary accounting principles at four-year schools.

Therefore, is it reasonable to assume that junior college transfer students' elementary accounting background need not jeopardize their successful completion of the advanced accounting programs offered at senior-level schools?

Definition of Terms

For the purpose of this study, the following terms are defined:

1. Elementary Accounting Principles refers to the first six hours of accounting instruction offered at the collegiate level.

2. Transfer student refers to a student having had elementary accounting principles at a two-year institution.

3. Non-transfer or native student refers to a student who has had all accounting instruction at the four-year institution.

4. Transfer group refers to those students having had elementary accounting principles at two-year institutions.

5. Non-transfer or native group refers to those students having had all elementary accounting instruction at four-year institutions.

6. Intermediate accounting refers to the third course in financial accounting offered at a four-year institution. It is commonly entitled Intermediate Accounting I. This course offers an in-depth study of accounting principles, transactions, and statements.

7. Intermediate accounting final course grade refers to the final letter grade received by the student in Intermediate Accounting I at the four-year school.

8. AICPA Achievement Test is entitled AICPA Achievement Test, Level I, Form E-S. It is a fifty-minute elementary accounting achievement test developed for the College Accounting Testing Program of the American Institute of Certified Public Accountants. This test is designed to measure accounting achievement after the completion of Elementary Accounting Principles.

9. ACT composite score is the composite standard score made by the student on the American College Test prepared by The American College Testing Program, Inc.

10. Type I school refers to a state four-year college in Oklahoma offering an undergraduate program in accounting and graduate education limited to the Master of Education degree.

11. Type II school refers to a state four-year university in Oklahoma offering an undergraduate program in accounting and graduate education limited to the Master of Education, Master of Arts in English, and Master of Business Administration degrees.

12. Type III school refers to a major state university in Oklahoma having a business school that is a member of the American Association of Collegiate Schools of Business. This university offers an undergraduate program in accounting and graduate education through the doctoral level.

Statement of the Problem

There were two basic research objectives present in this study. Research Objective I was concerned with the measurement and comparison of the elementary accounting knowledge attained by junior college transfer students and native four-year students upon entering the first course in intermediate accounting. Research Objective II dealt with a comparison of the Intermediate Accounting I achievement attained by the junior college transfer students with the four-year non-transfer students. Consequently, the problem of this study involved the collection and analysis of data which would reveal answers to questions associated with these research objectives. Questions relevant to Research Objective I:

1. Do the first-semester intermediate accounting students of selected four-year schools in Oklahoma who are non-transfer students obtain differing scores on the AICPA Level I, Form E-S Achievement Test in elementary accounting than those students transferring with elementary accounting principles from two-year schools?

2. Do the first-semester intermediate accounting students of selected Type I, Type II, and Type III schools in Oklahoma obtain differing scores on the AICPA Achievement Test?

3. Do the first-semester intermediate accounting students of selected Type I schools in Oklahoma who are non-transfer students

obtain differing scores on the AICPA Achievement Test than those students transferring with elementary accounting principles from two-year schools?

4. Do the first-semester intermediate accounting students of selected Type II schools in Oklahoma who are non-transfer students obtain differing scores on the AICPA Achievement Test than those students transferring with elementary accounting principles from two-year schools?

5. Do the first-semester intermediate accounting students of selected Type III schools in Oklahoma who are non-transfer students obtain differing scores on the AICPA Achievement Test than those students transferring with elementary accounting principles from two-year schools?

Questions relevant to Research Objective II:

1. Do the first-semester intermediate accounting students of selected four-year schools in Oklahoma who are non-transfer students achieve differently in terms of final course grade in Intermediate Accounting I than those students transferring with elementary accounting principles from two-year schools?

2. Do the first-semester intermediate accounting students of selected Type I, Type II, and Type III schools in Oklahoma achieve differently in terms of final course grade in Intermediate Accounting I?

3. Do the first-semester intermediate accounting students of selected Type I schools in Oklahoma who are non-transfer students achieve differently in terms of final course grade in Intermediate Accounting I than those students transferring with elementary accounting principles from two-year schools?

4. Do the first-semester intermediate accounting students of selected Type II schools in Oklahoma who are non-transfer students achieve differently in terms of final course grade in Intermediate Accounting I than those students transferring with elementary accounting principles from two-year schools?

5. Do the first-semester intermediate accounting students of selected Type III schools in Oklahoma who are non-transfer students achieve differently in terms of final course grade in Intermediate Accounting I than those students transferring with elementary accounting principles from two-year schools?

Hypotheses to be Tested

The hypotheses tested in this study are presented in the null form. Five hypotheses are associated with Research Objective I and five hypotheses are associated with Research Objective II. Hypotheses relevant to Research Objective I;

Ho_1 There is no significant difference between the means of the scores made by the non-transfer group and the junior college transfer group on the AICPA Level I, Form E-S Achievement Test when the scores are adjusted for the influence of the ACT composite score, cumulative grade point average, and the elementary accounting principles grade point average and when tested at the .05 level of confidence.

Ho_2 There is no significant difference among the means of the scores made by students at Type I, Type II, and Type III schools on the AICPA Level I, Form E-S Achievement Test when the scores are adjusted for the influence of the ACT composite score, cumulative grade point average, and the elementary accounting principles grade point average and when tested at the .05 level of confidence.

Ho_3 There is no significant difference between the means of the scores made by the non-transfer students and the junior college transfer students at Type I schools on the AICPA Level I, Form E-S Achievement Test when the scores are adjusted for the influence of the ACT composite score, cumulative grade point average, and the elementary accounting principles grade point average and when tested at the .05 level of confidence.

Ho_4 There is no significant difference between the means of the scores made by the non-transfer students and the junior college transfer students at Type II schools on the AICPA Level I, Form E-S Achievement Test when the scores are adjusted for the influence of the ACT composite score, cumulative grade point average, and the elementary accounting principles grade point average and when tested at the .05 level of confidence.

Ho_5 There is no significant difference between the means of the scores made by the non-transfer students and the junior college transfer students at Type III schools on the AICPA Level I, Form E-S Achievement Test when the scores are adjusted for the influence of the ACT composite score, cumulative grade point average, and the elementary accounting principles grade point average and when tested at the .05 level of confidence.

Hypotheses relevant to Research Objective II:

Ho_6 There is no significant difference between the means of the final course grades made by the non-transfer group and the junior college transfer group in Intermediate Accounting I when the final course grades are adjusted for the influence of the ACT composite score, cumulative grade point average, elementary accounting principles grade point average, and the score on the AICPA Achievement Test and when tested at the .05 level of confidence.

Ho_7 There is no significant difference among the means of the final course grades made by students at Type I, Type II, and Type III schools in Intermediate Accounting I when the final course grades are adjusted for the influence of the ACT composite score, cumulative grade point average, elementary accounting principles grade point average, and the score on the AICPA Achievement Test and when tested at the .05 level of confidence.

Ho_8 There is no significant difference between the means of the final course grades made by the non-transfer students and the junior college transfer students at Type I schools in Intermediate Accounting I when the final course grades are adjusted for the influence of the ACT composite score, cumulative grade point average, elementary accounting principles grade point average, and the score on the AICPA Achievement Test and when tested at the .05 level of confidence.

Ho_9 There is no significant difference between the means of the final course grades made by the non-transfer students and the junior college transfer students at Type II schools in Intermediate Accounting I when the final course grades are adjusted for the influence of the ACT composite score, cumulative grade point average, and the score on the AICPA Achievement Test and when tested at the .05 level of confidence.

Ho_{10} There is no significant difference between the means of the final course grades made by the non-transfer and the junior college transfer students at Type III schools in Intermediate Accounting I when the final course grades are adjusted for the influence of the ACT composite score, cumulative grade point average, elementary accounting principles grade point average, and the score on the AICPA Achievement Test and when tested at the .05 level of confidence.

Assumptions

It was assumed that the AICPA Level I, Form E-S Achievement Examination was a valid and reliable testing instrument for measuring elementary accounting achievement.

It was assumed that the Intermediate Accounting I grades assigned by accounting teachers were valid indicators of achievement in intermediate accounting.

It was assumed that academic standards and grading practices were common among all schools within each group of schools classified according to school types.

It was further assumed that subjects represented in the sample were typical of those students enrolling in intermediate accounting at Oklahoma four-year institutions.

Delimitations

This investigation was limited to five senior-level institutions in Oklahoma's system of higher education. These institutions were selected because of their function and location. Only those undergraduate junior college transfer and native four-year college students with majors in the area of business were included in the sample. The sample was further limited to only those students with obtainable ACT standard composite scores. This study was conducted during the fall semester of 1973.

Limitations

There was no intermediate-level accounting examination available for measuring accounting achievement at the end of the first semester of

intermediate accounting. Subjects in this study were unaware of taking the AICPA Level I achievement examination until the day and hour of testing. No effort was made to determine the psychological effects of this unawareness on subject performance.

Methodology and Analytical Procedures

The Sample

The sample consisted of students enrolled in first semester intermediate accounting during the fall semester of 1973 at five senior-level institutions in Oklahoma. The study involved students at the University of Oklahoma at Norman, Oklahoma State University at Stillwater, Central State University at Edmond, Northeastern State College at Tahlequah, and Southwestern State College at Weatherford. These schools were selected because of their function in the academic program in Oklahoma, their dispersion within the state, and the likelihood of their attraction of junior college transfer students.

Procedures for Collecting Data

The procedures for collecting the data for this research project were begun by securing the cooperation of each of the five schools selected to participate in this study. The actual data collection started early in the fall semester of 1973 with the administration of the AICPA Level I, Form E-S Achievement Examination to all students attending Intermediate Accounting I classes during the first week of classes. Specific data collection steps were as follows:

1. Cooperation was secured from the administration of each school.

2. Permission and cooperation was obtained from the teachers teaching Intermediate Accounting I for using their classes.

3. Permission was obtained from the records office of each school for the acquisition and use of information from student records.

4. Permission for using student records was obtained from participating students.

5. The ACT composite standard score, cumulative grade point average and Principles of Accounting I and II grades for each student were obtained from student records.

6. College records were used for verification of those students transferring principles of accounting from two-year schools.

7. College records were used for verification of class status and academic major of each student.

8. The AICPA Achievement Test, Level I, Form E-S was administered during the first week of the fall semester.

9. Questionnaires were completed by students during the first week of the fall semester.

10. Final course grades were obtained for each student participating in this study.

Procedures for Data Analysis and Interpretation

Analysis of covariance was the statistical technique used to obtain the F-values to test the hypotheses.[1] Analysis of covariance is capable of controlling those variables that were not otherwise controllable in this study. As Johnson explains the analysis of covariance:

> This operation makes it possible to increase the precision of an experiment by elimination of variation in some cases not controlled or controllable by the experimental design.[2]

---

[1] James E. Wert, Charles O. Neidt, and Stanley J. Ahmann, Statistical Methods in Educational and Psychological Research (New York: Appleton-Century-Crofts, Inc., 1954), pp. 343-360.

[2] Palmer O. Johnson, Statistical Methods in Research (New York: Prentice-Hall, Inc., 1949), p. 216.

To determine whether there is a significant difference in the performance of the students tested, a computer program designed to compute an analysis of covariance with multiple covariates, or independent factors, and one dependent factor was used. Analysis of covariance was used to equalize the non-transfer and transfer groups in terms of background factors and to adjust the accounting achievement test and intermediate accounting final course grade means to allow for this equalization.

Two basic analyses were made in this study to compare the performance of junior college transfer and native students. These two groups were first compared on the basis of their performance on the AICPA Achievement Test and secondly on the basis of their academic achievement in Intermediate Accounting I. To provide for differences in academic philosophy, instructional techniques, and grading practices that may exist among the five institutions from which the sample was drawn, comparisons were made of the performances of native and junior college transfer students based upon the type of institution involved. It is believed by the writer that when performances of students are analyzed by grouping institutions with similar characteristics and functions, validity will be added to the results obtained when comparing the combined junior college transfer students with the combined native students of the five senior-level institutions in this study.

Organization of the Study

Chapter I presents an introduction to the investigation undertaken. It includes the purpose of the study, definition of terms,

statement of the problem, hypotheses to be tested, assumptions, delimitations, limitations, methodology and analytical procedures, and the organization of the study.

Chapter II presents a review of the literature which is related to the study.

Chapter III presents the methodology and analytical procedures used in this study.

Chapter IV presents the statistical analysis and interpretation of the data collected for the study.

Chapter V presents a summary of the study. Conclusions are drawn and recommendations are made from the results of the study.

CHAPTER II

REVIEW OF RELATED LITERATURE

The development of the junior college concept in America's system of higher education has been rich in historical perspective. William Rainey Harper, sometimes called the "father of the junior college," has had significant influence in the development of the junior college movement in our system of collegiate education.[1] He was instrumental in the reorganization of the University of Chicago in 1892 into two separate colleges. These colleges later became known as the "junior college" for lower-division work and "senior college" for upper-division studies. It is from some of the efforts of President Harper that contemporary junior colleges in the United States have had their beginning.

Since the founding of the junior college in American education, many functions of the junior college have been expressed in establishing their proper role. The "transfer" function of the two-year school has become generally accepted in higher education. This review of literature will focus on general research dealing with the transferability of junior college students and more specifically with the transferability of junior college students into a study of upper-division accounting at senior-level schools.

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[1]Walter Crosby Eells, The Junior College (Boston: Houghton Mifflin Company, 1931), p. 47.

Review of General Studies and Related Literature

In 1967 The American College Testing Program, Inc. conducted a study involving an analysis of junior college students.[1] The sample consisted of 4,009 sophomore students at twenty-nine two-year colleges across the nation. That investigation describes the typical junior college student as one who had attended high school immediately before entering college and who has as a goal the preparation for transfer to a four-year institution. He aspires to a bachelor's degree and believes the most important goal in attending college is to secure vocational training. The junior college student is typically a working student who lives and studies at home.

When compared to peers in four-year institutions the junior college student is generally found to be less able in terms of academic potential with fewer non-academic high school accomplishments. The two-year college student tends to choose an institution for practical reasons and has a tendency to select business or agriculture as practical careers.

The American College Testing Program's study determined junior colleges to be institutions which attract pragmatic students seeking vocational training, and to be less attractive to talented students who are intellectually and academically oriented.[2] When comparing two-year with four-year college students, that study found considerable overlap in the ability of students attending the two types of schools. Many of the

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[1] The American College Testing Program, Inc., The Two-Year College and Its Students: An Emperical Report (Iowa City, Iowa: The American College Testing Program, Inc., 1969), pp. 43-45.

[2] Ibid., p. 80.

two-year students had higher aptitude than the average four-year student. The study, in using ACT test scores revealed that students within the average two-year colleges were more diverse than those within the typical four-year schools. Hence, a wider "spread" in achievement was noted at the two-year colleges as compared to the four-year schools. It was also found that students at two-year schools were awarded about the same college grades as students at the four-year institutions. Therefore, it was concluded that if the two-year college students had attended four-year schools they probably would have obtained lower college grades.[1]

The American College Testing Program's research has verified many of the conclusions concerning the abilities of junior college students drawn by Medsker in previous research.[2] Medsker's study involved seventeen senior level schools dispersed across the United States. He was concerned with analyzing the junior colleges, students, and the transferability of these students into the seventeen degree-granting institutions.

In reference to the findings in his study, Medsker said:

> The available facts indicate that the average academic aptitude level of students entering two-year colleges is somewhat below that of those who enter four-year colleges. However, there is a wide range of abilities among two-year college students, and many of them are superior in ability to many students in four-year institutions.[3]

The research studies previously cited indicate a difference in the academic abilities of the average two-year student when compared with the average four-year student. The questions of importance now are: what achievements do junior college transfer students realize after

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[1] Ibid., p. 104.

[2] Leland L. Medsker, The Junior College: Progress and Prospect (New York: McGraw-Hill Book Company, Inc., 1960).

[3] Ibid., p. 30.

transferring to the four-year schools, and how do they compare with native students after transfer?

Hills[1] in studying junior college transfers was concerned with "transfer shock"--a loss in grade point after transfer. He reviewed more than twenty studies conducted from the latter 1920's to 1963 dealing with the performance of the junior college transfer. The studies reviewed show that out of 46 sets of data relevant to the question of "transfer shock" forty-four revealed shock and two showed no shock. Out of 38 sets of data in which recovery from shock could be observed, thirty-four showed recovery and four showed none.

In probing the question of whether native students obtain better grades than transfers, Hills found 33 sets of data dealing with this problem. Twenty-two indicated native students performed better, four indicated better performance by the junior college transfers, while seven indicated they performed equally well.

Hills' investigation of transfer studies revealed that 21 sets of data examined whether the junior college transfers took longer than natives to graduate. The investigation also considered whether a smaller proportion of transfers than natives were graduated. Nineteen studies showed the natives were graduated sooner or in greater proportions and two showed the junior college transfers were graduated sooner or in greater proportions.

From the review of research pertaining to junior college transfers, Hills concluded a junior college transfer can expect a drop in college

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[1]John R. Hills, "Transfer Shock: The Academic Performance of the Junior College Transfer," The Journal of Experimental Education, XXXIII (Spring, 1965), pp. 201-15.

grades after transfer with a good probability of his grades recovering to some extent. After transfer his grades will probably be lower than those of the native students at the college to which he transfers. In graduation expectation, the junior college transfer is likely to take longer to graduate than the native student.[1]

Early in 1960 Knoell and Medsker,[2] with the cooperation of the U. S. Office of Education, began a study of the performance of junior college transfer students. Their sample for this study involved subjects in California, Washington, Florida, Georgia, Texas, New York, Pennsylvania, Illinois, Michigan, and Kansas. A sample of 6,345 junior college transfer students was selected from 43 senior-level institutions in these states.

Their study revealed nearly two-thirds of the transfer students completed the first term after transfer with a grade-point average of "C" or better.[3] However, this constituted an average drop in grade point for the sample of 0.3 when compared to their cumulative junior college average. Forty-five per cent of the junior college transfer students received their baccalaureate degree after two years at the senior-level schools. Slightly more than half the students who did not graduate were still in college two years after transfer. It was determined from this study that nineteen per cent of the transfers withdrawing from school left with a grade point below "C." The junior college transfers' cumulative grade averages at the four-year colleges were generally lower than were their grade averages while

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[1] Ibid., p. 209.

[2] Dorothy M. Knoell and Leland L. Medsker, Factors Affecting Performance of Transfer Students from Two-to-Four Year Colleges (Berkeley: Center for the Study of Higher Education, University of California, 1964).

[3] Ibid., p. 177.

attending the two-year schools. However, the grade averages steadily improved following the first-term loss that was realized immediately after transfer.[1]

Knoell and Medsker found, when comparing the performance of transfer student graduates and native student graduates, small but statistically significant differences in grade point achievement. These differences were noted at both the lower and upper division levels. The transfer students earned consistently higher averages than the native students in the lower division but the native students earned higher averages than the transfers in the upper division.[2] Because the results of this national study were less than desired, Knoell and Medsker continued the study through the third year after transfer.

> A major impetus for the third-year follow-up study of the students who transferred from junior colleges in 1960 was afforded by the finding that fewer than half the students had received their baccalaureate degree after two years and that nearly one-third were still enrolled in the four-year colleges. Furthermore, a large number of the dropouts reported either that they were planning to re-enroll at the same college or that they had transferred to another college to pursue their degree program. The findings from the two-year study thus tended to cast some doubt on the success of the junior colleges in their performance of the transfer function, or on the effectiveness of articulation between the two types of colleges. The outcome for the rather considerable group of students who were still enrolled more than two years after transfer was believed to be of critical importance in reaching a conclusion about the performance of the transfer function.[3]

The results of that continued investigation revealed that approximately 75 per cent of the original group transferring in 1960 could be

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[1] Ibid., p. 178.

[2] Ibid., p. 180.

[3] Dorothy M. Knoell and Leland L. Medsker, Articulation Between Two-Year and Four-Year Colleges (Berkeley: Center for the Study of Higher Education, University of California, 1964), p. 9.

expected to achieve graduation. Three calender years after transfer from junior college 62 per cent had obtained their baccalaureate degrees. Nine per cent were still enrolled and probably would be graduated during the fourth year after transfer. Of the 29 per cent not completing baccalaureate degree requirements before withdrawal, only 10 per cent withdrew as a result of dismissal for unsatisfactory scholarship.[1]

Since the conclusion of the Knoell and Medsker study, various other studies have been completed concerning the academic performance of junior college transfers entering a senior-level institution. In 1966 Spangler[2] studied the academic success of junior college transfers at Auburn University. He found that junior college transfers' cumulative grade average for the first term after transfer was 0.44 of a grade point below the cumulative grade average attained prior to transfer. This decline was followed by a gradual rise in grade averages. However, the junior college transfers' cumulative grade average at Auburn never reached their pre-transfer average. For the junior college transfer, Spangler found grades after transfer to be lower than the grades of the other Auburn undergraduate enrollment. At the termination of his study in 1964 approximately 20 per cent of the transfers had been graduated from Auburn, 25 per cent were still in residence and 55 per cent had dropped out due to academic or other reasons.

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[1] Ibid., p. 25.

[2] Billy Ben Spangler, "A Study of the Academic Success of Junior College Students Who Transferred to Auburn University from Fall, 1960 through Fall, 1963." (unpublished Ed.D. dissertation, Auburn University, 1966) cited by Dissertation Abstracts, p. 888-A.

Hughes[1] in 1968, studying academic achievement of two-year junior college transfer students and four-year students at Mississippi State University, found junior college transfers who persist to graduation compile records of academic achievement which compare favorably with those of native graduates. Hughes determined that grades of junior college transfers compare less favorably with those of native students during the first year after transfer. However, grades for both native and transfer students persisting to graduation improve with each succeeding semester in the junior and senior year. Hughes also found that academic achievement of junior college transfers compared more favorably with native students in forestry, business, and education.

In a similar study conducted at Bethel College, McKee[2] found the academic performance of junior college transfer students exceeded that of the natives in lower division courses. When comparing their academic performance in upper division courses, the native students exceeded that of the transfer students. Another consideration in McKee's study was the analysis of the pre-transfer preparation of public and private junior college students transferring to Bethel College. His investigation revealed that public and private junior college transfer students compare favorably in pre-transfer preparation.

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[1]William Austin Hughes, "A Study Comparing the Academic Achievement of Junior College Transfer Students with That of Native Students at Mississippi State University." (unpublished Ed.D. dissertation, Mississippi State University, 1968) cited by Dissertation Abstracts, p. 1679-A.

[2]James Edward McKee, "A Study of the Academic Performance of Junior College Transfer Students." (unpublished Ed.D. dissertation, Memphis State University, 1970) cited by Dissertation Abstracts, p. 4425-A.

Prediction of academic accomplishment of junior college transfers has been one of the major concerns of educators studying the transferability of junior college students. Wray and Leischuck[1] made a study of Alabama junior college students transferring between 1966 and 1968 to four-year colleges. In their study, 209 transfer students were selected for the sample to consider the effectiveness of using the number of hours attempted at the junior college, the junior college grade point average, ACT composite score, and the first quarter post-transfer GPA as predictors of academic accomplishment. The results of that study showed the junior college GPA to be the best predictor of the first quarter post-transfer GPA. A correlation of .577 was determined between these two variables. When trying to determine the best predictor for the cumulative fourth quarter post-transfer GPA, the first quarter post-transfer GPA was the best predictor with a correlation of .801 and the junior college GPA was the second best predictor with a correlation of .637.[2] The ACT composite score was a better predictor of transfer academic success than was the number of hours attempted at the junior college. The ACT composite score and number of hours attempted at the junior college had a correlation of .185 and .036, respectively.

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[1]Frederick Earl Wray and Gerald S. Leischuck, "Predicting Academic Success of Junior College Transfers," College and University, XLVII (Fall, 1971), pp. 10-16.

[2]Ibid., p. 14.

Nickens[1] in 1968 conducted a study at Florida State University dealing with determining performance predictors for junior college transfers. From a sample of 398 junior college students transferring to Florida State University, he found the junior college GPA to be the best predictor of the first quarter GPA achieved after transfer. The correlation between these two variables was .58347. The second best predictor with a correlation of .41033 was the total score on the Florida Twelfth-Grade Test. Nickens concluded that the junior college GPA was the only variable which related in any practical way to the performance of junior college transfers at Florida State University.[2]

Mince[3] conducted a study of Texas junior college transfers transferring in 1961 to Texas senior colleges. He found a significant relationship between the junior college grade point averages and the senior college grade point averages of the students after transfer. When comparing these two variables for all junior colleges in the study, the correlation coefficients ranged in values from .22893 to .71890. Mince also concluded that size of the junior college from which students transferred did not make any difference in the relationship between the junior college GPA and the senior college GPA.

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[1]John Nickens, "The Relationship of Selected Variables to Performance of Junior College Transfer Students at Florida State University," The Journal of Experimental Education, XXXVIII (Spring, 1970), pp. 61-65.

[2]Ibid., p. 65.

[3]Edward Wetah Mince, "A Study of Texas Junior College Students Who Transferred to Texas Senior Colleges and of the Relationship Between Grade Point Averages Before and After Transfer." (unpublished Ph.D. dissertation, University of Texas at Austin, 1968) cited by Dissertation Abstracts, p. 1370-A.

In 1970 Taylor[1] studied the academic performance of junior college students transferring to the Department of Business Education at the University of Southern Mississippi. She investigated predictive factors related to the academic performance of junior college transfer students majoring in business education. Taylor found the lower-division grade point average as the factor with the highest validity for predicting achievement of upper-division work. The ACT scores added little predictive power when used together with grade point averages. They had only moderate predictive value if used alone.

In 1963 Mann[2] researched Oklahoma junior college transfers and four-year college transfers enrolling in four major areas at the University of Oklahoma. He was interested in the success and persistency to graduation of these transfers in the Colleges of Education, Business, Arts and Sciences, and Engineering. Mann found that both groups of transfer students generally achieved at a significantly lower rate after entering the University of Oklahoma. He also found a significant difference in the achievement of the native and transfer students according to persistency to graduation. A large number of the transfer students who did not persist to graduation achieved at a rate higher than the

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[1]Gloria Bruemmer Taylor, "Factors Related to the Academic Performance of Students Transferring from Mississippi Public Junior Colleges to the Department of Business Education, University of Southern Mississippi." (unpublished Ed.D. dissertation, University of Southern Mississippi, 1970) cited by Dissertation Abstracts, p. 5805-A.

[2]Mitchel Mann, "The Academic Achievement of Transfer Students at the University of Oklahoma," (unpublished Ed.D. dissertation, University of Oklahoma, 1963).

minimum required for graduation. Because transfer students had higher pre-transfer grade point averages than their grade point averages after transfer, there was no significant difference when comparing native and transfer students' over-all grade point averages. When comparing Oklahoma junior college transfers and Oklahoma four-year college transfers, Mann found these groups compared favorably. He concluded that junior college transfers may expect some drop in post-transfer grade point average, but junior college transfers in general are prepared to achieve at a satisfactory level in the major colleges of the University of Oklahoma.[1]

Hoemann,[2] in another Oklahoma study, analyzed the academic performance and persistency of transfer students from eleven Oklahoma junior colleges transferring to the College of Arts and Sciences at Oklahoma State University. He also found junior college transfers to have a significantly higher two-year accumulated grade point average than native students. Because of this higher two-year accumulated grade point average, transfer students continued to maintain a superiority over native students in grade point at Oklahoma State University. When comparing two-year transfers with natives in persistency to degree attainment, Hoemann found students did not significantly differ. He concluded that students

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[1] Ibid., p. 49.

[2] Victor Harold Hoemann, "A Comparative Study of the Academic Achievement and Persistence to Graduate of Junior College Transfer Students and Native Students in the College of Arts and Sciences at Oklahoma State University." (unpublished Ed.D. dissertation, Oklahoma State University, 1967) cited by Dissertation Abstracts, p. 4875-A.

transferring to Oklahoma State University from Oklahoma junior colleges are generally adequately prepared to successfully attain graduation.

Review of Accounting Studies and Related Literature

The problems of the junior college transfer pursuing business and business related studies at senior institutions have been areas of interest for continuing research in recent years. From this research has evolved a study of the junior college transfer student and the problems encountered after transferring to a four-year school to continue a study in the field of accounting.

The American Association of Collegiate Schools of Business, the American Accounting Association, the American Institute of Certified Public Accountants, and many accounting educators have been concerned with the transferability of accounting courses from junior to senior colleges. At an annual meeting of the American Association of Collegiate Schools of Business a panel chaired by Professor Robert T. Sprouse indicated concern about the problems involving the transferability of junior college students to a study of accounting at AACSB schools.

In discussing the roles of collegiate education in accounting this panel observed:

> Accounting education has traditionally been taught in the four-year colleges and universities. Various factors are causing changes in this traditional structure, particularly the rapid growth of the junior colleges and community colleges and the shift in emphasis in accounting education to a more conceptual approach. Now the junior and community colleges are offering more and more accounting, primarily for the terminal student, but often for the student who will transfer to a four-year school to complete his accounting education. Key questions are (1) whether this trend will continue and (2) what should be the posture of the four-year schools with respect to accepting transfer credit for accounting courses beyond the introductory courses typically taught at the sophomore level.

> The problem is complicated by the fact that accounting courses at the junior or community college level are often presented with the most up-to-date teaching methods, but are very short on course content and rigorous application.[1]

Heins[2] reported the results of a survey conducted in 1966 to secure data relative to accounting courses now offered by accredited junior and community colleges in the United States. A questionnaire was used to gather data from 143 of the 207 junior and community colleges listed in the 6th edition of American Junior Colleges. This questionnaire was designed to secure data concerning specific accounting courses offered, credit hours allowed, course content, and academic training and teaching experience of the accounting faculty. Heins found that 142 of the 143 junior and community colleges offered accounting for transfer credit. Only two of these schools offered less than six hours credit for transfer. Seventy-nine of the schools offered six hours of accounting transfer credit. Of the remaining 61 schools offering more than six hours of transfer credit in accounting, 49 offered a maximum of eight hours.[3]

When reviewing the choice of textbooks for the junior college elementary accounting course, Heins found the most popular book to be the 8th edition of South-Western Publishing Company's book authored by Noble and Niswonger. Seventy-four per cent of the 142 schools used this text. The remaining schools were fairly evenly divided among the other currently popular texts.[4]

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[1]"Pace-Setting Accounting Curricula--The Demise of the Traditional Accounting Major," Robert T. Sprouse, panel chairman, AACSB Proceedings (St. Louis, Missouri: American Association of Collegiate Schools of Business, 1971), p. 69.

[2]Everett B. Heins, "A Survey of Accounting in Junior Colleges," The Accounting Review, XLI (April, 1966), pp. 323-26.

[3]Ibid., p. 324.

[4]Ibid.

When examining actual classroom techniques, Heins found 91 of the 142 schools taught accounting principles using three lecture hours. One hundred nineteen of the schools used one or more practice sets in teaching accounting principles. Seventy-five per cent of the schools provided one or more laboratory hours each week for beginning accounting students.[1]

Heins, while examining course offerings above elementary accounting principles, found that of the 143 junior colleges studied, 51 per cent offered intermediate accounting, 32 per cent offered income tax accounting, 61 per cent offered cost accounting and 10 per cent offered auditing instruction. The majority of the junior colleges offering accounting courses above the elementary accounting level did not limit these courses to terminal students, but offered them for transferable credit.[2]

Of the 417 junior college accounting teachers reviewed by Heins, 76.97 per cent were considered full-time faculty. Twelve per cent of the faculty held the CPA certificate and ten per cent were Public Accountants. In terms of accounting education hours earned by the full-time junior college faculty, 37 per cent had earned 24 hours or less in accounting study, 42 per cent had earned more than 24 hours and the remaining 21 per cent did not specify the number of accounting preparation hours earned.[3]

The American Institute of Certified Public Accountants and 28 state CPA societies sponsored the Accounting Education Survey conducted in 1968 and directed by Dr. Doyle Z. Williams.[4] The purpose of the survey was to obtain information which might be useful to those in accounting education in continuing their efforts in recruiting students to accounting study.

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[1] Ibid., p. 324. [2] Ibid., p. 325. [3] Ibid., p. 326.

[4] Doyle Z. Williams, "A Survey of Accounting Education," The Journal of Accountancy, CXXIX (February, 1970), pp. 85-89.

It was also desired that this study would help to provide adequate economic support for accounting education and curricula planning. The questionnaires used in that survey were developed by the AICPA to gather information about the amount of accounting offered, characteristics of accounting faculty, availability of auxiliary support for accounting education, and accounting curriculums. These questionnaires were completed by 418 four-year colleges and universities and 149 junior colleges representing a wide geographical distribution.

From this study it was determined that a positive relationship exists between the size of the school and the amount of accounting offered. Only 3.6 per cent of the schools surveyed, with enrollments of 2,000 or more students, offered no program in accounting. All institutions having enrollments of 15,000 or more offered an accounting program. The study also revealed accounting education employs an unusually high proportion of part-time faculty as compared to other disciplines. This survey reported a total of 1,440 full-time accounting faculty and 1,234 part-time faculty including graduate teaching assistants. Of the full-time faculty 31.4 per cent held an earned doctorate and almost 60 per cent held the CPA certificate, as compared to 45 per cent of the part-time faculty holding the CPA certificate.[1]

In discussing the contribution of junior colleges to accounting education, Dr. Williams stated:

> The explosive growth of junior colleges in the last decade and the promise of even greater growth in the future--has introduced an important new dimension into collegiate education in accounting. As increased numbers of students attend junior colleges prior to entrance into senior colleges, the established patterns of recruiting students

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[1] Ibid., p. 86.

> to accounting study and the nature of their professional preparation undoubtedly will be altered. For these reasons, it is important for those responsible for recruiting and educating the inputs into professional accounting careers to become more knowledgeable of the environment of accounting education in junior colleges.[1]

As was the case with senior institutions, the responses obtained from the survey of junior colleges indicated the amount of accounting offered by junior colleges tends to be related to the enrollment of the schools. Every junior college studied that had an enrollment of 2,000 or more offered some accounting or had an accounting program. However, 53.1 per cent of these schools offering an accounting program had enrollments of fewer than two thousand. Of the full-time junior college faculty, about four per cent held doctorate degrees. Since the bachelor's degree was the highest degree earned by about 18 per cent of the full-time junior college faculty, the majority of the accounting faculty was holding a master's degree and about 44 per cent of the junior college accounting instructors possessed the CPA certificate. The doctorate among the junior college accounting faculty was virtually nonexistent. However, Williams determined that junior college accounting faculties tend to have higher academic qualifications than some of the other disciplines at the two-year college level.[2]

Williams, in studying the accounting curricula offered at the junior college level, found that junior colleges offer a variety of accounting courses beyond the introductory level. Of the 61 schools

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[1] Ibid., p. 88.

[2] Doyle Z. Williams, A Statistical Survey of Accounting Education, 1967-68 (New York: American Institute of Certified Public Accountants, Inc., 1969), pp. 46-56.

completing the portion of the questionnaire applicable to course offerings at junior colleges, an average of 16.8 semester hours of accounting were required. These courses include intermediate accounting, cost accounting, and income tax accounting. Williams did find, however, that credit for courses other than introductory accounting is frequently not transferable to senior-level institutions. Thus, it is generally to the disadvantage of the student wishing to continue his accounting study to take advanced accounting courses at the junior-college level.[1]

During 1968 and 1969 a committee of the American Accounting Association conducted research dealing with the transferability of junior college students to a study of accounting at senior-level institutions.[2] This committee attempted to examine accounting courses offered by junior colleges and to determine how senior colleges and universities evaluate the courses taken by students at junior colleges. Questionnaires were sent to 97 junior colleges in Florida, Michigan, Massachusetts, and New York. The committee believed that these 97 junior colleges were fairly representative of the rest of the junior colleges throughout the country. Questionnaires were also sent to senior colleges and universities in Florida, Michigan, New York, Massachusetts, and Louisiana. The questionnaires sent to both categories were used to examine accounting courses offered by two-year schools and to determine how senior colleges and universities evaluate the accounting courses taken by students at

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[1] Ibid., p. 56.

[2] American Accounting Association, Report of the Committee on the Accounting Curriculum for Junior and Community Colleges, The Accounting Review, Supplement to Vol. XLV (1970), pp. 10-26.

these schools. That investigation revealed the mean accounting credit offerings of the 21 junior colleges in Florida to be 12.7 credit hours, the 26 junior colleges in Michigan to be 15.4 credit hours, the 32 junior colleges in New York to be 18.4 credit hours and the mean accounting offerings of the 18 junior colleges studied in Massachusetts to be 18 credit hours.[1]

Another concern of the curriculum committee dealt with the advice students receive from their counselors at the junior colleges pertaining to the amount of accounting study to be taken at the junior-college level. Of the 97 schools studied, thirteen recommended less than 6 hours, fifty-four recommended 6-12 hours, twenty-one recommended 13-19 hours and nine recommended more than 20 hours of accounting to be taken at the junior-college level before transferring to a four-year school to complete the bachelor's degree.[2]

A further objective of the American Accounting Association study was to determine how senior-level schools evaluated junior college transfer credits in accounting. Sixty-eight senior-level schools were involved in this aspect of the investigation. Of the senior colleges and universities responding, 56 stated that three credits of elementary accounting from a junior college should make the students eligible for the second half of elementary accounting in their own school. The remaining 12 schools either had some reservation about accepting the credit, would not accept it, or did not respond to the question.[3] Thirty-seven of the 68 schools surveyed believed there is a real problem existing when students

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[1] Ibid., p. 12. [2] Ibid. [3] Ibid., p. 14.

take the terminal course in accounting at a junior college and then transfer to a senior college or university to complete degree requirements. Twenty-three felt there was no problem and eight did not respond.[1]

Forty-two of the 68 senior-level schools reported that students who had completed elementary accounting in junior college were adequately prepared for the next course in accounting in their own college or university. Fourteen felt they were not, two offered no accounting and eleven did not respond.[2]

Twenty schools indicated that students completing intermediate accounting in junior colleges were adequately prepared for more advanced courses in accounting. Thirty-three reported they were not adequately prepared and fifteen either offered no advanced work or did not respond.[3]

Of the schools studied, there seemed to be a general consensus that students who had completed three credits of elementary accounting at a junior college were eligible to go directly into the second half of elementary accounting at a four-year institution. There also seemed to be agreement that students who had completed six credit hours of elementary accounting in a junior college were adequately prepared for the next course offered in accounting at the senior-level schools.

The American Accounting Association has been continuously involved in the coordination and articulation of programs of junior and senior-level schools. Since the completion of the 1970 committee report the AAA charged the Committee on Junior (Community) College Curriculum in Accounting with further study of the problem. This committee issued

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[1] Ibid., p. 15. [2] Ibid. [3] Ibid., p. 16.

another report in 1972 dealing with junior and senior college relationships.[1] Some conclusions drawn by this committee were (1) that the individual is more important than the curriculum or course content, (2) that learning is valid regardless of how or where it occurs, and (3) that individuals must be able to relate their accounting concepts to social change.

In reanalyzing the transfer credit problem the committee reported the solution to this problem should be approached by determining the level of competence of the student as he moves from situation to situation. It was suggested that we turn away from measuring education in terms of hours of credit and set up standards for measuring education in terms of levels of competence in a chosen field.[2]

The committee further revealed in its report issued in 1973, in which it concluded that, in the area of accounting, the community college plays a dual role in training paraprofessionals as well as providing the foundation work for those who intend to continue their education at a senior institution.[3] This committee further supported the idea that community colleges and four-year institutions offer basic accounting courses for all students who need a knowledge of accounting. In offering courses for the declared transfer student, the community college can

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[1]American Accounting Association, Report of the Committee on Junior (Community) College Curriculum in Accounting, The Accounting Review, Supplement to Vol. XLVII (1972), pp. 164-85.

[2]Ibid., p. 173.

[3]American Accounting Association, Report of the Committee on the Junior (Community) College Curriculum, The Accounting Review, Supplement to Vol. XLVIII (1973), pp. 36-71.

make a contribution by teaching the beginning part of the "common body of knowledge" as it can by training students interested in a two-year "career" program.[1]

When students transfer from a two-year college to a four-year school, many problems may arise. Transferring credit hours requires close cooperation and understanding on the part of both types of institutions. Consequently, the AAA curriculum committee recommended:

> 1. If a community college student knows that he is going to transfer to a four-year school, he should be counselled to take only one year of accounting.
>
> 2. If the community college student completes a two year career program and then decides to continue for the bachelor's degree (many do so), a fair evaluation (such as a placement examination) should be made to minimize the loss of credits. In those cases where the four year institution is thoroughly familiar with the work of a specific community college, transfer credit may be granted automatically. However, this should not be treated as an open invitation to potential transfer students to take an excessive number of accounting courses in the community college.[2]

Collegiate level accounting in Oklahoma was studied by Null[3] in 1954. Of the 29 schools examined, 16 were institutions which offered programs of study involving four or more years, and 13 were junior colleges offering the typical two-year program. Null interviewed 48 accounting teachers and department chairmen to gather data relative to the practices, procedures, and circumstances surrounding collegiate level accounting

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[1] Ibid., p. 61.

[2] Ibid., p. 62.

[3] Elsie La Hassa Null, "Accounting at the Collegiate Level," (unpublished Ed.D. dissertation, University of Oklahoma, 1954).

instruction at these Oklahoma institutions. Of those interviewed, thirty were teachers of accounting at four-year schools and thirteen were accounting teachers at two-year schools.

All teachers at both junior and senior institutions indicated the most important objective of elementary accounting is to enable students to develop an understanding of the basic concepts and principles involved in the theory of accounting. To enable students to develop competency in application of accounting principles and practices in the interpretation and solution of business problems was the second most important objective as indicated by all junior college teachers and 21 of the 30 senior-level teachers.[1] In examining the phases of instruction emphasized in elementary accounting, only 23 senior-level teachers and the 13 junior-level teachers indicated an emphasis. Fourteen senior college teachers and five junior college teachers indicated they placed emphasis on basic theory of accounting. A greater number of junior college teachers emphasized the most important instructional phase to be recording procedures in accounting.[2]

When examining the choice of textbooks used for elementary accounting principles, Null found that 22 of the 43 teachers interviewed used South-Western Publishing Company textbooks. The second most popular textbook, as indicated by nine teachers, was the principles text authored by Finney and Miller and published by Prentice-Hall, Inc.[3] The two most popular methods of teaching accounting principles as indicated by 20 of the 30 senior-level teachers were the conference method and the lecture method. Ten of the 13 junior college teachers selected the conference and laboratory methods as the most popular at the junior college level.[4]

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[1] Ibid., p. 68. [2] Ibid., p. 74. [3] Ibid., p. 79. [4] Ibid., p. 59.

Walcher[1] examined the accounting concepts being taught in accounting principles courses offered by junior colleges of the Southern Great Plains States. This study was designed to obtain information from these junior college accounting instructors as to their attitudes toward the importance of certain selected accounting concepts and as to the inclusion or exclusion of the concepts in their teaching of elementary accounting principles. To obtain this information, Walcher mailed questionnaires to 80 junior colleges in Oklahoma, Texas, Colorado, Kansas, and New Mexico. Seventy of these schools responded with usable information. A jury of eight university accounting professors from these five states was used in evaluating the importance of accounting concepts being taught.

From the results of this study, Walcher concluded:

1. Junior college accounting instructors are imparting to their students some of the wealth of new knowledge in the dynamic field of accounting.

2. The jurymen, in general, place greater importance on the managerial concepts than do the junior college instructors.

3. The instructors in the large junior colleges seem to be somewhat more cognizant of the newer trends in elementary accounting education than are the instructors in the medium and small junior colleges. In general, the instructors in the large junior colleges are more managerial accounting oriented than are the instructors in the medium or small junior colleges.

4. The kinds of accounting job experience encountered by the junior college instructors does not seem to affect their attitudes toward the importance of the accounting concepts.

5. The amount of accounting education does not seem to affect the junior college instructors in their attitudes toward the importance of the accounting concepts.

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[1] Olin Dean Walcher, "The Accounting Concepts Being Taught in the Accounting Principles Courses in the Junior Colleges of the Southern Great Plains States," (unpublished Ed.D. dissertation, Oklahoma State University, 1970).

6. The amount of college accounting teaching experience does not seem to affect the junior college instructors in their attitudes toward the importance of the accounting concepts.

7. Inasmuch as neither the size of college, accounting job experience of instructors, accounting education of instructor, or college accounting teaching experience show any marked influence on the attitudes of the junior college accounting instructors toward the importance of the accounting concepts, it is possible that the textbook being used may exert considerable influence on the instructor in his attitudes toward the importance of the accounting concepts.[1]

Walcher found that 53 of the 70 junior colleges used the textbook Accounting Principles, Ninth Edition by Niswonger and Fess and published by South-Western Publishing Company. The remaining seventeen schools were fairly evenly divided among six other currently popular elementary accounting texts. Walcher concluded that as newer textbooks in elementary accounting principles place greater emphasis on managerial concepts, and as these newer issues are adopted in the two-year schools, the junior college instructors may be expected to more readily recognize the managerial concepts in elementary accounting instruction.

Factors affecting the performance of junior college accounting students were the major interests of a study conducted by Pearce in 1968.[2] This study was designed to identify some of the factors which could influence a student's performance in elementary accounting classes at San Mateo Junior College. The factors analyzed to determine possible reasons for poor performance were (1) high school experiences (bookkeeping

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[1] Ibid., pp. 197-200.

[2] Frank C. Pearce, "Factors That Affect Performance in Accounting Classes," ERIC Document No. ED023396, (1968), pp. 1-25.

experience and high school attended), (2) scores on the School-College Ability Tests (SCAT), and (3) San Mateo elementary accounting experiences (grade distribution and instructors grading patterns). From this investigation Pearce determined the best indicator or predictor of a student's success in subsequent college accounting classes is his success in previous college accounting classes.

Bryan,[1] interested in determining the relationship of certain scholastic factors and achievement of students in intermediate accounting, conducted a study involving three selected Oklahoma colleges and universities. The subjects of this study were limited to men who were enrolled in intermediate accounting during the years 1966-1968 at Oklahoma State University, Central State University, and Southwestern State College. The sample was further limited to full-time, non-transfer, undergraduate students. Bryan used first and second semester freshmen grade point averages, Accounting I and Accounting II grades, ACT scores, and high-school grades reported by the ACT Program as intellective factors in developing regression equations. From the analyses made, Bryan found the best predictors of achievement in Intermediate Accounting I were grades received in Accounting Principles. The ACT mathematics score and the ACT composite score ranked second as predictive variables. The first and second semester GPA's ranked third in effectiveness as predictor variables in intermediate accounting.[2]

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[1]James Alvin Bryan, "A Study of Selected Factors Related to Student Achievement in Intermediate Accounting," (unpublished Ed.D. dissertation, Oklahoma State University, 1973).

[2]Ibid., p. 76.

Using the American Institute of Certified Public Accountants' Level-I, Form D-S, Achievement Test, Krull[1] compared transfer and non-transfer students' accounting achievement at Michigan State University (MSU) and Western Michigan University (WMU). Krull's investigation consisted of administering the AICPA examination to Intermediate Accounting I students at WMU and MSU and comparing their performance. A further consideration was to compare the transfer and non-transfer students' achievement in terms of the successful completion of Intermediate Accounting I at both Michigan universities. The research results indicated that the combined WMU and MSU non-transfer students scored significantly higher on the AICPA examination than did the Michigan public community college transfer students.[2]

The study further revealed that final course grade performance of transfer and non-transfer students' in Intermediate Accounting I differed significantly. From the results of this study, Krull made the following conclusions:

1. Two-year college transfer students are not as well prepared to pursue intermediate-level accounting studies as university non-transfer students. The popular belief that there is a lower degree of accounting achievement by two-year college students as compared to non-transfer students is a valid contention.

2. Transfer students on the average were not as well prepared to pursue advanced accounting studies in a four year, degree-granting institution as non-transfer students. This statement is justified by a measure of their elementary-level accounting achievement. It is also substantiated by their performance in the first intermediate-level accounting course. Two-year college transfer students did not have similar achievement to non-transfer students in intermediate-level accounting.[3]

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[1]George William Krull, Jr., "A Study of Two-Year College Transfer Students' Elementary Accounting Achievement," (unpublished Ph.D. dissertation, Michigan State University, 1971).

[2]Ibid., p. 135.

[3]Ibid., p. 140.

Based upon the findings of this study Krull recommended similar studies be performed using different populations of transfer students and other major universities. This additional research was recommended to confirm the results of his study and to add to the validity of the generalizations.[1]

In another study dealing with junior college transfer students transferring to four-year schools in Mississippi, Calcote[2] found significant differences exist between transfers and natives. The purposes of his study were (1) to compare the persistency and scholarship of native and two-year college transfer accounting students as a group and subdivided on the basis of age, sex, ACT composite score, and university attended; (2) to determine, on a comparative basis, any significant differences in the two groups of students in relation to the selected characteristics of sex, age, ACT composite score, university attended and lower division scholarship; (3) to compare the persistency and scholarship of transfer accounting students subdivided on the basis of two-year college attended; and (4) to isolate variables significantly relative to persistency and scholarship for the two-year college transfer students and native students.[3]

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[1] Ibid., p. 141.

[2] Roger Dale Calcote, "Academic Success of Two-Year College Transfer Students as Compared to Native Students in Accounting in the Universities of Mississippi," (unpublished D.B.A. dissertation, Mississippi State University, 1971).

[3] Ibid., p. 8.

Calcote's study involved analyzing and evaluating records of accounting students at the University of Southern Mississippi, Mississippi State University and the University of Mississippi. He found that, as a group, native students surpassed transfer students in upper division persistency and scholarship. He also determined that native students' mean ACT scores surpassed that of transfer students. The transfer students' mean age and lower division scholarship surpassed the mean age and lower division scholarship of native students. As Calcote concludes:

> On the basis of the findings pertaining to the academic success of native and transfer accounting students as a group, the high school graduate who seeks to obtain a baccalaureate degree in accounting should clearly recognize the potential handicaps associated with embarking on his college career in the two-year college. After the student has completed the first two years of his college career in the two-year college, his upper division accounting scholarship and all upper division scholarship will likely be significantly inferior to the native university student. In addition, the graduation performance (graduate or nongraduate) and success in upper division accounting (successful or nonsuccessful) of the transfer student will likely be significantly inferior to that of the native student.[1]

Examining factors that affect the achievement of the junior college transfer student in first-term intermediate accounting at selected Florida universities was the purpose of a study conducted by Rhile.[2] All junior college transfer students and native students enrolled in first-term intermediate accounting for the fall term 1970-71 at the Florida State University, University of Florida, and University of South Florida were used to measure the differences in achievement. The standard of

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[1] Ibid., p. 184.

[2] Joseph Elmer Rhile, "Factors That Affect Achievement of the Junior College Student in First-Term Intermediate Accounting," (unpublished Ph.D. dissertation, Georgia State University, 1972).

achievement for this study was the grade received in first-term intermediate accounting. Rhile found a significant difference between junior college transfer and native students' accounting achievement in first semester intermediate accounting. The difference was significant at the .05 level of confidence with the native students having the higher score.[1] Rhile also found the higher the grade earned in junior college elementary accounting the more chance the junior college transfer student had to receive a grade of "C" or better in first-term intermediate accounting.

From the responses of transfer students on a questionnaire used in this study, Rhile found junior college transfer students regard elementary accounting practice sets very helpful. He determined that all junior college transfers who received a grade of "C" or better had had practice sets in junior college accounting. Those students who did not achieve with at least a "C" grade had not been exposed to practice sets.[2] The factor found to be of greatest value to transfer students were junior college instructors' elementary accounting explanations. Eighty per cent of the questionnaire population of 252 selected this factor as having greatest value. Junior college students who achieved a grade of "C" or better in first-term intermediate accounting stated that elementary accounting should be more rigorous. These students desired more problems, more practice, additional homework, more information about accounting work and the course made harder.[3] Rhile also found work experience of students and covering the entire textbook as criterion not required for achieving a grade of "C" or better in first-term intermediate accounting for junior college transfers.

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[1] Ibid., p. 85. [2] Ibid., p. 89. [3] Ibid., p. 90.

Summary

This chapter is the result of an extensive investigation into the literature dealing with the transferability of junior college students to four-year schools. This review has given a description of the typical junior college student through a comparison of two-year and four-year students. Numerous studies were cited dealing with the problems of the student transferring into a four-year school.

Studies were reviewed that indicated there is a difference in the performance of junior college transfers when compared with four-year students. Studies were also cited that showed no significant difference in the performances of two-year and four-year students.

The vital concern of this chapter was a study of literature dealing with the transferability of junior college students into a study of accounting at senior-level schools. Professional organizations such as the American Association of Collegiate Schools of Business, the American Accounting Association, and the American Institute of Certified Public Accountants have been concerned with this problem for many years. The conclusions and recommendations of these organizations dealing with the problem of transferability were presented. These recommendations indicate a continuing effort of professional organizations to effect a workable solution for the problems associated with transferability.

Studies were examined which dealt with an analysis of accounting education at both the junior college and senior college level. This review of literature revealed that the problem of transferring from junior to senior college in the area of accounting has been considered in some areas of the country but little effort has been made in Oklahoma

dealing with this problem. With the conclusions drawn from the Krull study of junior college transfers in Michigan, a study comparing the performance of junior college transfer and four-year students taking intermediate accounting in Oklahoma colleges and universities seems highly justified.

CHAPTER III

METHODOLOGY

The primary purpose of this study was to ascertain if there is a significant difference between the elementary accounting knowledge attained by junior and community college students versus the four-year institution students. Another consideration was to determine how junior college transfer students compare with native senior college students in the successful completion of the first course in intermediate accounting.

Sample

The sample was drawn from a population of students taking the first course in intermediate accounting during the fall semester of 1973 at the five largest state supported institutions in Oklahoma's system of higher education. These schools were selected because of their academic programs and their accessibility to junior college transfer students. The five schools were the University of Oklahoma at Norman, Oklahoma State University at Stillwater, Central State University at Edmond, Northeastern State College at Tahlequah and Southwestern State College at Weatherford. The University of Oklahoma and Central State University are both located in the central part of Oklahoma near the state's largest metropolitan area--Oklahoma City. Within this metropolitan area are several junior

and community colleges from which these institutions may draw transfer students. Oklahoma State University is located in north-central Oklahoma and has a tendency to attract junior college transfer students from the northern part of the state. Northeastern State College, located in northeastern Oklahoma, draws junior college transfer students principally from eastern Oklahoma and the Tulsa metropolitan area. Junior and community college transfers from the southwestern areas of Oklahoma tend to choose Southwestern State College for study beyond the two-year college level. In analyzing the transfer patterns of junior college students to Oklahoma four-year institutions, it was found that students generally are attracted to the four-year institutions within their area; however, it was also evident that considerable dispersion of transfer students exists.

During the first week of classes in the fall semester of 1973, the AICPA Level I, Form E-S Achievement Examination was administered to 668 students enrolled in the seventeen sections of Intermediate Accounting I taught at the five participating schools. A sample of 472 students was then selected from the student population. The 196 students tested, but not included in the sample, were eliminated because of failure to meet criteria for this study. The criteria met by each student in the junior college transfer group were:

1. An obtainable ACT standard composite score;
2. Elementary accounting instruction taken only at a junior or community college;
3. Undergraduate classification with a major in the area of business; and
4. Previous accounting background obtained by the student must be limited to six hours of elementary accounting with the possible exception of exposure to other courses believed not to affect the elementary accounting principles knowledge of the student upon entering Intermediate Accounting I.

The criteria met by the native four-year students were the same as those for the junior college transfer students with one exception. The native four-year students must have had all elementary accounting instruction at the institution where currently enrolled.

TABLE 1

NUMBER OF SECTIONS OF INTERMEDIATE ACCOUNTING I, NUMBER OF STUDENTS TAKING AICPA LEVEL I EXAMINATION, AND THE NUMBER OF STUDENTS MEETING AND FAILING TO MEET THE CRITERIA REQUIREMENTS

Schools	Section Offered	Students Tested	No. Meeting the Criteria	No. Not Meeting the Criteria
Oklahoma State University	4	175	118	57
Oklahoma University	5	184	129	55
Central State University	3	148	93	55
Northeastern State College	3	80	64	16
Southwestern State College	2	81	68	13
Totals	17	668	472	196

Table 1 shows the number of Intermediate Accounting I sections, the number of students taking the AICPA Level I examination, and the number of students not meeting requirements for inclusion in the sample. As indicated in Table 2, there were 371 native and 101 junior college transfer students meeting the established criteria. Of the five participating schools, three distinct types or classifications of schools were evident. There were two major state universities, one minor state

TABLE 2

NUMBER OF NATIVE AND JUNIOR COLLEGE TRANSFER STUDENTS IN THE SAMPLE FROM EACH OF THE INSTITUTIONS

Schools	Native Students	Junior College Transfer Students	Totals
Oklahoma State University	96	22	118
Oklahoma University	110	19	129
Central State University	60	33	93
Northeastern State College	44	20	64
Southwestern State College	61	7	68
Totals	371	101	472

university, and two state four-year colleges. These schools were then classified as Type I, Type II, and Type III schools. The native and transfer students from the two four-year colleges were combined to form the Type I school native and transfer student groups. The native and transfer students from the minor state university became the Type II school native and transfer student groups. The native and transfer students from the two major state universities were combined to form the Type III school groups. The number of sections of intermediate accounting and the number of native and junior college transfer students in each school classification group are shown in Table 3.

TABLE 3

NUMBER OF SECTIONS OF STUDENTS AND NUMBER OF NATIVE AND JUNIOR COLLEGE TRANSFER STUDENTS IN EACH SCHOOL CLASSIFICATION

School Classification	Sections Offered	Number of Native Students	Number of Junior College Transfer Students
Type I	5	105	27
Type II	3	60	33
Type III	9	206	41
Totals	17	371	101

A comparison of the elementary accounting achievement of the 371 native and the 101 junior college transfer students was made by using the AICPA Level I examination as the evaluation instrument. Not all students taking the AICPA Level I examination completed the intermediate accounting course. Table 4, on page 55, shows the number of students taking the Level I examination and the number of students completing Intermediate Accounting I with a final course letter grade of A, B, C, D, or F. An analysis of Table 4 reveals that 88 of the students (63 native and 25 junior college transfer) taking the Level I examination did not complete the Intermediate Accounting I course.

TABLE 4

THE NUMBER OF NATIVE AND JUNIOR COLLEGE TRANSFER STUDENTS WHO WERE AICPA TESTED AND THE NUMBER OF STUDENTS WHO COMPLETED INTERMEDIATE ACCOUNTING I DURING THE FALL SEMESTER OF 1973

School Classification	AICPA Tested		Completing Course	
	Native	Transfer	Native	Transfer
Type I	105	27	93	23
Type II	60	33	46	25
Type III	206	41	169	28
Totals	371	101	308	76

Research Design

An ex post facto research design was used to compare the native and transfer groups. Kerlinger describes ex post facto research as:

> . . . that research in which the independent variable or variables have already occurred and in which the researcher starts with the observation of a dependent variable or variables. He then studies the independent variables in retrospect for their possible relation to, and effect on, the dependent variable or variables.[1]

In this study the performance of the two groups of students on the AICPA Level I examination and the performance of the groups in Intermediate Accounting I, as measured by the final course grade received, were the observed dependent variables.

According to Kerlinger, ex post facto research has three basic weaknesses: (1) the inability to manipulate independent variables,

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[1]Fred N. Kerlinger, Foundations of Behavioral Research (New York: Holt, Rinehart, and Winston, Inc., 1964), p. 360.

(2) the lack of power to randomize, and (3) the risk of improper interpretation.[1] Kerlinger contends that ex post facto research does have value, however, because many research problems in education which do not lend themselves to experimentation do lend themselves to controlled inquiry of the ex post facto kind.[2]

In this investigation it was administratively impossible to measure student knowledge of elementary accounting principles before their enrollment in intermediate accounting. It was also administratively impossible to physically segregate junior college transfer students and native four-year students into separate Intermediate Accounting I classes. Consequently, the classes had to be studied as intact groups at each participating school. The statistical technique used to measure the junior college transfer and native student groups was multiple classification analysis of covariance. Popham indicates that it is usually very difficult for teachers and administrators to cater completely to the wishes of the researcher regarding the manipulation of students for experimental purposes.[3] He further indicates that many educational research studies require that intact classroom groups be used. Analysis of covariance will allow the researcher to statistically equate the independent variable groups with respect to one or more variables which are relevant to the dependent variable.[4]

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[1] Ibid., p. 371.

[2] Ibid., p. 373.

[3] W. James Popham, Educational Statistics Use and Interpretation (New York: Harper & Row, Publishers, 1967), p. 221.

[4] Ibid., p. 223.

Two basic research objectives were present in this study. Research Objective I was to make a comparison of the elementary accounting achievement of the junior college transfer student group and the native senior college student group. The independent variables were the group classification (junior college transfer or native) and the school classification (Type I, Type II, or Type III). The dependent variable was the achievement on the AICPA Level I, Form E-S Achievement Examination. The control variables for this comparison were the ACT composite score, the overall grade point average, and the elementary accounting principles grade point average. From a review of studies related to prediction of accounting achievement, these factors were shown to be effective predictor variables.

Research Objective II was to make a comparison of the achievement of the junior college transfer and non-transfer student groups in the first course in intermediate accounting. For this comparison the dependent variable was the final course grade received in Intermediate Accounting I. The control variables were the ACT composite score, elementary accounting grade point average, overall grade point average, and the AICPA Level I examination score.

Some natives and junior college transfer students originally enrolled in Intermediate Accounting I did not complete the requirements of the course. A chi-square test of significance was made to determine if there was a relationship between the number of students who failed to complete the course and their educational background. This test was designed to answer the question: Were more students who failed to complete the course from junior colleges or from four-year institutions?

Evaluative Instrument

A review of testing materials designed to measure elementary accounting principles knowledge revealed that standardized achievement tests with national norms were currently available from two testing services. The Educational Testing Service of Princeton, New Jersey has the College-Level Examination Program commonly known as CLEP examinations. Included among these tests was an examination designed to measure elementary accounting principles knowledge. The American Institute of Certified Public Accountant's Testing Project Office in New York, New York also had tests available for measuring elementary accounting achievement. Upon reviewing the available tests, only the AICPA Testing Project Office had an examination that could be administered within a 50 minute class period. The CLEP examination program had brief forms of their tests available only until July 1, 1972.

Since the test to be used could take no longer than one regular 50 minute class period to administer, the AICPA Level I, Form E-S Achievement Test was determined to be acceptable for meeting the time constraints of this research project. Permission was then obtained from Mr. William Bock, AICPA Program Supervisor of the Testing Project Office for using the Level I examination as the testing instrument. It was also understood that in order to protect the confidentiality of the test content no part of the test could be reproduced in this thesis. An examination copy of the AICPA Level I, Form E-S test was then obtained for the purpose of analyzing the test content.

The AICPA Level I, Form E-S Achievement Examination is a 45 question multiple-choice examination designed to take a testing time of

50 minutes. The test is divided into four parts. Part I consists of twenty-two questions dealing with vocabulary and financial accounting concepts. Part II has nine questions pertaining to elementary cost and system concepts. There are six questions on the theory of cost-volume-profit behavior in Part III. Part IV is composed of eight questions dealing with account classification.

The percentile rank norms for the Level I, Form E-S examination were based on 10,306 cases tested in the combined spring 1969 through 1970 period. The scoring and reporting services provided by the AICPA Testing Project Office consists of a class list of the raw score and corresponding percentile rating of each student taking the examination. The Testing Project Office gives no published validity or reliability data for Form E-S of this examination. There was available, however, an item analysis for this test giving the difficulty level and discrimination index for each question based upon a group of 450 students tested during January, 1966. This item analysis is reproduced as Appendix A.

Three accounting professors from the accounting departments of two of the four-year schools participating in this study were asked to review the Level I examination on the basis of test content. These included one instructor from the University of Oklahoma and two instructors from Central State University, all of whom expressed positive opinions regarding the use of this test for measuring the accounting concepts taught in the first two courses of elementary accounting principles. On the basis of these opinions the test was determined to have content validity.

In their discussion of content validity, Downie and Heath describe it as follows:

> Content validity is a nonstatistical type of validity that is usually associated with achievement tests. When a test is so constructed that it adequately covers both the content and the objectives of a course or part of a course of learning, it is said to have content validity.[1]

The reliability of a test is another important factor to be considered in selecting the appropriate testing instrument. Reliability is a measurement of the consistency of a test. It indicates how accurately the test measures whatever it is designed to measure. In discussing the size of the reliability coefficient, Downie and Heath indicate:

> In general, reliability coefficients of well-made standardized tests tend to be high, .90 or above. There is no hard and fast rule that says that any reliability has to be of a certain size before any test or measuring instrument can be useful. Today we look upon reliability as a relative thing, and there are certain areas and certain techniques where reliability coefficients fall well below this .90, and the techniques are still used and found to be very useful.[2]

A review of the literature revealed no reliability coefficients for Form E-S of the Level I examination. Krull reported a Hoyt reliability coefficient of .80 and a standard error of measurement of 2.85 based on all test items of the AICPA Level I, Form D-S Achievement Examination.[3]

Each succeeding form of the Level I examination is a revision of the preceding form. Therefore, Form D-S and Form E-S test reliabilities should be similar. Since there was no published reliability coefficient available for this test, it became necessary to determine the test reliability based upon the sample of 472 students taking the examination

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[1] N. M. Downie and R. W. Heath, Basic Statistical Methods (New York: Harper & Row, Publishers, 1965), p. 223.

[2] Ibid., p. 220.

[3] Krull, op. cit., p. 100.

in this research project. Thorndike and Hagen[1] suggest that whenever the mean and standard deviation of a test are known, a reliability coefficient can be calculated by using the Kuder-Richardson Formula 21. The mean for the 472 native and junior college transfer students taking this examination was 15.258 and the standard deviation was 7.166. With this data the following Kuder-Richardson Formula 21 was used to calculate the reliability coefficient:

$$r_{11} = \frac{n}{n-1}\left[1 - \frac{M_t\ (1 - \frac{M_t}{n})}{s_t^2}\right]$$

Where r_{11} is the estimate of reliability

n is the number of items on the test

s_t is the standard deviation of the test

M_t is the mean score of the group[2]

The reliability coefficient for the test was determined to be .82 which compares very favorably with the reliability coefficient reported for form D-S of the achievement examination.

Downie and Heath suggest another statistic called the standard error of measurement may be used for establishing the reliability of a test. They indicate the standard error of measurement

> . . . unlike the reliability coefficient is not affected by the range of scores of the sample tested. It tends to be about the same for samples with different variances. This standard error of measurement is the standard deviation of a sample of scores of an individual about his true score.[3]

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[1]Robert L. Thorndike and Elizabeth Hagen, Measurement and Evaluation in Psychology and Education (New York: John Wiley & Sons, Inc., 1961), p. 181.

[2]Ibid.

[3]Downie and Heath, op. cit., p. 221.

The formula for calculating the standard error of measurement is:

$$s_e = s\sqrt{1-r_{tt}}$$

Where s_e is the standard error of measurement

s is the standard deviation of the test

r_{tt} is the reliability of the test.[1]

Using the standard deviation of 7.166 and the reliability coefficient of .82 the standard error of measurement for this test was determined to be 3.04.

The standard error of measurement is a standard deviation and should be interpreted as such. Therefore it is possible to say that the chances are two out of three that a student's obtained score on the Level I, Form E-S examination was not more than 3.04 units from his true score. The smaller the standard error of measurement, the more reliable the test and the more confidence that can be placed in any score obtained by using the test.[2]

Data Collection Procedures

This study was initiated by obtaining the cooperation of each of the five participating schools. Permission from school administrators was obtained for using the schools' Intermediate Accounting I classes. The cooperation of each accounting instructor teaching a section or sections of the first course in intermediate accounting during the fall semester of 1973 was then secured.

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[1] Ibid.

[2] Ibid., p. 222.

The AICPA Level I, Form E-S tests were obtained from the Testing Project Office of the American Institute of Certified Public Accountants in New York City. These tests along with student questionnaires were distributed to the various schools before class instruction was begun. The students were asked to take the AICPA examination during the first week of classes in the fall of 1973. Not all sections took the examination at each school on the same day but no test was given later than the third class meeting of the semester. Of the seventeen sections tested at the five schools, five sections were tested during the first class period, eleven sections were tested during the second class period and one section was tested during the third class meeting of the semester. With no sections tested later than the third class period, only a minimal amount of course content could be taught before the administration of the examination.

During the first week of classes, students were also asked to complete an informational questionnaire. This questionnaire had three specific purposes. One purpose was to help determine which students were meeting the sample criteria. Another purpose was to facilitate accurate identification of each student. This identification became necessary when student records were analyzed in the office of admissions and records at each school. The third purpose for using the questionnaire was to obtain permission from the students for allowing the researcher to examine student records in the records office of each school. A copy of the student questionnaire and permission form have been reproduced as Appendix B.

The administration of the achievement examination at each school was completed as uniformly as possible. Each intermediate accounting instructor was provided with a testing manual furnished by the AICPA Testing Project Office. The testing manual gave detailed instructions for the administration of the Level I examination. Each teacher was asked to follow carefully the set of testing instructions presented in the testing manual.

After the tests were administered and student questionnaires completed, all materials were then collected from the schools. All testing materials were returned to the Testing Project Office in New York for scoring and evaluating. Upon the return of the testing results from the AICPA Testing Project Office, student testing information forms furnished by the AICPA were completed and returned to each student. These informational forms contained the testing date, the level and form of the examination, the raw score, and the percentile rank of that score based upon the national norms.

While student records were being analyzed in the offices of admissions and records at the five schools, three specific types of data were collected. The data collected for each student were:

1. ACT standard composite score.
2. Overall grade point average.
3. Accounting I and II grades.

As student records were analyzed, the information obtained from the student questionnaires relative to the student status (native or junior college transfer) and the class status (number of credit hours accumulated) was also verified.

Approximately two weeks before the end of the semester, letters were mailed to all cooperating intermediate accounting teachers requesting a copy of the final grade report for each section of intermediate accounting. Self-addressed stamped envelopes were provided to facilitate the return mailing of the final grade reports.

After all data for the sample were accumulated, IBM cards were punched with all data applicable for each student. Appendix C presents the coding of the data and the order in which the data were punched on the cards. A complete list of all data used for the sample of students is presented in Appendix D.

Procedures for Testing Hypotheses

In order to test the hypotheses applicable to Research Objective I and Research Objective II, a 2 x 3 factorial design was used for each set of hypotheses. One set of hypotheses uses the AICPA Level I, Form E-S Achievement Test as the dependent variable and the other set of hypotheses uses the Intermediate Accounting I final course grade as the dependent variable.

By using a 2 x 3 factorial design for testing each set of hypotheses, it becomes possible to test each set with one major statistical operation. This factorial design provides a test of hypotheses about differences between native and junior college transfer students, differences among schools, and tests the effect of the type of school on the kinds (native and junior college transfer) of students.

TABLE 5

2 X 3 FACTORIAL MODEL SHOWING NUMBER OF STUDENTS WITH AICPA ACHIEVEMENT TEST SCORES AND INTERMEDIATE ACCOUNTING I FINAL COURSE GRADES

Student Status	Institutional Status		
	Type I	Type II	Type III
Native	$N_1 = 105$ $N_2 = 93$	$N_1 = 60$ $N_2 = 46$	$N_1 = 206$ $N_2 = 169$
Transfer	$N_1 = 27$ $N_2 = 23$	$N_1 = 33$ $N_2 = 25$	$N_1 = 41$ $N_2 = 28$

N_1 is number of AICPA test scores

N_2 is number of final course grades

Table 5 presents this 2 x 3 factorial design. Each cell in the 2 x 3 model shows the number of students having AICPA achievement test scores and the number of students having Intermediate Accounting I final course grades for each student group at each type of school.

There were five hypotheses associated with Research Objective I and five hypotheses associated with Research Objective II. These hypotheses were stated in the traditional null form.

Hypotheses for Research Objective I

Ho_1 There is no significant difference between the means of the scores made by the non-transfer group and the junior college transfer group on the AICPA Level I, Form E-S Achievement Test when the scores are adjusted for the influence of the ACT composite score, cumulative grade point average, and the elementary accounting principles grade point average and when tested at the .05 level of confidence.

Ho_2 There is no significant difference among the means of the scores made by students at Type I, Type II and Type III schools on the AICPA Level I, Form E-S Achievement Test when the scores are adjusted for the influence of the ACT composite score, cumulative grade point average, and the elementary accounting principles grade point average and when tested at the .05 level of confidence.

Ho_3 There is no significant difference between the means of the scores made by the non-transfer students and the junior college transfer students at Type I schools on the AICPA Level I, Form E-S Achievement Test when the scores are adjusted for the influence of the ACT composite score, cumulative grade point average, and the elementary accounting principles grade point average and when tested at the .05 level of confidence.

Ho_4 There is no significant difference between the means of the scores made by the non-transfer students and the junior college transfer students at Type II schools on the AICPA Level I, Form E-S Achievement Test when the scores are adjusted for the influence of the ACT composite score, cumulative grade point average, and the elementary accounting principles grade point average and when tested at the .05 level of confidence.

Ho_5 There is no significant difference between the means of the scores made by the non-transfer students and the junior college transfer students at Type III schools on the AICPA Level I, Form E-S Achievement Test when the scores are adjusted for the influence of the ACT composite score, cumulative grade point average, and the elementary accounting principles grade point average and when tested at the .05 level of confidence.

Hypotheses for Research Objective II

Ho_6 There is no significant difference between the means of the final course grades made by the non-transfer group and the junior college transfer group in Intermediate Accounting I when the final course grades are adjusted for the influence of the ACT composite score, cumulative grade point average, elementary accounting principles grade point average, and the score on the AICPA Achievement Test and when tested at the .05 level of confidence.

Ho_7 There is no significant difference among the means of the final course grades made by students at Type I, Type II, and Type III schools in Intermediate Accounting I when the final course grades are adjusted for the influence of the ACT

composite score, cumulative grade point average, elementary accounting principles grade point average, and the score on the AICPA Achievement Test and when tested at the .05 level of confidence.

Ho_8 There is no significant difference between the means of the final course grades made by the non-transfer students and the junior college transfer students at Type I schools in Intermediate Accounting I when the final course grades are adjusted for the influence of the ACT composite score, cumulative grade point average, elementary accounting principles grade point average, and the score on the AICPA Achievement Test and when tested at the .05 level of confidence.

Ho_9 There is no significant difference between the means of the final course grades made by the non-transfer students and the junior college transfer students at Type II schools in Intermediate Accounting I when the final course grades are adjusted for the influence of the ACT composite score, cumulative grade point average, elementary accounting principles grade point average, and the score on the AICPA Achievement Test and when tested at the .05 level of confidence.

Ho_{10} There is no significant difference between the means of the final course grades made by the non-transfer students and the junior college transfer students at Type III schools in Intermediate Accounting I when the final course grades are adjusted for the influence of the ACT composite score, cumulative grade point average, elementary accounting principles grade point average, and the score on the AICPA Achievement Test and when tested at the .05 level of confidence.

To facilitate the statistical testing of the hypotheses associated with each research objective, a Biomedical Computer Program (BMDX64)[1] was used at the Merrick Computer Center on the University of Oklahoma campus to perform the statistical operations. This computer program is designed to use multiple classification analysis of covariance.

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[1] W. J. Dixon, Ed., Biomedical Computer Programs, No. 3 (Berkeley: University of California Press, 1970), p. 34.

By using multiple classification analysis of covariance with a 2 x 3 factorial design, three F ratios are calculated. The first F ratio tests for any differences in achievement based upon student status, i.e., between native and junior college transfer groups. The second F ratio tests for differences in achievement based upon the institutional status. This is a test for significant differences among the groups at Type I, Type II, and Type III schools. These two ratios are the "main effect" ratios. The 2 x 3 design provides a third F ratio which tests for the interaction that may be existing between the two main effects. The F ratio for interaction will be used to provide information about the remaining three hypotheses in each set. These hypotheses were designed to test the differences between native and transfer students at each type of school. If there is a significant difference between the native student group and the junior college student group and the F ratio for interaction is not significant then it can be concluded that the difference between the native and junior college transfer students at each type of school is significant. Therefore, the last three hypotheses in each set will be rejected.

If F ratios indicate significant differences, further tests should be conducted to describe and identify these differences. Therefore, if differences exist among schools, it becomes necessary to conduct post hoc analyses to determine which differences are significant. Post hoc analyses were not necessary to test differences between the native and junior college transfer student groups since that F ratio involved only

two classifications. The Scheffé[1] method of post hoc analyses was used to test for differences in student achievement among the different types of schools. The Scheffé test can be used to make all possible comparisons among the Type I, Type II, and Type III school student achievement means.

Chapter IV will present the statistical analyses used to test the research hypotheses developed for this study.

Summary

This chapter has presented the methodology used to measure the research objectives of this study. The sample by which the study was made was described, the research design has been presented, and the methods for accumulating and processing the data for each student were described. A description of the evaluative instrument that was used in collecting the data was also made and the justification for using the AICPA Level I Achievement Examination was presented. This justification included the method of determining the reliability and the content validity of the test.

Finally, a description of the statistical procedures used for analyzing the hypotheses was presented. The computer program that was used to calculate the F ratios for determining the acceptance or rejection of the research hypotheses was discussed.

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[1] Roger E. Kirk, Experimental Design: Procedures for the Behavioral Sciences (Belmont, California: Brooks/Cole Publishing Company, 1968), p. 112.

CHAPTER IV

STATISTICAL ANALYSIS AND INTERPRETATION

The purpose of this study was to determine if there is a difference in the elementary accounting achievement attained by students taking elementary accounting principles at two-year schools as compared to those students taking elementary accounting principles at four-year institutions. A further consideration was to determine how junior college transfer students compare with native senior college students in the successful completion of the first course in intermediate accounting taken at the four-year school.

The comparison of junior college transfer students and four-year native students on the basis of the elementary accounting knowledge attained by these groups became Research Objective I. Research Objective II involved the comparison of the two groups of students based upon student achievement in Intermediate Accounting I. This chapter will present the statistical analysis and interpretation of all data applicable to these research objectives.

Research Objective I

Description of Data

Research Objective I was concerned with a comparison of the elementary accounting achievement attained by junior college transfer

students and four-year non-transfer students. To make this comparison, it became necessary to measure the elementary accounting principles knowledge acquired by these two groups of students.

This measurement of achievement was accomplished through the administration of an examination with national norms. This examination was designed to measure the elementary accounting principles knowledge obtained by the student upon the completion of the first six hours of Principles of Accounting. The AICPA Level I, Form E-S Achievement Examination was the evaluation instrument used in this study. This test was administered to the Intermediate Accounting I classes during the first week of the fall semester of 1973. There were 17 intermediate accounting sections tested at the five participating schools.

A sample of 472 students was selected to participate in this research project. Of the students in the sample, 371 were native or non-transfer four-year students and 101 were junior college transfer students. All junior college transfer students had taken elementary accounting principles at two-year schools.

For the students represented in the sample, the scores on the AICPA achievement examination ranged from zero to thirty-eight. The highest possible score that could be obtained on this examination was forty-five.

In order to make a comparison of the achievement of the native and junior college transfer students on the AICPA examination, the student scores were separated into transfer and non-transfer group classifications for each type of school. Of the five schools represented in the sample, two schools were classified as Type I schools, one school

was classified as a Type II school, and two schools were classified as Type III schools.

The means of the raw scores made on the AICPA achievement test by the junior college transfer and native students at each type of school were calculated. In order to make a comparison of the performance of the native and junior college transfer groups, the statistical technique of analysis of covariance was used. Analysis of covariance allows the scores made by the groups to be adjusted for certain factors that are believed to have an influencing effect on student performance. By using certain control factors known as covariates, the analysis of covariance procedure allows a study to be made of the performance of several groups which are unequal with regard to an important variable (or variables) as though they were equal in this respect. The resulting adjusted scores are then subjected to an analysis of variance which tests for mean differences by identifying the amount of variation resulting from differences between the groups. The F ratios that are produced using covariance techniques are then interpreted in the usual manner. The control variables used to adjust the scores made by the students on the accounting achievement examination were (1) the ACT composite score, (2) the overall grade point average, and (3) the elementary accounting principles grade point average.

Table 6, on page 74, presents the unadjusted raw score means and the adjusted raw score means for each of the groups of students at each type of school. This table also presents the unadjusted and adjusted means for the combined junior college transfer group and the combined non-transfer group. In addition, the table presents the two types of means

for the combined natives and junior college transfers at each type of school. This factor will be useful in a later analysis when the performances of students at each type of school are compared.

TABLE 6

MEANS OF THE AICPA TEST SCORES FOR NATIVE AND TRANSFER STUDENTS AT THREE TYPES OF INSTITUTIONS

Student Groups	Types of Institutions			Combined Means
	Type I	Type II	Type III	
Native:				
Unadjusted	12.743	16.817	18.209	16.437
Adjusted	13.233	17.486	17.623	16.358
Transfer:				
Unadjusted	7.482	13.455	11.171	10.931
Adjusted	8.868	13.609	11.255	11.385
Combined Means:				
Unadjusted	11.667	15.624	17.041	
Adjusted	12.340	16.109	16.566	

When analyzing Table 6, the effect of the covariates on the raw scores may be seen. These covariates have adjusted the raw scores so that the statistical procedures in analysis of covariance will result in a comparison of adjusted means. The adjusted means of the junior college transfer and native groups are all higher than the unadjusted means at Type I and Type II schools. Type I school students were those students tested at state four-year colleges and Type II school students were those students tested at the minor state university. The Type III school means were calculated from the scores of those students from the two major state universities. Their means indicate a somewhat different effect.

The adjusted mean for the native Type III school students is lower than the unadjusted mean. However, the Type III school transfer students' adjusted mean is higher than the unadjusted mean for that group.

The unadjusted mean for the combined native student group (all native students) is higher than the adjusted mean. The reverse effect is noted for the unadjusted and adjusted means for the combined transfer student group (all transfer students). Here again, the effect of the control variables adjusting the means through the covariance procedure is evident.

The differences between the unadjusted and adjusted means indicates the effect of the covariates. Adjusted means were used for the subsequent statistical analyses used for testing the stated hypotheses for Research Objective I.

Hypotheses Tested

In order to test the hypotheses applicable to Research Objective I, a multi-classification analysis of covariance procedure was used with the 2 x 3 factorial design. There were three F ratios computed with this statistical technique. Table 7, on page 76, presents the results of the computation of covariance; it is to be interpreted as analysis of variance.

Table 7 shows the sums of squares, degrees of freedom, mean square, and the F ratio calculated for each source of variation. The table shows the first two F ratios calculated were significant beyond the .05 level. The third F ratio calculated was not significant. These three F ratios were necessary to test the five hypotheses applicable to Research Objective I.

TABLE 7

ANALYSIS OF COVARIANCE OF THE ACHIEVEMENT ON THE AICPA TEST OF NATIVE AND TRANSFER STUDENTS AT THREE TYPES OF INSTITUTIONS

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F
Natives/Transfers	1,662.51	1	1,662.51	57.17*
Types of Schools	949.12	2	474.56	16.31*
Natives/Transfers X Types of Schools	97.33	2	48.66	1.67
Error	13,463.44	463	29.07	----
Total	16,172.40	468	-----	----

*p<.05

The first hypothesis stated for Research Objective I was designed to compare elementary accounting knowledge of students transferring from junior colleges with the elementary accounting knowledge of students native to senior level schools. To test for any differences in elementary accounting knowledge acquired by both groups of students, the null hypothesis was stated as follows:

Ho_1 There is no significant difference between the means of the scores made by the non-transfer group and the junior college transfer group on the AICPA Level I, Form E-S Achievement Test when the scores are adjusted for the influence of the ACT composite score, cumulative grade point average, and the elementary accounting principles grade point average and when tested at the .05 level of confidence.

In testing this hypothesis, the source of variation involves any differences in achievement levels attained by native and junior college transfer student groups on the AICPA examination. In Table 7, the F

ratio for the first main effect, Native/Transfers, indicates a significant difference between the means of scores made by native students and transfer students ($F = 57.17$; $p<.05 = 3.86$). Therefore, the null hypothesis was rejected.

Once it has been determined that a significant difference does exist in the elementary accounting knowledge attained by junior college transfer and native students, it is necessary to know which group did significantly better. To determine this, Table 6, on page 74, must be analyzed for differences in adjusted means. The adjusted mean for the combined junior college transfer group is 11.385 and the adjusted mean for the combined non-transfer group is 16.358. Since the difference between the adjusted means is statistically significant, it is evident that the native student group performed significantly better on the accounting achievement examination than did the junior college transfer group.

Another concern of Research Objective I involved a comparison of the performance of students from the three types of schools on the AICPA examination. This analysis was made to determine if there is a difference in the accounting achievement obtained by those students attending Type I, Type II, and Type III schools. The second hypothesis applicable to Research Objective I was stated as follows:

Ho_2 There is no significant difference among the means of the scores made by students at Type I, Type II, and Type III schools on the AICPA Level I, Form E-S Achievement Test when the scores are adjusted for the influence of the ACT composite score, cumulative grade point average, and the elementary accounting principles grade point average and when tested at the .05 level of confidence.

It must be observed that this hypothesis is testing for differences in accounting achievement of the combined native and transfer students at Type I, Type II, and Type III schools. The F ratio for the second main effect, Types of Schools, presented in Table 7 indicates differences among means of scores from the three types of schools. This F ratio was produced when the hypothesis of no difference in student achievement among the schools was tested. When comparing the calculated F ratio of 16.31 with the tabled value of 3.02 (.05 level) a significant difference is clearly evident. Therefore, the null hypothesis stating no difference among schools was rejected.

The rejection of this hypothesis indicates differences do exist in student knowledge of elementary accounting among the schools. Table 6 presents the adjusted mean values for all students taking the achievement test at each type of school. The adjusted mean for both native and transfer students at Type I schools is 12.340, for all students at the Type II school is 16.109, and for all students at Type III schools is 16.566.

Since more than two means exist, it cannot be determined which student group performed significantly better without further analysis. Analysis of variance indicates that differences exist; it does not identify the differences. Post hoc analyses were made to determine these differences. The post hoc analysis used to make these comparisons involved subjecting the adjusted means of the three types of schools to a Scheffé test. Table 8 presents the results of the Scheffé test.

It should be noted that the mean of scores made at Type I schools is significantly lower than the mean of scores made by students at the Type II and Type III schools. However, the difference between the mean

TABLE 8

SCHEFFÉ TEST FOR DIFFERENCES AMONG THE AICPA ADJUSTED MEANS OF STUDENTS AT THREE TYPES OF SCHOOLS

Comparison of Means	F
Type I ($\bar{x}$ = 12.340 with Type II ($\bar{x}$ = 16.109)	4.24*
Type I ($\bar{x}$ = 12.340 with Type III ($\bar{x}$ = 16.566)	4.58*
Type II ($\bar{x}$ = 16.109) with Type III ($\bar{x}$ = 16.566)	1.48

*p<.05 (df = 5; 463)

scores of students at Type II and Type III schools was not significantly different.

A final concern of Research Objective I involved a comparison of the elementary accounting achievement of junior college transfer and native students at each type of school. Do junior college transfer students perform significantly better at one type of school while native students perform significantly better at another type of school? The last three hypotheses tested for Research Objective I were concerned with making this determination. These null hypotheses were:

Ho_3 There is no significant difference between the means of the scores made by the non-transfer students and the junior college transfer students at Type I schools on the AICPA Level I, Form E-S Achievement Test when the scores are adjusted for the influence of the ACT composite score, cumulative grade point average, and the elementary accounting principles grade point average and when tested at the .05 level of confidence.

Ho_4 There is no significant difference between the means of the scores made by the non-transfer students and the junior college transfer students at Type II schools on the AICPA Level I, Form E-S Achievement Test when the scores are

adjusted for the influence of the ACT composite score, cumulative grade point average, and the elementary accounting principles grade point average and when tested at the .05 level of confidence.

Ho_5 There is no significant difference between the means of the scores made by the non-transfer students and the junior college transfer students at Type III schools on the AICPA Level I, Form E-S Achievement Test when the scores are adjusted for the influence of the ACT composite score, cumulative grade point average, and the elementary accounting principles grade point average and when tested at the .05 level of confidence.

To make a determination of student performance on the accounting achievement examination of the two types of students at each type of school, the first two F ratios in Table 7 must be reconsidered. The first F ratio clearly indicated a significant difference between the performance of transfer and non-transfer students when only these student classifications were considered. The second F ratio indicated a significant difference existed in the performance of students at each school. It cannot be concluded that native students performed significantly better than transfer students at each school. In order to make a comparison of the performance of natives and junior college transfers at each school as hypotheses three, four, and five tested, the interaction effect must be considered. This interaction effect considers the potential relationship between the dependent variable and the combined interacting effects of the two independent variables. To state this situation in another manner, what interacting relationship or effect is the type of school and the type of student having on the achievement level? The third F ratio presented in Table 7 indicated the results of the interaction effects of type of student and type of school. The F ratio of 1.67 did not reach the level required for significance; there was no interaction effect present.

With no interaction effect existing, the overall comparison of means between transfers and natives indicates that the significant difference is consistent across the three types of schools. The relationship between mean scores of native and transfer students may be shown through plotting the adjusted means in graphic form.

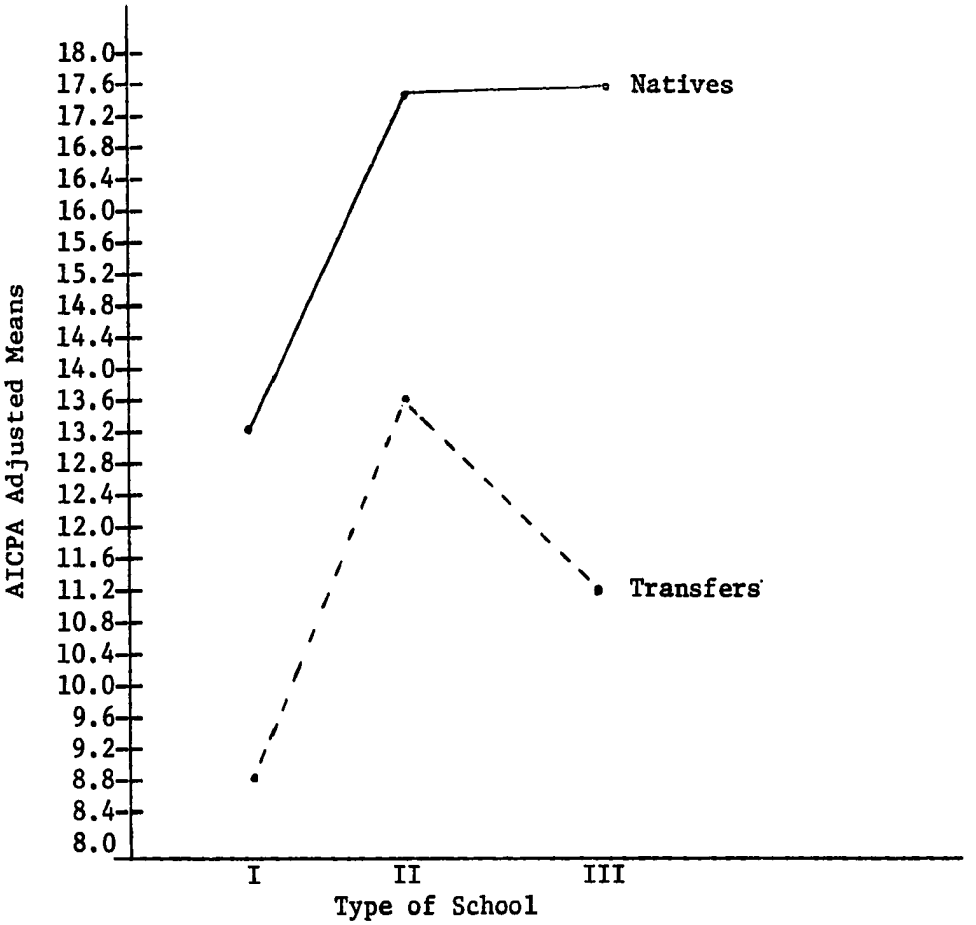

Fig. 1--Means of Transfer and Native Student Scores

Figure 1 presents the plotted means of the native and junior college transfer groups at each type of school. An analysis of this graph reveals that at each type of school the mean achievement level on the AICPA test was higher for the native student group than for the junior college transfer student group. To determine if this achievement level was significantly higher, the F ratio for interaction and the F ratio which tested for a difference between native and transfer students must be re-examined. Since no interaction was present as shown in Figure 1 and the F ratio comparing all natives and all junior college transfers was statistically significant, it must be concluded that there is a significant difference between the junior college transfer and native student achievement levels at Type I, Type II, and Type III schools. Therefore, the null hypotheses three, four, and five were rejected. The elementary accounting achievement levels attained by the native student groups at all types of schools were significantly higher than the achievement levels attained by the junior college transfer groups.

Research Objective II

Description of Data

Research Objective II was concerned with making a comparison of the intermediate accounting achievement realized by junior college transfer and native four-year students. This comparison was made by using Intermediate Accounting I final course grades as the measurement of achievement.

The statistical methodology used to test the research hypotheses applicable to Research Objective II was similar to that used in analyzing Research Objective I. The analysis of covariance procedure used to test

the set of hypotheses related to Research Objective II did vary in that the AICPA achievement examination score was used as an additional control variable. The final course grade means of the student groups were adjusted using the (1) ACT composite score, (2) overall grade point average, (3) elementary accounting grade point average, and (4) the AICPA achievement test score as covariates.

Another deviation in this analysis involved a change in the size of the student groups. Since not all students who took the AICPA examination at the beginning of the semester completed the intermediate accounting course, the sample size for each group of students at each type of school decreased. Of the 371 native and 101 junior college transfer students taking the AICPA test, 308 native and 76 transfer students completed Intermediate Accounting I. Listed in Table 5, on page 66, are the number of native and transfer students completing intermediate accounting at each type of school. There were 63 natives and 25 junior college transfers who did not complete Intermediate Accounting I. These withdrawals represented 19 per cent of the original 472 students tested.

Those students who did not finish intermediate accounting were not the focus of Research Objective II. However, the proportion of native to transfer students who withdrew posed an interesting problem. An additional analysis, not originally planned, was carried out and will be discussed in a later section of this chapter.

To test the hypotheses associated with Research Objective II, the analysis of covariance was computed. The unadjusted and adjusted means for final course grades provided by the analysis are presented in Table 9. Final course grade means for the native and transfer students at each

type of school appear in the body of the table. Also included are combined means for all native students, all transfer students, and all students at each type of school.

TABLE 9

MEANS OF THE INTERMEDIATE ACCOUNTING I FINAL COURSE GRADES FOR NATIVE AND TRANSFER STUDENTS AT THREE TYPES OF INSTITUTIONS

Student Groups	Types of Institutions			Combined Means
	Type I	Type II	Type III	
Native:				
Unadjusted	2.774	2.304	2.645	2.633
Adjusted	2.875	2.297	2.527	2.598
Transfers:				
Unadjusted	2.130	2.080	2.107	2.105
Adjusted	2.563	2.043	2.169	2.247
Combined Means:				
Unadjusted	2.647	2.225	2.569	
Adjusted	2.813	2.208	2.476	

An examination of Table 9 indicates that for Type I natives and transfers and for Type III transfers, the effect of the covariates was to produce values for adjusted means that were higher than for unadjusted means. The opposite effect was realized for Type II natives and transfers and for Type III natives. The unadjusted mean for the combined natives of all schools was higher than the adjusted mean. For the combined transfer students of all schools, the adjusted mean was higher than the unadjusted mean.

The effect of the covariates can also be seen on the combined native and transfer students at each type of school. The adjusted final

course grade mean for Type I students was higher than the unadjusted mean. The reverse effect was noted for the Type II and Type III students' adjusted means.

Hypotheses Tested

The tests of hypotheses for Research Objective II were conducted using the F ratios provided by the analysis of covariance. The statistical technique was similar to that used for Research Objective I. Table 10 presents the results of the analysis.

TABLE 10

ANALYSIS OF COVARIANCE OF THE ACHIEVEMENT IN INTERMEDIATE ACCOUNTING I OF NATIVE AND TRANSFER STUDENTS AT THREE TYPES OF INSTITUTIONS

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F
Native/Transfers	4.63	1	4.63	6.35*
Types of Schools	10.34	2	5.17	7.10*
Native/Transfers X Types of Schools	0.10	2	0.05	0.07
Error	272.49	374	0.72	----
Total	287.56	379	----	----

*P<.05

Table 10 presents the F ratios calculated for each source of variation. The table shows the F ratios calculated for the Native/Transfers source of variation and the Type of Schools source of variation to be significant beyond the .05 level. The F ratio calculated for

the interaction effects (Native/Transfer X Types of Schools) was not significant. These three F ratios were used to test the set of hypotheses related to Research Objective II.

The first hypothesis tested was designed to compare the Intermediate Accounting I final grade achievement of students transferring from junior colleges with the final grade achievement of students native to senior level schools. Stated in null form the hypothesis was:

> Ho_6 There is no significant difference between the means of the final course grades made by the non-transfer group and the junior college transfer group in Intermediate Accounting I when the final course grades are adjusted for the influence of the ACT composite score, cumulative grade point average, elementary accounting principles grade point average, and the score on the AICPA Achievement Test and when tested at the .05 level of confidence.

Table 10, on page 85, presents the F ratio for the first main effect (Native/Transfers). This F ratio indicates a significant difference exists between the final grade means of the native student group and the junior college transfer student group ($F = 6.35$; $p<.05 = 3.86$). Therefore, the null hypothesis was rejected.

To determine which group performed significantly better, it was necessary to refer to the adjusted means for each group. Table 9, on page 84, presents the combined native and the combined transfer groups' adjusted means. The adjusted mean for the native group is 2.598. The adjusted mean for the transfer group is 2.247. Since the adjusted mean of the native group was higher than the adjusted mean for the transfer group, it was concluded that native students realize significantly higher final grade achievement levels in Intermediate Accounting I than do junior college transfer students.

Research Objective II was also concerned with comparing the performance of students in intermediate accounting from the three types of schools. This analysis was made to determine if there is a difference in the final grade achievement levels attained by those students attending Type I, Type II, and Type III schools. The hypothesis that tested for school differences was stated as follows:

Ho_7 There is no significant difference among the means of the final course grades made by students at Type I, Type II, and Type III schools in Intermediate Accounting I when the final course grades are adjusted for the influence of the ACT composite score, cumulative grade point average, elementary accounting principles grade point average, and the score on the AICPA Achievement Test and when tested at the .05 level of confidence.

This hypothesis was testing for differences in the intermediate accounting final grade achievement of the combined native and transfer students at each type of school. The F ratio for the second main effect, Type of Schools, presented in Table 10 indicated significant differences exist among the means of final grades from the three types of schools ($F = 7.10$; $p<.05 = 3.02$). Therefore, the hypothesis of no difference among schools was rejected.

Table 9, on page 84, presents the adjusted final grade means for the combined native and transfer students at each type of school. Arranged in order of the magnitude of the mean final grades the adjusted means are: Type I, 2.813; Type III, 2.476; and Type II, 2.208. The Scheffé test was used to determine which of these means was significantly different from the others. The results of the Scheffé test is presented in Table 11 on the following page.

The Scheffé test indicated that the highest mean (Type I school students) was significantly higher than the lowest mean (Type II school

students). However, the median grade achievement (Type III school students) did not differ significantly from the highest or lowest.

TABLE 11

SCHEFFÉ TEST FOR DIFFERENCES AMONG THE FINAL COURSE GRADE ADJUSTED MEANS OF STUDENTS AT THREE TYPES OF SCHOOLS

Comparison of Means	F
Type I ($\bar{x}$ = 2.813) with Type II ($\bar{x}$ = 2.208)	4.05*
Type I ($\bar{x}$ = 2.813) with Type III ($\bar{x}$ = 2.476)	.88
Type II ($\bar{x}$ = 2.208) with Type III ($\bar{x}$ = 2.476)	1.28

*p<.05 (df = 5; 374)

The last three research hypotheses stated for Research Objective II involved a comparison of the intermediate accounting achievement levels of native and transfer students at each type of school. These hypotheses were:

Ho_8 There is no significant difference between the means of the final course grades made by the non-transfer students and the junior college transfer students at Type I schools in Intermediate Accounting I when the final course grades are adjusted for the influence of the ACT composite score, cumulative grade point average, elementary accounting principles grade point average, and the score on the AICPA Achievement Test and when tested at the .05 level of confidence.

Ho_9 There is no significant difference between the means of the final course grades made by the non-transfer students and the junior college transfer students at Type II schools in Intermediate Accounting I when the final course grades are adjusted for the influence of the ACT composite score, cumulative grade point average, elementary accounting principles grade point average, and the score on the AICPA Achievement Test and when tested at the .05 level of confidence.

Ho_{10} There is no significant difference between the means of the final course grades made by the non-transfer students and the junior college transfer students at Type III schools in Intermediate Accounting I when the final course grades are adjusted for the influence of the ACT composite score, cumulative grade point average, elementary accounting principles grade point average, and the score on the AICPA Achievement Test and when tested at the .05 level of confidence.

To test these hypotheses, the F ratio for interaction must be considered. The F ratio for interaction is testing for any interacting relationship existing between the kinds of students and the types of schools. The F ratio for interaction of 0.07 was not statistically significant. It was concluded that no interaction effects were present.

The first F ratio testing for differences between the mean achievement of natives and transfers was significant. The third F ratio was not significant; indicating no interaction effects. These F ratios may be interpreted for testing the last three hypotheses for Research Objective II. If there is a difference between native and transfers and there is no interacting effect between types of schools and kinds of students, then it may be concluded that there is a significant difference between native and transfer students at each type of school.

If the adjusted means for each group of students at each type of school are plotted in graphic form, the differences are clearly evident. Figure 2, on page 90, presents the plotted means for each group of students. An examination of the pattern of means indicates the consistent difference between the achievement of native and transfer students at each of the types of schools. The adjusted means of the intermediate accounting final course grades for the natives are all higher than the adjusted means for the junior college transfer students.

With no interaction effect existing and a significant F ratio for the Native/Transfer variation effect, it was concluded that there was a significant difference between the natives and transfers at each type of school. Hypotheses eight, nine, and ten stating no difference between natives and transfers at each type of school were rejected.

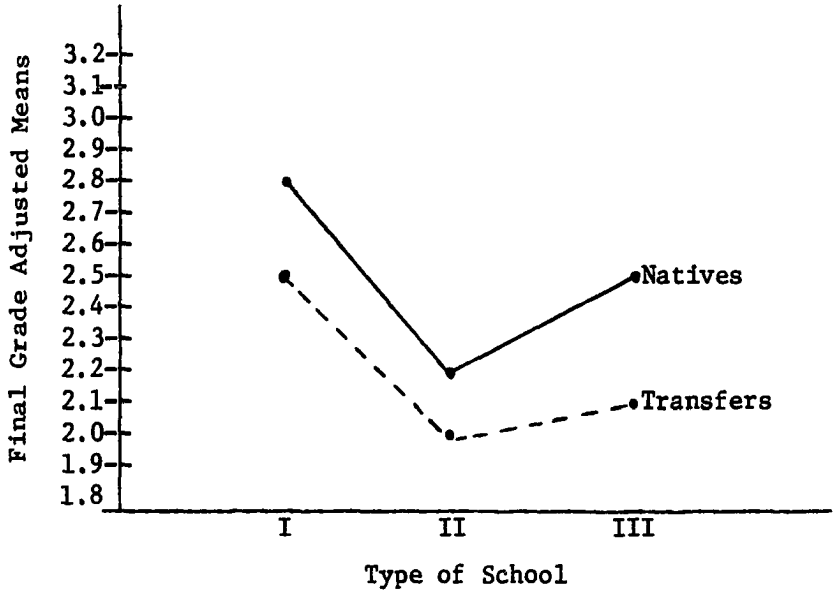

Fig. 2--Means of Transfer and Native Student Final Grades

The results of testing the hypotheses stated for Research Objective II indicated that intermediate accounting achievement, as measured by final course grades, is significantly higher for native students than for junior college transfer students at all types of schools.

Additional Analyses

Although not one of the stated hypotheses, the large number of students failing to complete the intermediate accounting course became an ancillary question of the study. While this study focused upon achievement of students in the class, the number who found it necessary to

withdraw posed the added question: Were more students who failed to complete the intermediate accounting course transfers from junior colleges or four-year native students? No data was collected on reasons for withdrawal. It could not be assumed that those who withdrew were failing so they were not included in the analysis of intermediate accounting achievement. It was possible, however, to compare the number of transfer students with the number of native students who withdrew from the course. A chi-square test of significance was used to make this comparison. Table 12 presents this chi-square analysis.

TABLE 12

CHI-SQUARE ANALYSIS BETWEEN NATIVE AND TRANSFER STUDENTS WHO WITHDREW FROM INTERMEDIATE ACCOUNTING

Groups	N	Withdrew	Finished	df	x^2
Natives	371	63	308	1	3.16
Transfers	101	25	76		

The resultant chi-square value did not reach the level required for significance ($x^2 = 3.16$; $p<.05 = 3.841$). Therefore, no inference was drawn between withdrawal from intermediate accounting and status as a junior college transfer.

A second chi-square analysis was made to explore the relationship between type of school and kind of student. It was designed to answer the question of whether more transfer students than native students withdraw at any one of the types of schools. The chi-square analysis applicable to this question is presented in Table 13 on the following page.

TABLE 13

CHI-SQUARE ANALYSIS BETWEEN KINDS OF STUDENTS AND NUMBER OF WITHDRAWALS AT TYPES OF SCHOOLS

Groups	N	Type I	Type II	Type III	df	x^2
Natives	63	12	14	37	2	.916
Transfers	25	4	8	13		

Again the resulting chi-square value did not reach the level required for significance (x^2 = .916; $p<.05$ = 5.991). It was concluded that there was no significant relationship between the types of institutions from which Accounting Principles were taken and the withdrawal patterns of students in Intermediate Accounting.

Summary

This chapter has presented the statistical analyses and interpretations of data applicable to the two research objectives. For Research Objective I, it was found that non-transfer students realize higher levels of elementary accounting achievement than do junior college transfer students.

When examining the intermediate accounting achievement levels attained by both junior college transfer and native students, it was determined that non-transfer students again realize higher achievement in Intermediate Accounting I. Research Objective II was involved with making this comparison on the basis of final course grades received in Intermediate Accounting I.

When examining the achievement levels attained in elementary accounting principles and intermediate accounting of native and transfer groups at each type of school, the natives performed significantly higher than the junior college transfer students at each type of school. Additional analyses indicated that there was no relationship between the rate of withdrawal and the status of the student as a native or junior college transfer.

Chapter V presents a summary of this study. That chapter also presents the conclusions drawn from the study and the implications of the findings of this research effort.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this chapter is to give a summary of the study. This chapter also presents the conclusions, implications, and recommendations for further research. The conclusions were drawn from the data collected from five Oklahoma four-year institutions. No attempt is made to make generalizations beyond the geographical limitations of this study.

Summary of the Study

This study involved the measurement and comparison of accounting achievement of junior college transfer and non-transfer students enrolled in Intermediate Accounting I at selected four-year institutions in Oklahoma. Two basic research objectives were present. Research Objective I consisted of measuring and comparing the elementary accounting knowledge attained by the transfer and non-transfer students before any further accounting study was made by these groups. To measure elementary accounting knowledge, the AICPA Level I, Form E-S Achievement Examination was administered to all Intermediate Accounting I students attending classes during the first week of the fall semester of 1973 at five senior-level institutions in Oklahoma's system of higher education.

There were 17 sections of intermediate accounting taught at Oklahoma State University, Oklahoma University, Central State University, Northeastern State College and Southwestern State College during that semester. From these 17 sections, there were 472 students meeting the criteria for participating in this research effort. Of the 472 students selected, 371 students were non-transfer four-year students and 101 were junior college transfer students.

The five participating schools were classified into three school types depending upon their academic functions and characteristics. Northeastern State College and Southwestern State College, having similar academic characteristics, were classified as Type I schools. Central State University was classified as a Type II institution and Oklahoma State University and the University of Oklahoma were classified as Type III schools.

Research Objective I not only involved comparing combined native and combined junior college transfer students of the three types of schools, but also compared the elementary accounting knowledge of students enrolled at one type of school with those students enrolled at the other types of schools. A final comparison applicable to Research Objective I involved comparing the elementary accounting knowledge attained by native and junior college transfer students at each type of school.

The purpose of Research Objective II was to compare native and junior college transfer students' intermediate accounting achievement. The comparisons were made by using the final course grade received in Intermediate Accounting I as the measurement of intermediate accounting achievement. The analytical procedures used in making these comparisons

were similar to those procedures used in making the comparisons for Research Objective I.

In order to test the null hypotheses applicable to each research objective, a statistical technique was selected which would allow a comparison of subjects selected from intact classroom groups. The analysis of covariance procedure was used to compare adjusted means of the student groups.

In the analyses made for Research Objective I, the overall grade point average, elementary accounting principles grade point average, and the ACT composite score were the control variables used to adjust the AICPA achievement test means. In the analyses made for Research Objective II, an additional control variable was used to adjust the final course grade means. This covariate was the AICPA achievement test score.

There were five hypotheses tested for each research objective. The hypotheses stated for Research Objective I tested for no difference in student achievement on the AICPA achievement test between all native and all junior college transfer students, no difference in student achievement among the types of schools, and no difference in achievement of native and junior college transfer students at each type of school. The hypotheses stated for Research Objective II were similar to those stated for the first research objective except the comparisons were made using final course grades as the indicator of intermediate accounting achievement.

It was from the results of these tested hypotheses that conclusions were drawn relative to comparisons of junior college transfer and native four-year students' accounting achievement. Although not required

by the set of hypotheses, an additional analysis was made of the students who withdrew from intermediate accounting to determine whether more transfer students than native students did not complete the course.

Conclusions

This study involved analyzing and comparing the accounting achievement levels of junior college transfer and native students. The problem of this study, as presented in Chapter I, involved finding answers to specific questions comparing the performance of these two groups of students. The conclusions drawn from this study were based upon the answers found for these questions after a statistical comparison of the accounting achievement of the junior college and native student groups. The following conclusions were drawn from the results of this investigation.

1. The non-transfer students demonstrate higher levels of achievement on the AICPA Level I Achievement Examination than the junior college transfer students. Therefore, it was concluded that native students have a greater knowledge of elementary accounting principles and concepts upon entering a study of intermediate accounting than do those students transferring from two-year schools.

2. When comparing the elementary accounting achievement levels of students from Type I, Type II, and Type III schools, it was found that differences do exist among the types of schools. From the findings of this study, it was concluded that students from Type II and Type III schools have a greater knowledge of elementary accounting principles than do students from Type I schools. Students at Type II and Type III

schools obtain comparable levels of elementary accounting knowledge as measured by the AICPA achievement test.

3. Type I school non-transfer students have a greater knowledge of elementary accounting principles than do the Type I school junior college transfer students.

4. Type II school non-transfer students have a greater knowledge of elementary accounting principles than do Type II school junior college transfer students.

5. Type III school non-transfer students have a greater knowledge of elementary accounting principles than do Type III school junior college transfer students.

6. Native students demonstrate higher levels of intermediate accounting achievement based on Intermediate Accounting I final course grades than do junior college transfer students.

7. When comparing the intermediate accounting achievement levels of students from Type I, Type II, and Type III schools, it was found that differences exist among the types of schools. From the results of this study, it was concluded that intermediate accounting students at Type I schools received the highest grades in Intermediate Accounting I. The mean of their grades was significantly higher than the mean of Type II school students' grades, but not significantly higher than the mean of grades at Type III schools. The Intermediate Accounting I achievement levels for students at Type II and Type III schools compare favorably on the basis of final course grades received in the course.

8. The Type I school non-transfer students have higher final grade achievement in Intermediate Accounting I than do the Type I school junior college transfer students.

9. The Type II school non-transfer students have higher final grade achievement in Intermediate Accounting I than do the Type II school junior college transfer students.

10. The Type III school non-transfer students have higher final grade achievement in Intermediate Accounting I than do the Type III school junior college transfer students.

From the results obtained when comparing native and transfer students' achievement levels in accounting, it was concluded that native students realize greater accounting achievement levels in both elementary accounting principles and Intermediate Accounting I. This greater accounting achievement level for native students was consistent for all types of four-year institutions.

Analysis of the number of students who withdrew from Intermediate Accounting I resulted in the conclusion that the number of transfer students who withdrew from the course was not significantly different from the number of native students who withdrew. Further analysis indicated that the pattern held true across the three types of institutions.

Implications

Since this study was conducted using only five selected four-year institutions in Oklahoma's system of higher education, there is no attempt to make generalizations from the results of this study beyond the boundaries of this state. This study has revealed that junior college transfers taking intermediate accounting at Oklahoma four-year schools are not adequately competing with native students of these four-year schools. This study was concerned only with making a determination of

any differences that exist between native and junior college transfer students. No attempt was made to determine why these differences exist. Certainly, the reasons for these differences are very important to accounting education in Oklahoma.

The preparation of students at the junior-college level for transfer to senior-college level schools has been determined to be a very important function of junior colleges. As four-year colleges and universities continue to expand beyond the undergraduate level, the dependency on two-year students transferring to these four-year schools becomes even greater. As students move from two-year to four-year schools, it must be assumed that these students are qualified to meet the educational requirements of the programs at the four-year schools. As the need for accountants increases and as the demand for accounting education expands, accounting programs at four-year schools in Oklahoma are going to be required to depend more and more upon students transferring from junior colleges.

Since it has been determined that differences do exist between the transfer and non-transfer students in the area of accounting, it becomes very important to learn why these differences are present. From the results of this study, only generalizations about the causes of these differences may be made.

It should be pointed out that the effects of different abilities as reflected in ACT scores and of different achievement patterns as reflected in grade averages were considered. Their use in the design resulted in the scores of students with high ability and achievement being adjusted downward and scores of students with lower ability and

achievement being adjusted upward. Thus, the differences in achievement must be attributed to factors other than the ability and previous achievement of students.

This focuses the search for contributing causes toward the junior college system. The accounting instruction at the junior colleges may not be of the same quality as that of the four-year schools. The philosophy of the junior college may place less emphasis on academic standards. Since many transfer students enroll in Intermediate Accounting I during their first semester of instruction at the four-year school, "transfer shock" may be having an adverse effect on the quality of their performance in the intermediate accounting courses. These factors need additional research to determine reasons for the differences between the two types of students.

Perhaps, it will become necessary to devote special attention to the transfer student in accounting. This could be done through offering special short courses or transitional courses in accounting immediately after transfer. These courses would be designed for remedial learning of elementary accounting principles. It might be feasible to offer separate sections of intermediate accounting designed for students transferring from two-year colleges.

An important part of any attempt to improve the probability of success for transfer students is the diagnosis or identification of difficulties before the student reaches the withdrawal stage. Routine use of an entrance examination such as the AICPA Level I examination could be used to assess the strengths and weaknesses of each student.

Placement in tutoring sessions, remedial classes or simply a few class sessions devoted to review of essentials could avert serious and expensive problems.

Perhaps an even better solution to the transfer problem would be to have greater cooperation between the two-year and four-year schools. This type of cooperation would result in greater standardization of instruction, course content, and grading practices among the schools. All of these possibilities seem feasible in obtaining viable solutions to transfer student problems in the area of accounting.

The cooperation among schools might well extend to communication among four-year institutions. The differences among types of schools indicates that completion of an accounting program at one type of school does not mean the same as at another type of school. However, the different populations attracted by different schools may have more effect on achievement and procedures than other factors. In fact, diversity of program and product may very well be desirable.

The withdrawal rate was an interesting side effect of the study. Another effect that became apparent was the shift in differences among types of schools. At the beginning of the course students at Type I schools scored lowest and students at Type II and Type III schools scored at comparable levels (see Figure 1, page 81). At the end of the course students at Type I schools were graded highest, students at Type III schools were graded next highest and students at the Type II school lowest (see Figure 2, page 90).

No statistical comparison of this interesting shift was possible; the measurements were not comparable. The effect might be attributed to

differences in grading practices at the types of institutions. Further analysis would require the use of parallel forms of a standardized instrument as pre and post tests at each of the institutions.

These observations suggested some of the proposals for additional research in Accounting Education recommended in the following section.

Recommendations for Further Research

It is recommended that a study be made comparing the elementary accounting and intermediate accounting achievement levels of native students at Type I, Type II, and Type III schools.

It is recommended that a study be made comparing the elementary accounting and intermediate accounting achievement levels of two-year transfer students at Type I, Type II, and Type III schools.

It is recommended that a current study be made comparing the methods of instruction, course content, and teacher qualifications in elementary accounting at two-year and four-year institutions in Oklahoma.

It is recommended that a study be conducted to determine what similarities and differences exist in the type of elementary accounting knowledge obtained by junior college transfer and four-year students in Oklahoma.

It is recommended that a study be conducted comparing the intermediate accounting achievement levels of junior college transfer and native students when taught in separate Intermediate Accounting I classes at four-year institutions.

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APPENDICES

APPENDIX A

ITEM ANALYSIS FOR AICPA TEST

ITEM ANALYSIS[1]

Achievement Test, Level I, Form E-S

Item	Difficulty*	Discrimination Index**	Item	Difficulty*	Discrimination Index**
Pt. I			Pt.II		
1.	91	51	23.	89	41
2.	88	43	24.	77	39
3.	73	53	25.	73	46
4.	73	50	26.	60	39
5.	72	43	27.	52	25
6.	72	35	28.	46	41
7.	70	24	29.	40	40
8.	64	32	30.	37	40
9.	59	32	31.	29	35
10.	55	43			
11.	49	41	Pt.III		
12.	48	40	32.	77	68
13.	47	29	33.	80	52
14.	46	37	34.	34	54
15.	45	21	35.	86	56
16.	42	42	36.	83	65
17.	40	37	37.	71	51
18.	37	50			
19.	36	42	Pt.IV		
20.	34	26	38.	42	41
21.	31	40	39.	18	27
22.	16	43	40.	47	42
			41.	78	39
			42.	93	36
			43.	34	28
			44.	30	37
			45.	58	39

*Decimal points omitted.

**Correlation between item and total scores ("Flanagan r"); decimal points omitted.

Note: Item analysis is based on a group of 450 students tested in January, 1966, by the following nine colleges: University of Arizona, C.C.N.Y., Hofstra, University of Minnesota, University of North Carolina, Oklahoma State, University of Rochester, San Jose State, University of Texas.

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[1]The Item Analysis was reproduced for this study by permission from the Testing Project Office of the American Institute of Certified Public Accountants.

APPENDIX B

STUDENT QUESTIONNAIRE

STUDENT QUESTIONNAIRE

This questionnaire is to gather data for research being done in the State of Oklahoma for a doctoral study. If you will allow the data from the questionnaire to be used in this research and if you will grant permission for your records in the Office of Admissions and Records of your school to be used, please sign your name on the permission form below. (Please be certain that no names or identification numbers will be published in this research. They were needed for identification purposes only.) Your cooperation will be greatly appreciated in providing the data requested as completely as possible.

NAME (Last, First, M.I. or Maiden Name) _____ SOCIAL SECURITY NUMBER _____ AGE _____

MAJOR _____ MINOR _____ STUDENT I.D. NUMBER (other than social security) _____ SEX _____

HIGH SCHOOL GRADUATED FROM _____ YEAR _____ LOCATION _____

APPROXIMATE NUMBER OF TOTAL COLLEGE CREDIT HOURS COMPLETED? _____

CLASS STATUS (Jr., Sr., Etc.) _____
HAVE YOU TAKEN THE AMERICAN COLLEGE TEST (ACT) FOR COLLEGE ADMISSIONS? _____
IF YES, IN WHAT YEAR AND APPROXIMATE MONTH WAS THE ACT TEST TAKEN? _____
IF POSSIBLE, PLEASE INDICATE YOUR COMPOSITE ACT SCORE. _____

IF YES, FOR ADMISSION TO WHAT SCHOOL? _____
IF NO, HAVE YOU TAKEN ANOTHER COLLEGE ADMISSIONS TEST? IF SO PLEASE INDICATE THE TEST TAKEN AND APPROXIMATE DATE. _____

HAVE YOU EVER ATTENDED ANOTHER COLLEGE OR UNIVERSITY? _____ IF YES, WHAT SCHOOL/SCHOOLS, LOCATION, AND CLASSIFICATION (2 yr. or 4 yr. school or other)? _____

_____

HOW MANY HOURS OF ACCOUNTING HAVE YOU COMPLETED BEFORE ENROLLING IN THIS COURSE? _____

IF YOU HAVE COMPLETED OR HAVE ATTEMPTED MORE THAN SIX HOURS OF ELEMENTARY ACCOUNTING PRINCIPLES, PLEASE INDICATE COURSE/COURSES. _____

_____

IF YOU HAVE ATTEMPTED ACCOUNTING COURSES BEYOND ELEMENTARY ACCOUNTING PRINCIPLES BUT DO NOT HAVE CREDIT FOR THE COURSE/COURSES, APPROXIMATELY HOW LONG DID YOU ATTEND THAT COURSE/COURSES? _____
(approximate number of class meetings attended)

FROM WHAT SCHOOL DID YOU COMPLETE THE FOLLOWING:

Elementary Accounting I_____

Elementary Accounting II_____

Other accounting courses_____

HAVE YOU HAD ACCOUNTING WORK EXPERIENCE IN BUSINESS?_____

IF YES, PLEASE DESCRIBE ON REVERSE SIDE OF THIS QUESTIONNAIRE.

- -

To: Office of Admissions and Records

Permission is hereby granted to the researcher to examine my permanent records in your office for the purpose of gathering data for educational research only.

Date_____ Signed_____

(Student's signature)

School (currently enrolled)_____

APPENDIX C

CARD CODING SYSTEM

CODE SHEET

STUDENT DATA

Code on Data Sheet
Order of Punches on Cards

Card Column

1	*School identification number 1 Oklahoma State University 2 University of Oklahoma 3 Northeastern State College 4 Southwestern State College 5 Central State University
2	Student status 1 Junior college transfer 2 Native four-year student
3	Blank
4-5	AICPA Level I, Form E-S examination raw score Score values punched from 00--38.
6	Blank
7-8	ACT standard composite score Score values punched from 07--35.
9	Blank
10-12	Total grade point average Values punched to two decimal places.
13	Blank
14-16	Accounting I and II grade point average Values punched to two decimal places.
17-18	Blank
19	Intermediate Accounting I final course grade Values punched as numbers. A--------4 B--------3 C--------2 D--------1 F--------0 Blank----no grade available
20-80	Blank

*During the program run, schools coded numbers 1 and 2 were combined and classified TYPE III. Schools coded numbers 3 and 4 were combined and classified TYPE I. School coded number 5 was classified TYPE II.

APPENDIX D

STUDENT DATA

TYPE I SCHOOL DATA

Student Number	Student Status	AICPA Score	ACT Score	Total GPA	Acctg. GPA	Final Grade
1	N	16	19	3.25	3.00	C
2	N	12	16	2.52	3.50	A
3	N	12	19	3.12	4.00	A
4	N	16	15	2.37	3.50	A
5	T	15	19	2.85	3.00	A
6	N	21	26	3.21	4.00	B
7	N	10	24	3.42	3.50	B
8	N	13	19	2.98	2.50	C
9	N	10	20	3.69	4.00	B
10	N	12	17	2.22	4.00	B
11	T	02	12	1.91	1.50	D
12	N	10	19	3.30	3.50	
13	N	16	23	2.12	2.50	
14	N	19	23	3.39	4.00	B
15	N	22	18	4.00	4.00	A
16	T	03	12	2.04	3.50	
17	N	18	22	3.45	3.50	A
18	T	08	16	3.47	4.00	B
19	N	09	14	3.20	3.00	C
20	T	08	15	2.42	2.50	D
21	N	28	23	4.00	4.00	A
22	T	07	12	2.66	3.00	D
23	N	15	25	1.93	4.00	C
24	T	14	21	3.42	3.50	A
25	N	11	15	3.25	4.00	C
26	N	08	25	2.84	3.50	B
27	T	02	14	3.30	3.50	C
28	N	11	16	2.35	3.50	B
29	N	13	23	3.13	3.00	C
30	N	26	13	2.32	4.00	A
31	T	15	17	3.04	4.00	C
32	N	03	07	2.57	2.00	
33	N	04	17	2.12	2.00	D
34	N	01	17	2.66	2.00	
35	N	01	18	2.40	2.30	C
36	N	07	16	3.00	3.50	B
37	T	10	18	3.41	4.00	C
38	T	05	20	2.39	3.50	
39	T	08	20	2.16	2.00	B
40	N	05	15	2.41	2.50	D
41	T	01	17	2.09	3.50	C
42	N	17	18	1.79	2.50	B
43	N	19	19	2.57	3.50	A
44	T	09	17	2.19	2.00	C
45	N	04	21	2.51	2.50	C

TYPE I SCHOOL DATA--Continued

Student Number	Student Status	AICPA Score	ACT Score	Total GPA	Acctg. GPA	Final Grade
46	N	14	16	3.48	4.00	B
47	N	09	18	3.10	4.00	A
48	N	15	21	3.86	2.50	
49	N	09	27	1.88	1.50	C
50	T	00	18	2.73	3.50	D
51	N	20	18	3.26	4.00	C
52	T	15	23	3.91	4.00	B
53	T	04	23	3.37	3.50	
54	N	16	23	2.43	3.00	D
55	N	19	19	3.00	3.00	B
56	T	02	17	3.38	4.00	B
57	N	08	21	2.74	1.50	D
58	N	03	15	1.97	1.50	F
59	N	13	15	3.34	3.50	B
60	T	09	27	3.02	4.00	B
61	N	12	17	2.67	4.00	A
62	N	07	18	3.06	2.50	C
63	T	12	18	2.03	2.50	C
64	N	10	19	3.20	3.00	A
65	T	07	21	2.87	3.00	C
66	T	13	23	2.97	3.50	
67	T	04	09	2.55	3.00	F
68	T	10	18	1.70	2.00	D
69	N	16	28	3.35	3.50	B
70	N	19	24	2.73	3.00	B
71	N	13	23	1.93	1.50	D
72	N	11	13	1.90	2.00	
73	N	11	23	2.55	3.00	B
74	T	14	25	3.28	4.00	B
75	N	19	25	3.81	3.50	B
76	N	15	20	3.03	3.50	B
77	N	16	24	3.19	4.00	
78	N	17	27	3.38	3.50	C
79	N	09	22	1.83	2.50	
80	N	19	20	2.00	3.00	C
81	N	19	19	2.47	2.50	D
82	N	18	20	3.29	3.00	A
83	N	11	17	2.33	3.00	C
84	N	10	16	2.53	2.50	C
85	N	15	23	3.20	4.00	
86	N	16	24	3.25	4.00	
87	N	14	26	3.55	4.00	B
88	N	19	21	2.23	4.00	B
89	N	10	21	2.26	3.00	D
90	N	20	27	3.69	4.00	A

TYPE I SCHOOL DATA--Continued

Student Number	Student Status	AICPA Score	ACT Score	Total GPA	Acctg. GPA	Final Grade
91	N	12	18	3.24	4.00	B
92	N	18	19	1.97	4.00	A
93	N	23	20	3.80	4.00	A
94	N	33	31	3.33	4.00	A
95	N	16	22	2.18	1.50	
96	N	19	21	3.07	3.50	B
97	N	03	19	2.56	1.50	C
98	N	08	27	3.09	2.50	B
99	N	09	22	2.82	2.50	B
100	N	16	19	3.81	3.50	A
101	N	05	19	2.00	1.50	C
102	N	06	23	2.48	2.50	C
103	N	11	14	3.10	4.00	A
104	N	00	15	2.08	1.50	
105	N	00	17	2.38	2.00	C
106	T	04	16	1.60	2.00	B
107	T	01	09	2.43	3.00	D
108	N	08	19	3.36	3.00	C
109	N	24	25	3.73	4.00	A
110	N	15	18	2.19	3.50	B
111	N	10	17	2.92	3.50	A
112	N	10	15	2.29	2.50	C
113	N	11	23	3.00	3.50	B
114	N	19	17	2.69	3.50	A
115	N	14	21	2.69	4.00	B
116	N	07	16	2.40	2.50	C
117	N	04	22	2.18	3.00	C
118	N	25	23	2.90	4.00	A
119	N	10	23	2.94	2.50	B
120	N	15	24	3.00	4.00	A
121	N	08	22	3.17	3.50	C
122	N	14	22	3.51	4.00	A
123	N	20	27	3.74	4.00	A
124	N	08	15	2.67	2.50	B
125	N	08	24	2.87	3.50	C
126	N	13	18	2.27	3.00	D
127	N	14	19	2.47	3.50	B
128	N	13	26	2.76	3.50	B
129	N	10	12	2.82	3.00	B
130	N	15	25	3.02	3.50	C
131	N	17	26	3.43	4.00	A
132	N	03	16	2.39	2.00	D

TYPE II SCHOOL DATA

Student Number	Student Status	AICPA Score	ACT Score	Total GPA	Acctg. GPA	Final Grade
1	N	15	13	1.95	2.00	F
2	T	09	19	2.98	4.00	C
3	T	06	14	3.25	4.00	F
4	T	12	17	2.89	2.50	F
5	T	09	13	3.13	4.00	
6	N	21	20	1.20	3.00	A
7	N	19	18	2.05	2.00	F
8	N	18	28	4.00	4.00	A
9	N	10	18	2.14	1.50	A
10	N	21	16	3.72	4.00	A
11	N	18	18	2.24	2.50	F
12	T	14	19	3.83	4.00	A
13	T	13	18	2.04	1.00	
14	N	06	11	2.32	3.50	D
15	N	19	15	2.13	1.50	
16	T	20	28	3.03	4.00	A
17	N	14	22	2.77	4.00	A
18	N	09	22	3.31	4.00	C
19	T	19	26	3.00	1.00	D
20	N	18	19	2.03	3.00	B
21	T	23	16	3.34	4.00	A
22	N	26	16	2.62	4.00	
23	N	20	25	2.36	3.00	C
24	T	09	18	1.90	3.00	D
25	T	29	18	2.25	4.00	
26	N	20	21	3.83	4.00	A
27	T	04	17	1.90	2.50	D
28	N	20	17	2.42	3.50	C
29	T	23	21	3.00	2.00	A
30	N	17	11	1.73	3.00	C
31	T	03	20	2.85	2.00	
32	T	10	14	2.45	3.50	F
33	N	12	11	2.88	3.50	B
34	N	13	15	1.80	3.00	
35	N	11	24	2.13	3.00	C
36	N	15	23	2.69	3.00	
37	N	16	22	2.54	3.50	D
38	T	16	24	3.77	4.00	C
39	N	07	18	3.05	3.50	
40	N	27	20	2.89	4.00	B
41	N	19	27	3.35	4.00	C
42	T	24	22	2.56	3.50	B
43	N	14	18	2.59	2.00	
44	N	24	19	1.96	2.00	D
45	N	08	21	3.19	3.00	C

TYPE II SCHOOL DATA--Continued

Student Number	Student Status	AICPA Score	ACT Score	Total GPA	Acctg. GPA	Final Grade
46	N	21	13	2.59	3.50	C
47	N	11	24	1.95	2.00	D
48	T	15	19	2.58	3.50	
49	N	34	30	3.36	4.00	A
50	N	15	26	2.61	3.00	C
51	N	11	15	2.00	2.50	
52	N	13	21	2.38	2.50	C
53	T	18	24	3.33	4.00	
54	N	28	22	3.99	4.00	A
55	N	06	10	2.75	3.50	C
56	N	30	25	2.41	4.00	B
57	N	11	12	3.32	3.50	D
58	N	16	17	1.92	3.50	C
59	N	18	23	3.50	3.00	
60	N	23	16	2.42	2.50	C
61	T	12	23	3.36	4.00	D
62	T	13	21	3.79	3.50	D
63	N	19	26	2.82	2.00	
64	T	13	26	2.28	2.50	
65	N	13	19	2.95	2.00	D
66	T	18	22	3.43	4.00	C
67	N	20	27	3.50	4.00	C
68	N	11	15	2.88	2.50	D
69	N	33	22	3.13	4.00	B
70	T	17	20	3.81	4.00	A
71	N	24	23	2.86	2.50	C
72	T	14	27	3.45	4.00	B
73	N	06	16	2.84	2.50	C
74	N	21	20	1.67	2.50	
75	T	09	16	2.74	3.50	F
76	N	11	24	2.38	2.50	
77	N	20	29	3.09	3.50	
78	N	13	24	3.91	3.50	B
79	T	16	19	2.75	3.50	C
80	N	05	16	1.96	2.00	
81	N	22	22	3.23	4.00	A
82	N	29	19	2.61	4.00	A
83	N	16	17	3.40	3.00	A
84	N	13	26	2.48	2.00	
85	N	12	24	2.83	3.50	D
86	T	15	19	3.59	4.00	B
87	T	09	17	2.47	4.00	B
88	T	05	15	3.06	3.50	C
89	T	06	16	2.00	1.50	C
90	N	18	27	3.41	3.50	B

TYPE II SCHOOL DATA--Continued

Student Number	Student Status	AICPA Score	ACT Score	Total GPA	Acctg. GPA	Final Grade
91	T	08	14	2.48	2.50	
92	N	09	14	1.93	2.50	D
93	T	13	27	3.67	4.00	B

TYPE III SCHOOL DATA

Student Number	Student Status	AICPA Score	ACT Score	Total GPA	Acctg. GPA	Final Grade
1	N	13	10	2.19	2.50	C
2	N	16	21	3.11	3.50	B
3	N	09	22	2.90	3.00	C
4	N	21	24	3.96	4.00	A
5	N	20	29	3.85	4.00	
6	N	17	22	2.71	2.50	B
7	N	23	27	3.34	4.00	A
8	T	14	22	2.22	2.00	
9	T	25	24	3.69	4.00	B
10	N	27	24	2.92	4.00	B
11	N	18	14	1.65	1.00	C
12	N	30	28	2.43	3.00	B
13	T	13	13	2.23	2.50	D
14	N	24	27	3.61	4.00	C
15	N	11	13	2.84	3.00	C
16	N	15	17	2.24	3.00	F
17	N	30	22	2.62	2.50	A
18	N	18	26	3.52	4.00	B
19	T	01	18	2.03	3.00	F
20	N	16	18	2.34	3.00	C
21	N	21	20	1.75	1.00	C
22	N	15	17	3.30	3.50	B
23	N	20	25	2.29	3.50	F
24	N	24	26	3.53	4.00	B
25	N	14	21	2.43	2.50	C
26	N	16	17	3.10	3.00	B
27	N	11	13	3.41	3.00	D
28	N	25	28	3.01	4.00	A
29	N	19	27	3.30	3.50	A
30	N	10	20	3.41	3.50	C
31	N	12	24	3.12	3.50	
32	N	21	15	2.48	3.00	A
33	N	16	23	2.85	2.50	D
34	N	09	22	3.59	3.00	C
35	N	21	29	3.67	4.00	A
36	N	28	20	2.75	2.50	B
37	N	19	07	2.51	2.50	B
38	N	26	26	3.45	4.00	B
39	N	16	25	2.90	2.50	C
40	N	11	17	2.41	2.50	C
41	T	04	21	3.51	3.50	D
42	N	15	23	2.48	2.00	C
43	T	00	19	2.72	2.00	
44	N	15	27	3.60	4.00	A
45	N	21	28	3.38	3.50	C

TYPE III SCHOOL DATA--Continued

Student Number	Student Status	AICPA Score	ACT Score	Total GPA	Acctg. GPA	Final Grade
46	N	26	27	3.95	4.00	A
47	N	14	19	2.41	2.00	C
48	N	23	26	3.48	3.50	C
49	N	21	27	2.48	3.00	B
50	N	15	26	2.75	4.00	B
51	T	14	17	3.06	2.50	
52	N	19	21	3.10	3.00	C
53	N	16	23	3.42	2.50	C
54	N	15	18	2.76	3.00	
55	N	19	25	3.11	4.00	B
56	T	23	23	3.49	4.00	D
57	T	13	17	3.64	4.00	D
58	N	15	20	2.14	2.50	
59	N	20	26	2.76	3.00	C
60	N	16	23	3.66	3.00	A
61	N	14	22	2.14	2.00	
62	N	15	28	3.95	4.00	B
63	N	08	13	1.79	2.00	C
64	N	28	35	4.00	4.00	A
65	N	11	16	1.89	3.00	C
66	N	23	27	3.16	3.00	C
67	N	18	27	3.77	4.00	B
68	N	08	16	1.93	2.50	C
69	N	10	23	2.60	2.50	
70	N	14	17	2.36	2.50	
71	N	14	26	3.10	3.00	C
72	N	30	20	3.41	3.00	B
73	N	20	20	2.77	3.00	C
74	N	05	35	3.71	3.50	B
75	N	24	19	2.98	3.00	C
76	N	29	24	3.66	3.50	C
77	N	27	29	3.41	3.50	B
78	N	17	27	3.70	3.50	B
79	N	08	20	2.58	2.00	
80	T	14	20	2.32	3.50	
81	N	09	13	1.83	2.00	
82	N	19	26	3.43	3.50	C
83	T	08	13	2.77	2.50	
84	N	19	23	2.80	3.00	C
85	N	18	22	3.90	3.50	C
86	N	16	18	2.38	1.50	
87	N	23	23	2.84	3.00	
88	N	17	21	3.88	4.00	C
89	N	13	27	3.03	3.50	B
90	N	16	25	3.37	3.50	

TYPE III SCHOOL DATA--Continued

Student Number	Student Status	AICPA Score	ACT Score	Total GPA	Acctg. GPA	Final Grade
91	N	06	12	2.23	2.00	
92	T	16	26	3.78	4.00	B
93	T	06	19	3.00	2.00	C
94	N	15	25	3.48	3.50	C
95	N	11	25	3.19	3.00	C
96	N	18	16	2.27	3.00	C
97	N	34	35	4.00	4.00	A
98	N	09	14	2.24	2.50	C
99	N	27	24	3.76	4.00	A
100	N	13	19	2.54	1.50	
101	N	03	20	2.01	1.50	C
102	T	10	17	2.59	3.50	
103	N	19	21	2.27	2.50	C
104	N	21	27	3.10	4.00	A
105	N	24	23	2.41	3.00	B
106	T	08	20	1.73	3.00	B
107	N	30	22	3.80	4.00	A
108	N	19	20	3.05	2.50	A
109	T	16	28	4.00	4.00	A
110	T	13	24	2.91	3.50	C
111	T	15	21	1.64	2.00	
112	N	24	29	3.93	4.00	A
113	T	09	15	3.03	3.00	C
114	N	15	21	2.33	2.00	B
115	T	15	25	3.04	3.50	A
116	T	11	24	2.08	3.50	C
117	T	08	18	2.56	3.00	C
118	N	16	27	1.69	2.00	
119	N	29	25	2.39	3.00	B
120	N	19	22	2.44	3.50	A
121	N	24	21	3.73	4.00	A
122	T	08	28	3.33	4.00	
123	N	15	22	3.23	3.50	A
124	N	18	28	1.74	1.00	F
125	N	20	26	2.89	3.00	B
126	N	13	22	2.43	3.00	
127	N	23	25	2.49	2.00	D
128	T	17	29	3.89	4.00	B
129	N	29	30	3.16	4.00	B
130	N	26	28	3.83	4.00	A
131	N	15	26	2.26	3.00	C
132	T	16	17	2.63	3.00	B
133	T	11	15	2.46	3.50	
134	T	03	24	1.77	0.50	D
135	N	15	23	2.69	2.50	B

TYPE III SCHOOL DATA--Continued

Student Number	Student Status	AICPA Score	ACT Score	Total GPA	Acctg. GPA	Final Grade
136	T	11	18	3.13	4.00	F
137	N	11	16	2.20	3.00	B
138	T	16	24	3.69	4.00	C
139	N	16	22	2.92	3.00	C
140	N	17	26	2.57	3.00	B
141	T	11	21	3.35	3.00	
142	T	11	16	2.95	4.00	A
143	T	18	29	4.00	4.00	A
144	N	10	24	3.47	3.00	
145	N	30	26	3.49	4.00	A
146	N	18	25	2.97	3.00	B
147	N	18	17	1.84	2.00	D
148	N	24	28	3.95	4.00	A
149	N	16	21	2.98	3.00	B
150	N	20	28	2.16	2.50	
151	N	18	23	1.99	2.50	C
152	N	14	25	2.91	3.00	C
153	N	19	27	3.74	4.00	A
154	N	11	27	2.97	3.00	C
155	N	15	21	2.79	3.50	B
156	N	24	28	3.06	3.50	C
157	N	24	28	3.10	3.50	B
158	N	24	28	3.29	3.50	C
159	N	30	29	3.84	4.00	A
160	N	19	23	3.29	3.50	C
161	N	22	27	2.86	3.00	C
162	N	10	28	2.85	2.50	C
163	N	24	24	2.33	3.50	B
164	N	16	26	2.86	2.00	C
165	N	17	23	2.25	2.50	D
166	N	29	23	2.80	3.00	B
167	N	21	25	2.87	3.50	B
168	N	22	28	3.94	4.00	B
169	N	29	27	3.91	4.00	A
170	N	20	26	2.84	3.00	A
171	N	29	25	2.10	2.50	D
172	N	29	28	3.71	4.00	B
173	N	15	28	3.25	3.50	C
174	N	15	24	2.36	3.50	C
175	N	20	27	2.48	2.00	
176	N	19	27	2.68	2.00	B
177	N	11	22	2.70	3.00	C
178	N	23	25	3.34	3.50	
179	N	04	11	2.05	3.00	C
180	N	16	29	3.37	3.50	A

TYPE III SCHOOL DATA--Continued

Student Number	Student Status	AICPA Score	ACT Score	Total GPA	Acctg. GPA	Final Grade
181	N	23	19	2.19	2.00	C
182	N	23	26	2.35	4.00	A
183	N	09	22	2.08	2.50	B
184	N	16	26	3.09	4.00	C
185	N	08	18	2.08	2.00	
186	N	10	26	3.08	2.50	B
187	N	19	24	3.16	4.00	B
188	N	05	22	1.78	1.50	
189	N	00	19	2.43	2.00	
190	N	08	14	2.06	2.00	C
191	N	15	24	2.89	3.50	B
192	N	13	25	2.46	2.00	D
193	T	00	19	2.84	3.50	C
194	N	10	19	2.41	3.00	C
195	N	25	26	3.08	3.00	C
196	N	25	22	2.93	3.50	B
197	N	28	27	3.81	4.00	
198	N	13	27	3.50	3.50	A
199	N	25	27	3.14	3.50	B
200	N	25	19	2.04	2.50	
201	N	20	18	3.20	3.50	A
202	N	13	26	3.38	3.50	B
203	N	24	29	3.02	3.50	B
204	N	10	16	2.12	1.00	
205	N	09	17	2.87	2.50	
206	N	24	22	2.94	3.00	B
207	N	30	27	3.00	4.00	A
208	T	09	12	2.60	3.50	D
209	N	06	13	3.01	3.00	B
210	N	15	25	1.94	1.50	
211	N	16	23	2.44	2.50	B
212	N	20	15	3.43	4.00	B
213	N	18	26	3.06	3.00	B
214	N	14	24	2.75	3.00	B
215	N	12	21	2.09	2.00	C
216	N	21	27	2.01	3.50	B
217	N	21	19	3.55	3.50	A
218	N	16	25	2.30	2.00	
219	N	09	25	2.15	2.50	
220	N	16	30	2.45	2.50	
221	T	12	18	2.94	3.00	C
222	N	18	20	2.12	2.50	
223	N	16	25	2.40	2.50	B
224	N	38	30	3.59	4.00	A
225	N	30	31	2.77	4.00	

TYPE III SCHOOL DATA--Continued

Student Number	Student Status	AICPA Score	ACT Score	Total GPA	Acctg. GPA	Final Grade
226	N	14	17	2.03	2.00	D
227	N	14	14	2.52	2.50	C
228	N	14	21	2.05	1.50	D
229	N	13	28	2.86	3.00	B
230	N	26	27	2.35	2.50	F
231	T	08	19	2.02	3.00	
232	N	23	27	2.45	3.50	B
233	N	06	19	2.31	2.00	C
234	T	08	18	3.40	4.00	C
235	N	19	22	3.18	3.50	
236	N	19	26	2.83	3.50	B
237	T	12	19	2.82	3.00	D
238	N	36	29	4.00	4.00	B
239	T	14	22	2.21	3.00	B
240	T	06	16	3.16	3.50	
241	N	13	26	2.13	2.50	C
242	N	23	26	2.28	2.00	
243	N	12	25	2.25	1.50	
244	T	11	23	3.40	3.50	
245	N	20	22	2.00	3.00	
246	N	19	26	1.55	1.50	D
247	N	30	22	2.55	4.00	A