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Wilson, Wayne Roy

**THE USE OF PERMANENT LEARNING GROUPS IN TEACHING
INTRODUCTORY ACCOUNTING**

The University of Oklahoma

PH.D. 1982

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THE UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

THE USE OF PERMANENT LEARNING GROUPS IN

TEACHING INTRODUCTORY ACCOUNTING

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the

degree of

DOCTOR OF PHILOSOPHY

BY

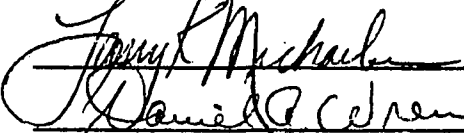
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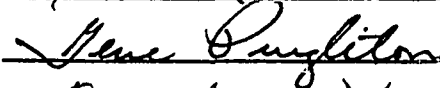
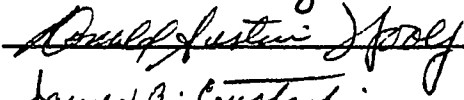
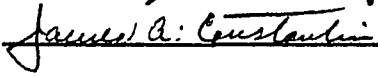
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1982

THE USE OF PERMANENT LEARNING GROUPS IN
TEACHING INTRODUCTORY ACCOUNTING

APPROVED BY



DISSERTATION COMMITTEE

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THE USE OF PERMANENT LEARNING GROUPS IN TEACHING
INTRODUCTORY ACCOUNTING

BY: WAYNE ROY WILSON

MAJOR PROFESSOR: LARRY K. MICHAELSEN, Ph.D.

The study was designed to determine if there are significant differences in achievement, interpersonal relationships, and satisfaction between students that experienced permanent group teaching as compared to the lecture method.

Data for the study were obtained via a quasi field experiment in which each of three instructors taught an experimental (group) and a control (lecture) Accounting I class at Cameron University, Lawton, Oklahoma, during the fall of 1981. The population consisted initially of 264 students, of which 185 completed their required course work. Of the 185, 91 were control students and 94 were experimental students.

Performance data consisted of scores on the Level I Financial Accounting-Form A (AICPA) exam developed by the American Institute of Certified Public Accountants. Both parametric and non-parametric analytical procedures were used to test for performance effects.

Data on interpersonal relationships and satisfaction were obtained from a questionnaire that was administered on the first and last class period of the semester and from the "IDEA" post course survey form developed by the Center for Faculty Evaluation and Development in Higher Education at Kansas State University. The Wilcoxon Rank Sums Test and the Kruskal-Wallis Analysis of Variance were used to test for significant differences between experimental and control groups.

The results of the study disclosed that performance of students in the experimental classes was consistently higher than in control classes but that the differences were not statistically significant. In addition, there were no statistically significant performance differences that were attributable to differences between instructors.

The results also indicated that students in experimental classes scored significantly higher on a number of interpersonal relationship satisfaction measures than did lecture students and that these differences tended to increase as the semester progressed.

THE USE OF PERMANENT LEARNING GROUPS IN TEACHING INTRODUCTORY ACCOUNTING

CHAPTER I

THE PROBLEM

Introduction

This paper has actually been a personal long term goal for over 30 years. I always thought learning should be enjoyable and measurable against an established standard, that the students should make inputs and understand the application of standards to the evaluation process. In addition, the course of the study should be well planned as to time, topics, and organization into the marketable package. This package would make use of the latest instructional methodology while providing utility to the instructor and student.

Purpose of Study

It is the purpose of this study via a quasi field experiment to provide research evidence to either support or deny the hypothesis that the group learning techniques will provide an improvement in student performance and satisfaction.

Need for Study

In today's rapidly changing world, there is a need for some systematic method of determining the value of various instructional methodologies in use. It is also important to determine the strengths and weaknesses of instructional methodology and to accurately evaluate current levels of effectiveness.

Currently, the Department of Business at Cameron University has no systematic method for evaluation of instructional efficiency. As a result of looking at other instructors' changes, instructional methods may be revised impulsively. The final outcome of instructional methodology revisions cannot be measured without empirical research. Arthur W. Chickering, a respected authority in the area of higher education, has addressed himself, in part, to this problem with the following statement:

Innovation, experimentation, and research designed specifically to test and to study some of the general propositions is needed if curriculum procedures are to become more effective and if educational policies and practices are to derive less from myth and more from evidence and concrete experience.¹

Permanent group teaching is actually being practiced in other courses within the Business Department at Cameron. The courses are Business Policy, Marketing, Advertising, and Problems of Administration. No documented research has been accomplished to determine student performance or satisfaction, adding to the existing need for this study.

¹Arthur W. Chickering, Education and Identity (San Francisco: Jossey-Bass, 1969), p. 219.

Statement of Problem

In general, the problem was to determine if there are significant differences in achievement or satisfaction between Principles of Accounting I students that experienced learning groups as compared to those taught by the lecture method.

Specifically, the problem was to procure answers to the following questions:

1. Is there a significant difference in achievement between students in the experimental groups (group learning methodology) and students in the control group (lecture methodology)?
2. Is there a significant difference in achievement between students in the experimental groups and in the control groups due to instructor influence?
3. Is there a significant difference in satisfaction between classes using the group learning techniques and classes using the lecture technique?
4. Is there a significant difference in satisfaction between various instructors of the experimental and the control groups?

Limitations of Study

This study was limited to six Principles of Accounting I classes taught at Cameron University during the fall semester of 1981. Any inferences drawn from this study were, therefore, limited to the population and are applicable only to Cameron University.

Due to the time of the offerings and the prearranged schedules of classes at Cameron University, it was impossible for the accounting

instructors and administrator of the business program to cater completely to the desires of this investigator regarding the manipulation of students and instructors for research purposes. Therefore, it was necessary to deal with "intact" student groups for the purpose of this study. The random assignment of students to the experimental and control groups was unattainable.

Other uncontrolled personal variables would include the amount of study time each person had, the number of semester credit hours in which each was enrolled, and their previous exposure to bookkeeping and/or accounting. Additional uncontrolled variables are the time of day of the class, length of the class period, the number of times each class meets per week and the number of students enrolled in each class section.

Assumptions

The study includes the following basic assumptions:

1. The students' ability as measured by the cumulative grade point average is homogeneous and normally distributed between the experimental and control groups in this study.
2. The desire of individual students to enroll in a specific section was not influenced by previous knowledge of the instructional methodology of the class. (The experimental and control classes were selected after enrollment.)
3. The desire of individual students to enroll in a specific section did not influence study in that each instructor taught an experimental and a control class.

With the stated assumptions completed, the order of presentation seems to be the next logical step.

Order of Presentation

Chapter II will consist of a selected review of the literature which the researcher considered pertinent to this study. Research of group learning will involve studies from the elementary to the college level. The primary areas developed consist of historical articles, active learning, and pair learning, to include several significant factors of pair learning.

Chapter III will set forth the methodology to include a statement of hypotheses, procedures and measures. The results of the study will be presented in Chapter IV. The conclusions and general discussions, to include suggestions for further research, will be given in Chapter V.

CHAPTER II

REVIEW OF LITERATURE

Introduction

The purpose of this chapter is to describe what we know about learning in the group setting. Literature will be reviewed from elementary through post-secondary classes. Review of related literature is organized under the following headings: Acquisition of Knowledge Through Active Involvement of Students, Factors That Influence the Effectiveness of Learning in a Group Setting, Group Learning, Group Participation and Subsequent Performance.

Acquisition of Knowledge Through Active Involvement of Students

Jerome Bruner, a psychologist who has stirred up many pertinent educational issues, suggests that the acquisition of knowledge is an active process and that the student should not be regarded as a passive recipient of knowledge but rather as an active participant who selects and transforms information. Many researchers have heeded this

consideration and have worked toward developing techniques that force the student to actively manipulate information.¹

Activity on the part of the student should facilitate comprehension and retention of information for at least two readily apparent reasons. First, the active manipulation of information should make the learner aware of what should be remembered and not remembered as material is learned. Second, active manipulation of information should provide additional encodings or connections as it is being stored.²

Rothkopf is also a proponent of the active involvement of the student during learning. His metaphor "You can lead a horse to water but the only water that gets into his stomach is what he drinks" is used to point out that what a student learns depends largely on his own activities. Rothkopf uses the term "mathemagenic" behaviors to refer to active, student-generated behaviors which give birth to learning. The study of mathemagenic behaviors is, more specifically, the study of students' actions that are relevant to the achievement of specified instructional objectives. The assumption underlying Rothkopf's work is that learning is facilitated when the learner is required to search the short term memory system for the answer to a question or problem.³

¹Jerome S. Bruner, On Knowing: Essays for the Left Hand (Cambridge: Belknap Press of Harvard University Press, 1963), pp. 129-148.

²Ibid., pp. 129-148.

³E. Z. Rothkopf, "The Concept of Mathemagenic Activities," Review of Educational Research, 40, 3 (1970):325-336.

Shlomo and Yael believe that learning is facilitated by activating the students; and learning relevant to intellectual development takes place as a result of a dynamic interaction between the students and their environment. Students must organize and assimilate their new experiences into the store of concepts already possessed. Environmental events are understood in light of our intellectual background and level of development. They do not have a specific meaning simply because the teacher presenting them to the students thinks they have that meaning.⁴ In many educational systems, particularly at the university level, students' active involvement is hindered by the fact that students substantially outnumber the teachers; hence, the interaction between students and teachers is limited. One possible alternative is to plan for group activity.

Before discussing group activity, we must answer a fundamental question: What is a group?

For the purpose of this study, a group is comprised of interdependent individuals with mutual relatedness in their activities and a common goal.⁵ The groups discussed in this study share a common goal of learning the content of their first college level accounting course. Shlomo and Yael suggested that educational planning and practice should be primarily student centered. In fact, students should be active in

⁴Sharan Shlomo and Sharan Yael, Small-Group Teaching (Englewood Cliffs: Educational Technology Publications, Inc., 1976), pp. 1-4.

⁵C. Gibb, "Leadership," in G. Lindzey and E. Aronson (eds.), The Handbook of Social Psychology, vol. 4, 2nd edition (Reading: Addison-Wesley, 1969), pp. 205-282.

planning their learning experiences as well as in performing learning tasks.⁶ This was not a new approach to educational planning. One of the earliest writers of group study plans was Edward Randall Maguire. In his book published in 1928 he stated:

In the Group-Study Plan each pupil works forward in a stimulating and challenging environment; pupil-teacher partnerships are formed; units of work are set out. The passive, listening, absorptive type of learner is not found in this procedure. The furtive pulpit and the mourners' bench have disappeared. No clever little Billies are found in these schoolrooms patiently waiting for the rest to catch up. In brief, here is exhibited the schoolroom as a working laboratory in every subject of the curriculum. The self-active, responsible, cooperative individual is cultivated. School becomes life.⁷

Maguire was an exponent of the school in which pupil power had the right of way over teacher talk. He made the pupil occupy the center of the stage. The teacher was there to assist the pupil in the search for knowledge. Maguire thought the old methods sought to place emphasis on the teacher teaching; and that emphasis meant too often the teacher telling, ordering, explaining, and imposing subject matter and modes of conduct.⁸ We will now consider the factors that influence the effectiveness of learning in a group setting.

Factors That Influence the Effectiveness of Learning in a Group Setting

A number of studies have manipulated factors that appear to be important in group learning. Some of the factors that have been

⁶Shlomo and Yael, pp. 1-4.

⁷Edward R. Maguire, The Group Study Plan (New York: Scribner's Sons, 1928), p. 3.

⁸Ibid., pp. 1-29.

considered are social context, social comparison, ability mix, age of the students, and verbalization.

Social Context

Wickens provided the concept that students' active role in learning is best fostered in a social context. Students should be encouraged, by the very structure of the learning situation, to develop cooperative relations with their classmates. Learning is more pleasurable, more positively motivated, when constant competition and the anxiety it entails are eliminated, or at least reduced; and classmates become a source of mutual help.⁹

Gibb noted that groups are rarely if ever homogeneous in terms of IQ or academic achievement; however, the aim of small groups is to foster cooperation and communication among students for learning purposes and to create a social context for individual investigation and involvement. The students' motivation to work together with other group members is increased, and they develop positive attitudes toward group activities.¹⁰ Students who participate in cooperative groups tend to view their studies as work that is meaningful rather than just laboring at a make work task. They see their teacher as a counselor and advisor, rather than as a taskmaster or policeman--words used by students in traditional classrooms.¹¹

⁹D. Wickens, "Piagetian Theory as a Model for Open Systems of Education," in M. Schwebel and J. Ralph (eds.), Piaget in the Classroom (New York: Basic Books, 1973), pp. 179-198.

¹⁰Gibb, pp. 205-282.

¹¹B. Blitz, The Open Classroom: Making It Work (Boston: Allyn and Bacon, 1973), pp. 4-34.

A one-year descriptive study of eight, sixth-grade classrooms by Meehan and Schusler concluded that group teaching draws some of its motivating power from a creation of a social context for learning. The very differences between personalities, which formal teaching tends to ignore, bring interest and a wide range of knowledge and skills to the group. In formal classrooms, the instructor typically establishes uniform standards and requirements for everyone. In group learning, on the other hand, students often participate in the establishment of the standard. This, in turn, cultivates respect for each person's unique contribution to the collective effort. Toward the close of the school year the teachers and the pupils expressed their feelings about their experience with small groups. The teachers were asked: For you as a teacher, what were some of the most valuable features of small-group organization (if any)? Five of the eight teachers reported benefits to the pupils. They found that pupils felt more responsibility toward one another and toward class rules. The increased pupil responsibility was often expressed through encouragement to shy, timid pupils; through patience and help to the disruptive; and through help in academic areas. Other teachers liked the added time small groups provided for observing pupils, for seeing and helping individuals, and for increased communication from the pupils. Pupils were asked: What benefits did the small groups offer pupils? What problems did pupils meet during direct and extended interaction with their peers? The pupils showed a strong favorable attitude toward small-group work and a realistic view of its difficulties. During the opening months of the school year, the pupils found that working in groups helped them with their regular

school subjects. Later in the year, pupils liked small-group work because of social-emotional values. They found that group work helped them get along better with others, make more friends, understand and like others better. In addition, the students gained the confidence to express opinions and to interact without fear. The different interests, backgrounds, values, and abilities of the members are, in fact, the group's greatest asset and the source of its potentially creative learning experiences. This study pointed out that small group interaction provides the inherent opportunity for social comparison.¹²

Social Comparison

Evans investigated the hypothesis that promising an opportunity to engage in social comparison would cause an increase in motivation. This increase in motivation would be reflected by increases in performance and tonic heart rate. Performance on modified forms of the Wechsler Adult Intelligence Scale (WAIS) Digit Symbol task was used as the behavioral measure of motivation. The tonic heart rate served as the psychophysiological measure of motivation. Tonic heart rate refers to rate measured over at least a 30-second period. Previous work by Evans demonstrated that performance on modified forms of the WAIS Digit Symbol was sensitive to differences in motivation. Recent work by Evans also demonstrated that an increase in tonic heart rate is a dependable and consistent indication of an increase in motivation.

¹²M. Meehan and R. Schusler, "Small Groups in Sixth Grade," Elementary School Journal (1966-1967):241-245.

The subjects were volunteers from an introductory psychology class participating to fulfill a class requirement. The experimental group consisted of eight males and eight females and the control group consisted of eight males and eight females. Analyses were done taking sex out as another factor.

The first three of five trials served as the basis of pilot data allowing for performance and heart rate to stabilize. During the fourth trial the experimental and control group received the same instructions with measurement of performance and heart rate. Analyses of the groups' heart rates were identical and performance scores differences were not significant. Just prior to the fifth trial, the experimental group was told that after the next trial they would be given the opportunity to compare their score with 25 other introductory psychology students who had been given the same amount of practice on the task. The experimental subjects manifested a significantly greater improvement in performance as well as a significantly greater increase in tonic rate compared to the control group.¹³ Festinger states that people have a need to evaluate their opinions and abilities in comparison to others, especially when there is no objective means of evaluation.¹⁴ Radloff's study revealed that people desired affiliation

¹³J. Evans, "Motivational Effects of Being Promised an Opportunity to Engage in Social Comparison," Psychological Reports, 34 (1974):117-140.

¹⁴L. Festinger, "A Theory of Social Comparison Processes," Human Relations, 7 (1954):117-140.

with other people when they had an opinion about a subject and had no "reference point" for that opinion.¹⁵

Gruder's work in 1971 showed that whenever people were offered the opportunity to engage in social comparison they wanted information about the best person, the worst person, the person just above them, and the person just below them.¹⁶ The use of permanent learning groups in this study will allow social comparison.

Ability Mix Within Groups

Webb compared learning in individual and group settings and controlled ability mix of U.S. Navy students. Students were assigned to either uniform or mixed ability groups. High-ability students did best on objective tests when they assumed a teaching role in mixed ability groups. Medium-ability students did best in uniform ability groups when all members had an equal opportunity to explain. Low-ability students, however, did best on objective tests when higher-aptitude students presented them with clear explanations. It would seem, then, that high-ability students should not be paired together because both students want to talk and low-ability students should not study together as they might only confuse each other. Webb also

¹⁵R. Radloff, "Opinion, Evaluation and Affiliation," Journal of Abnormal and Social Psychology, 62 (1961):578-585.

¹⁶C. Gruder, "Determinants of Social Comparison Choices," Journal of Experimental Social Psychology, 7 (1971):473-489.

considered subject matter and group size; however, impact was not significant from these variables.¹⁷

Rosen, Powell, and Schubot concluded in their study that people did well in a peer-tutoring situation as long as an equitable tutoring relationship was maintained. The authors looked at ability level and competency of 178 undergraduate students enrolled in educational psychology at the University of Georgia to determine whether students in a pair situation should exchange roles. They found that students preferred the role of the tutor and that they preferred to tutor those of their own ability level.¹⁸ In other studies looking at hetero-homogeneity of aptitude within groups, Hurlock and Hurlock found that discrepant-aptitude groups did not lead to poorer performance but did lead to unfavorable attitudes regarding group learning.¹⁹ Frick, however, found that grouping high and low-aptitude U.S. Air Force students resulted in much higher performance and less time to complete instructions for the low-aptitude students than that for a low-aptitude student in the control group.²⁰

¹⁷N. M. Webb, Learning in Individual and Small Group Settings (Technical Report No. 7). (Washington, D.C.: Personnel and Training Research Programs, Office of Naval Research, and Advanced Research Projects Agency, October, 1977.)

¹⁸S. Rosen, E. R. Powell, and D. B. Schubot, "Peer-Tutoring Outcomes as Influenced by the Equity and Type of Role Assignment," Journal of Educational Psychology, 69 (1977):244-252.

¹⁹R. Hurlock and J. Hurlock, "Paired Students Trained by CAI. Proceedings, American Psychological Association," 1972, pp. 495-496.

²⁰F. C. Frick, Study of Peer Training With the Lincoln Training System (AFATC Report KE 73-116). (Keesler Air Force Base, Miss., 1973.)

Age Mix Within Groups

One extreme form in cross age in elementary school is when an older student is paired with a younger student. Devin-Sheehan, Feldman, and Allen reviewed approximately a decade of studies investigating the effectiveness of cross-age tutorials. In these studies, students did not learn material together; instead, one student served as a tutor to another student(s). In most of these studies, tutors were older than those being tutored. Nearly all of these studies showed the tutorials to be beneficial to both tutors and those tutored. In many cases, tutors improved their own performance even more than those being instructed. It may be that even in learning groups as opposed to tutor/pupil situations, older or higher-aptitude students do better with low-aptitude students as they assume the role of "Teacher" and have the opportunity to do an extensive amount of explaining.²¹

Verbalization and Learning

One reason for the effectiveness of learning groups may be that groups provide students with the opportunity to verbalize concepts which they encounter in their individual study. Webb suggested that the amount of "explaining" by U.S. Air Force students in group study resulted in increased performance irrespective of the ability mix of groups. Additional support for the importance of verbalization is provided by Durling and Schick. They compared vocalizing and nonvocalizing pairs in a concept attainment task. The subjects were 84 college

²¹L. Devin-Sheehan, R. S. Feldman, and V. L. Allen, "Research on Children Teaching Children: A Critical Review," Review of Educational Research, 46 (1976):355-385.

students who volunteered for the experiment. Their study noted that the greatest learning gains were achieved by vocalizing pairs followed by individuals vocalizing to an experimenter, then nonvocalizing individuals, and finally, nonvocalizing pairs. This study suggests that vocalizing is important but also that a combination of vocalizing and interacting is perhaps even more important.²²

Ross and DiVesta also identified the effects of anticipated or actual vocalization of an oral summary, as a contribution to learning. Their study specifically examined the effects of an oral summary as a review strategy. The subjects were 162 female undergraduates solicited from an introductory educational psychology course. They were awarded credit toward their class grade for participation in the study. One treatment group studied text material with the expectation that they would present an oral summary at a later point in time; another treatment group studied without this expectation. After studying the material, one-third of the students (in both groups) presented oral summaries, one-third listened to the oral summaries (observation condition), and one-third of the students did not receive a review session.²³

All subjects returned one week later, at which time they were administered short-answer and multiple-choice criterion tests of the information contained in the material studied. The researchers found

²²R. Durling and C. Schick, "Concept Attainment by Pairs and Individuals as a Function of Vocalization," Journal of Educational Psychology, 68 (1976):83-91.

²³S. M. Ross and F. J. Divesta, "Oral Summary as a Review Strategy for Enhancing Recall of Textual Material," Journal of Educational Psychology, 68 (1976):689-695.

that verbalization was superior to observation with respect to short-answer performance. The actual presentation of an oral summary was not appreciably more effective than listening to one, as measured by multiple-choice items. Both types of review activities were provided to the experimental group to facilitate retention as compared to the control group which was not provided an opportunity for review. An important finding was that observation groups significantly outperformed the control group. This leads to the expectation that even quiet members of a group will benefit from listening to a group discussion. The authors concluded that the most optimal condition is a combination of active oral report with instructions to prepare to make an oral report (they suggest that the expectation to give an oral summary produces a positive motivational effect).²⁴

Group Learning

Many terms are used to describe group learning. Pair learning, peer learning groups are used interchangeably by writers. Within this study, the term "group learning" will be used. Group learning programs offer a promising alternative to the traditional format.

Effectiveness

Frazer, Beaman, Diener, and Kelem conducted two studies in which they compared the effectiveness of groups of two, three, or four students with a control group on college class performance. Students were assigned partners and requested to arrange to study together at

²⁴Ibid., pp. 689-695.

their convenience throughout the quarter. The course grade assigned to each was determined by the average of the performance of that student and his partner on tests and class assignments. They found that the group learning method was superior to the typical individual performance. Performance involved studying written material in groups, then testing for recall. (There were not significant differences between the peer learning groups.) The authors suggested that group learning programs could be implemented in college courses with minimal expense. They did not indicate that there was any special planning, testing, or training involved for the college students.²⁵

Beaman, Diener, Frazer, and Endreson conducted three studies to assess the effects of voluntary and semivoluntary group learning on effectiveness. In the first study, the subjects were 85 university students taking an undergraduate course in personality and individual differences. Each student attended four 50-minute lectures and one 50-minute discussion section per week. The sections were conducted by a teaching assistant, who randomly assigned two of his four sections to be the experimental group leaving the other two as the control group. Experimental subjects with low grade point averages were roughly matched to students with high grade point averages. The students were not informed that grade point average was considered in their partner assignments. Students in the experimental group were informed during the first meeting of the discussion section that one of the course

²⁵S. C. Fraser, A. L. Beaman, E. Diener, and R. T. Kelem, "Two, Three or Four Heads Are Better Than One: Modification of College Performance by Peer Monitoring," Journal of Educational Psychology, 69 (1977):101-108.

requirements was to study the course materials each week with a partner. The measure of academic performance was each individual's course performance. The performance measure consisted of the total of the 12-item weekly quizzes, a longer midterm, and a final exam. All quizzes and exams consisted of true-false, multiple-choice, and short essay questions, with scoring performed by a departmental reader.

The best results were from the students who performed the requested mutual study at least one-half hour per week. It should be noted that the average of 67.2 minutes per week increased grade averages about 7.1%. Since many courses use a grading scale with 10% increments, an increase of 7% would produce a letter grade increase for a large portion of the students. The major weakness of the group learning technique used in the first study was that it induced only about one-half of the students to perform the minimal requirement of studying one-half hour per week. Thus, a second study was planned to examine techniques of extending the benefits of group learning to a larger segment of students in a given course while minimizing their concerns about grade averaging.

In the second study, the subjects were 109 university students enrolled the following quarter in the same course as in the first study. Again, two of the sections were randomly selected to be the experimental group and two served as a control group.

Course grades consisted of three exams worth 100 points each, 6 points for each discussion section attended, and 3 points for each voluntary participation in a psychological experiment (up to a maximum of 12 points). The total possible score was 372 points. Each subject

in the experimental group was assigned a partner without regard to any characteristics of the student, that is, the subjects' grade point averages, sex, and so on were not considered in the partner assignments. The partners were required to study together a minimum of 45 minutes each week to receive the 6 points for attending each discussion section. Compliance was assessed using self-report forms submitted at the beginning of each discussion section. Thus, roughly 17% of the course grade was contingent upon the performance of 45 minutes of mutual study time per week.

Control subjects also submitted weekly reports of their study behavior, but with no required amount of study time. Hence, control subjects received 6 points purely for attending the discussion section. The measure of academic performance was each individual's cumulative total score for the three exams. Points for attendance of discussion sections and points for experimental participation were not analyzed. All exams consisted of 33 multiple-choice items with four choices. The experimental group performed better than the control group but did not reach statistical significance. Students could again refuse to participate in mutual studying, but would be less free to do so, since the reporting of no time each week would lower their grade. Thus, a more attractive option would be to agree with their partner to report the minimum study time even though they actually did not work together.

The third investigation was designed to examine this study time factor again. Since an undetermined number of subjects failed to perform the group learning under these minimal requirement procedures, another modification of the voluntary participation procedures of the

less conservative test of improved performance and to provide generalization to a population of students taking another course.

In the third study, the subjects were members of an undergraduate course in abnormal psychology. The professor invited any class member to volunteer to participate with a partner and to accept for his grade the average of his partner's and his own performances. Of the 108 class members, 14 volunteered for peer monitoring.

The subjects selected their own partners. Each subject next signed a brief contract indicating that he/she voluntarily agreed to study with a partner and understood he/she would receive his grade based on the averages of the performances. Lastly, the contract required that subjects not drop the course after the second week. The measure of academic performance was each individual's cumulative total points earned on the three tests administered during the course. Each test was worth 100 points and consisted of 33 multiple-choice items. Tests were scored by a teaching assistant. The experimental subjects averaged 258 points compared to 249.85 points for the control group. This was considered of marginal statistical significance by the researchers.

The three studies cited suggest that peer-learning procedures produce consistently positive effects. In no case did an experimental group show poorer performance than its control group. Presently the most effective method of maximizing the benefits for most students is to use the strong contingency of grade averaging.²⁶

²⁶A. L. Beaman et al., "Effects of Voluntary and Semi-Voluntary Peer-Monitoring Programs on Academic Performance," Journal of Educational Psychology, 69 (1977):109-114.

Lightner completed an effectiveness study of intermediate accounting students utilizing the group learning method (experimental) and lecture method (control) at San Diego State University, San Diego, California. The participants in Lightner's study were enrolled in an upper level course of intermediate accounting, where our subjects were enrolled in Accounting I. The fall semester classes served as the control classes. They were conducted under the original structure: lectures were delivered daily, homework was assigned, and student inquiries were answered. There was a nongroup milieu in which grading was based upon total points accumulated from examinations as follows:

Exam I	100 points
Exam II	100 points
Exam III	100 points
Final	<u>200 points</u>
Total	<u>500 points</u>

Spring semester classes were taught under a changed structure and served as the experimental classes. Students received identical lectures, homework assignments, and examinations as administered during the fall semester. However, the spring semester students were required to work in groups. Grading was based upon total points accumulated as follows:

	Points From Individual Effort	Points From Group Effort	Total Points Possible
Exam I	100	5	105
Exam II	100	5	105
Exam III	100	5	105
Final	<u>200</u>	<u>10</u>	<u>210</u>
Total	<u>500</u>	<u>25</u>	<u>525</u>

The measure of the control and experimental classes academic performance was each individual's total points from the four examinations.

The mean score of the performance measure was higher for the grouped classes, and the difference in means on the examination scores for intermediate accounting is statistically significant at a .10 level. Because a difference in the performance measure could be attributed to a difference in the mix of students from the two semesters, a test of homogeneity of the two classes was made. No significant difference was found between the average previous accounting grades for the grouped and nongrouped students which suggests that the grouped structure increased students' learning of intermediate accounting.

Lightner also measured student attitudes toward group learning. He found that students in the experimental condition developed significantly more positive attitudes toward groups. Surprisingly the

students from the two nongrouped intermediate accounting classes had a positive attitude toward group learning.²⁷

Peer Teaching

One of the most comprehensive studies was performed by Coy Jones. The objectives of his study were: To determine to what extent employing a set of group learning techniques encouraged peer teaching and did it result in improved student performance and satisfaction.

The subjects were 360 university students taking one of eighteen laboratory sections of an introductory zoology course. Eight graduate teaching assistants taught two sections, one experimental (group) and one control section.

The experimental group learning techniques Jones provided for were:

1. Opportunities for forming permanent, heterogeneous learning groups.
2. Maintaining group sizes to seven or fewer members.
3. A grading system in which group projects contributed significantly to each student's course grade.
4. Experimental group negotiated the weighting of individual performance, group performance, and peer evaluations.
5. Group projects and peer evaluations that contributed to each individual's course grade. The projects were structured such that no single individual could complete the project as successfully as a team effort.

²⁷Sharon M. Lightner, "Accounting Education and Participatory Group Dynamics," Collegiate News & Views, XXXV, 1 (Fall 1981):5-9.

The control class was instructed in the normal manner-- students were permanently assigned to lab tables and shared equipment with other students to complete non-graded projects.

Both the experimental and control classes took 12 mini-tests, a mid-term, and final exam. Immediately following the mid-term and final exams, all students completed a questionnaire to measure their perceptions of the group's cohesiveness, cooperation, quantity and quality of peer teaching, and their satisfaction with the course.

Jones concluded that experimental (group) sections were significantly more cohesive and cooperative and significantly outperformed control sections on individual quizzes and exams. The study indicated that no significant difference existed in satisfaction with the course between experimental and control sections.²⁸

Group Participation and Subsequent Performance

Many educational and training systems assume that individuals who solve problems in cooperative groups will subsequently perform better than individuals who have previously solved problems alone. Conversely, many cooperative problem-solving groups, such as committees, assume that individual problem-solving competence will transfer to subsequent group solution to problems of the same general class.

²⁸Coy A. Jones, "Peer Teaching in Permanent Project Teams (PT2)" (unpublished doctoral dissertation, The University of Oklahoma, 1982).

Thus, general group-to-individual and individual-to-group problem-solving transfer is particularly pertinent to performance.²⁹

Problem-Solving Transfer

Klausmeier, Wiersma, and Harris developed an experiment to ascertain whether university students acquired concepts equally efficiently when initially working as individuals, in pairs, and in groups of four. They also measured whether they performed equally well on an immediate and a delay transfer problem when working as individuals.

How efficiently persons attain concepts and other outcomes in the cognitive domain when working as individuals, in comparison with working in groups, is of significance in schools as in other behavioral settings.

One hundred twenty-eight subjects were drawn randomly from classes in educational psychology in two blocks of 64 during two semesters.

A 128-card, ordered figural board was used to present the problem to be solved. It was designed so that each card contained each of seven attributes and one of two defining characteristics. The total display incorporated the attributes and defining characteristics in all possible combinations. Thus, the seven attributes were number of borders, continuity of borders, number of figures, size of figures, texture of figures, color of figures, and shape of figures. The defining characteristics were one or two solid or broken lines; one or two small

²⁹Patrick R. Laughlin and Joan M. Barth, "Group-To-Individual and Individual-To-Group Problem-Solving Transfer," Journal of Personality and Social Psychology, 41, 6 (December 1981):1057-1089.

or large figures which had a solid or spotted texture; red or green color; circle or ellipse shape.

The four concepts to be attained in the initial learning situations by each individual, pair, and quad were as follows: broken borders, circular figures; two borders, small figures; solid red figures; and one large figure. The concept used in the transfer problem was one-border elliptical figures.

Upon receiving the instructions, the subjects worked at the task according to the three treatment groups. The subjects who did not engage in the immediate transfer problem left the laboratory and were instructed to read an article. After 12 minutes they were brought back to the laboratory for the delay transfer problem. The four initial concepts and the immediate and delay concepts were attained in a period of 30-60 minutes, depending upon the efficiency of the subject.

The mean time to attain the four concepts initially was computed for each individual, pair, and quad, yielding a total of 48 scores--16 for individuals, 16 for pairs, and 16 for quads. In both the immediate and in the delay transfer condition, there were 16 who had learned initially as individuals, 16 in pairs, and 16 in quads.

The rank order in efficiency of performance in initial learning was quads (3.27 minutes), pairs (3.89), and individuals (4.62). However, in immediate transfer, the subjects who learned initially as individuals were most efficient (2.34), with time to criterion about half that of the subjects who now worked as individuals but had learned initially in pairs (4.82) and quads (4.62).

For immediate transfer, the difference among treatment groups was significant beyond the .05 level. The subjects who had learned as individuals were significantly more efficient than those who had learned in pairs or in quads.

In delay transfer the rank order of efficiency was individuals, pairs, and quads; the difference among treatment groups was not significant for the delay transfer condition.

One substantive result of the experiment was that pairs and quads performed more efficiently initially than did individuals; but subsequently, when working as individuals, those who learned originally as individuals performed significantly better than those who learned in pairs and quads.³⁰ This indicates learning may be inhibited if only group performance measures are used.

Group Effect On Subsequent Individual Performance

McClintock and Sonquist's investigation focused on groups operating in actual classrooms. It was not primarily concerned with theoretical issues, but rather with the practical implication of an attempt to restructure student relationships in college classrooms through the use of small task-oriented groups. In addition, they sought to evaluate the consequences of such a change for student performance and attitudes.

Students from four discussion sections of an introductory sociology research methods class at the University of California, Santa

³⁰H. J. Klausmeier, W. Wiersma, and C. W. Harris, "Efficiency of Initial Learning and Transfer by Individuals, Pairs, and Quads," Journal of Educational Psychology, 54 (1963):160-164.

Barbara, participated in the experiment. Forty-eight were assigned to a group condition and 36 were assigned to an individual condition. The participants' grades on several classroom tasks were used as performance indicators. During the last period of the class students evaluated the class to report their perceived impact of group participation on their performance and satisfaction.

The results indicated that working in groups to prepare for a test did not affect subsequent individual performance on the test. However, team work resulted in better performance and grades on a joint paper than did individual performance. The grades that students received as members of a group were on the average better than those they could have been expected to receive on the basis of their own prior individual performance. In addition, group performance was often better than what could have been expected of the best student in the group. Additional evidence from the study indicated that the majority of group members had positive experiences in their groups.³¹

Laughlin and Barth believed concepts learned first in groups, then applied individually, should be assessed against an individual-to-individual application condition. Their purpose was to control for individual learning, fatigue, and motivational change over successive problems. They cited six studies that were consistent in their findings of superior training performance for groups, but no evidence that individuals performed better in later attempts to independently apply

³¹E. McClintock and J. A. Sonquist, "Cooperative Task-Oriented Groups in a College Classroom: A Field Application," Journal of Educational Psychology, 68 (1976):588-596.

the concepts. Their experiment assessed group-to-individual and individual-to-group application related to reasoning problems requiring logic, probabilistic inference, and hypothesis testing.

The Laughlin and Barth experiment results indicated that cooperative groups performed more effectively (fewer trials to solutions) and used a strategy of testing tenable instances more than individuals. Their results indicated that previous group experience did not influence subsequent individual performance, nor did previous individual experience influence subsequent group performance.³²

Summary

Taken together, the research and professional literature cited indicates the following:

1. Acquisition of knowledge is an active process.
2. Groups tend to feel more responsibility toward one another than non-group classes.
3. Groups tend to feel more positive toward their studies than non-group classes.
4. Within groups, mixing high-ability students with low-ability students resulted in higher performance for all levels of participants.
5. Within-group vocalization improved performance.
6. Group participants' satisfaction was significantly increased compared to non-group participants.

³²Laughlin and Barth, pp. 1092-1093.

The reasons suggested for the above are as follows:

1. An active participant selects and transforms information which facilitates comprehension and retention of information.
2. The group structure develops cooperative relations rather than competition and anxiety and they see their teacher as an advisor rather than as a policeman.
3. Students participate with their instructors in the establishment of course standards.
4. High-ability students prefer the role of tutor and the low-ability students accept the tutor as long as an equitable relationship is maintained.
5. The amount of "explaining" in group study resulted in increased performance irrespective of ability mix of groups.
6. The positive group experiences cited in (1) through (5) account for the significant increase in satisfaction compared to non-group participants.

The review of literature provided the background for the development of this study. Chapter III will develop procedures for this study to demonstrate: workability, practicality and reduce the mystery that may be associated with permanent group teaching.

CHAPTER III

PROCEDURES OF THE STUDY

Introduction

The purpose of this study was to provide research evidence to either support or deny the hypothesis that there is no significant difference in performance or satisfaction of accounting students between classes using the group learning techniques and classes using the lecture techniques.

During the conceptualization of this permanent group teaching study certain outcomes were hypothesized. The occurrence and extent of these outcomes would be difficult to recognize by personal observation; therefore, the following hypotheses were developed for empirical testing.

Statement of Hypotheses

Hypothesis 1: There is no significant difference in student performance between classes using the group learning techniques and classes using the lecture techniques.

Hypothesis 2: There is no significant difference between class performance due to instructor influence.

Hypothesis 3: There is no significant difference in student satisfaction between classes using the group learning techniques and classes using the lecture technique.

Hypothesis 4: There is no significant difference between class satisfaction due to instructor influence.

The population, design of study, to include instruments used to collect data, will be presented within the remainder of Chapter III.

Population

The population for this study was the accounting students enrolled in six of eight classes of Principles of Accounting I at Cameron University, Lawton, Oklahoma, during the fall semester of 1981. Table I identifies: the control/experimental classes of the first-course "Principles of Accounting I" sections, instructors, scheduled time of day for each class, the length of the class, the number of times the class meets per week, and the length of the class in weeks.

Design of Study

The primary purpose of this study was to determine if a significant relationship existed between teaching methods experienced by students and their levels of satisfaction and performance in accounting.

Once the resources required were identified, the primary task was obtaining those resources from organizations and people who would participate. The Department of Business chairman was contacted in regard to the planned research. Dr. Jack F. Amyx, the chairman of the Department of Business, volunteered his services as an instructor of one experimental group and one control group. The scheduling of people

TABLE 1
PRINCIPLES OF ACCOUNTING I CLASS SCHEDULING INFORMATION
CAMERON UNIVERSITY, FALL 1981

Control/ Experimental	Section	Instructor	Time Scheduled*	Class Length	Number of Meetings Per Week	Course Length
Control	0430	Jeter	8:30 A.M.	50 min.	3	16 weeks
Control	0435	Amyx	9:30 A.M.	50 min.	3	16 weeks
Experimental	0440	Amyx	10:30 A.M.	50 min.	3	16 weeks
Experimental	0445	Jeter	11:30 A.M.	50 min.	3	16 weeks
Control	6025	Chester	5:30 P.M.	74 min.	2	16 weeks
Experimental	8015	Chester	7:00 P.M.	160 min.	2	8 weeks

*All classes were assigned to the same classroom for period of time scheduled (Howell Hall, Room 201).

Note: See Appendix VIII for expanded Table 1 of class scheduling information.

and classes allowed for one other instructor, Mr. John S. Jeter, to teach an experimental and a control group on the same days and in the same classroom. The third instructor needed was Dr. James W. Chester, who had recently completed his terminal degree at Oklahoma State University. His dissertation investigated the effects of course length on the achievement of accounting students at Cameron University. His research indicated a significant difference existed in accounting achievement when the study of accounting was for a period of eight weeks as compared to 16 weeks. The eight-week students' achievement was significantly lower. Dr. Chester volunteered to teach the two night classes after expressing confidence that the 16-week section would out-perform the eight-week section in regard to achievement.

Dr. Larry K. Michaelson, of the University of Oklahoma, and I jointly hosted a briefing session with the three instructors at Cameron to provide ground rules that would be adhered to and to answer questions. The entire session was video taped and audio taped for the instructors to review at any time prior to or during the study. This session was held July 22, 1981, and lasted approximately two hours. The procedures and rules that were discussed and established were:

1. Each instructor would teach one class, identified as the control class, in their normal manner, which in every case was lecture.
2. Each instructor would teach one class, identified as the experimental class, using group teaching method.
3. Each class would meet in the same classroom.
4. Each instructor would identify the experimental and the control class after initial enrollment and prior to their first class

meeting. Class rosters would not be available to instructors until after selection was made.

5. Each instructor would develop and administer identical exams to his control and experimental classes. This would insure that the major exams for the control and experimental groups would provide a common standard of measurement.

6. The American Institute of Certified Public Accountants Achievement Test, Level I Financial Accounting-Form A would be administered as a posttest to all control and experimental classes. This would provide a standardized and independent source of achievement measurement.

7. A pre and post collection of data would be made in the form of 20 questions dealing with the students' experience. Data would be collected on the first day and the last day of class.

8. The instrument identified as "IDEA" developed by the Center for Faculty Evaluation and Development in Higher Education at Kansas State University would be administered as a post course measurement of perceived level of performance and satisfaction.

9. Evaluation and grading of experimental classes--The grades will be determined by scores in three areas: (1) Individual Performance, (2) Group Performance, and (3) Group Maintenance. Within these three areas, the graded assignments will be as follows:¹

¹See Appendix V for the three instructors' syllabuses for the experimental group.

Individual Performance

- a. Major exams
- b. Homework problems
- c. Mini-exams

Group Performance

- a. Homework
- b. Mini-exams
- c. Decision Problems

Group Maintenance

- a. Peer Evaluation

The percentage of the grade that will be determined by scores in the major three areas (Individual Performance, Group Performance, or Group Maintenance) and the relative weight of the major exams, homework problems, and mini-exams within individual performance will be determined by students as a class as soon as the student work groups are formed. The procedure through which the grade weights are set will be as follows:

- a. Groups will be formed within the class from members of the class.
- b. Groups will set preliminary weights for each area and select a member to meet with representatives of other groups.
- c. Representatives assemble in the center of the classroom and discuss until a consensus about the desired grade weights in the three areas is reached. NOTE: The only limitations on the grade

weights are that (1) a minimum of 10% must be assigned to each major area and (2) at least 60% of the Individual Performance grade must be determined by the major exams.

There will be several short Individual and Group mini evaluations given during the course. On group exams each group will turn in only one exam and all group members will receive the same score. All major exams will be individual exams.

Individual peer evaluation scores will be the average of the points individuals receive from the other members of their group. All individuals will rate all of the other members of their group. Assuming arbitrarily that (1) the peer evaluation is worth 10 points and (2) that there are six members in a group, an example of the peer evaluation procedure will be as follows:

- a. Each individual must assign a total of 50 points to the other five members in the group.
- b. Raters must differentiate some in the ratings; for example, each rater must give at least one score of eleven or higher and at least one score of nine or lower. NOTE: As a result of this procedure, the average peer evaluation score for each group will be identical although there will be some variation in scores within groups.

10. Collection of Data--The instructor may desire additional information from students for selection of groups. To assure a degree

of balance the data collection will be accomplished on the first day of class. Data may include: business courses, such as accounting, book-keeping, mathematics, computer, accounting experience, or whatever the instructors may want to know that will help them assign students to permanent work groups on the second day of class. Group size should not exceed seven members.

11. Each instructor will give the first individual and group mini-test on the second day.

12. Each instructor will be provided with a suggested schedule for the first three days and any additional forms or information of value to instructors. Information will be supplied by the writer of the study, prior to summer break.²

13. The entire process will be oriented toward the concept of a quasi field experiment.

Sources of Data

Five sources were utilized in gathering meaningful information on group learning processes, including the role of social interaction:

1. The American Institute of Certified Public Accountants Achievement Test, Level I Financial Accounting Form-A, administered as a standardized posttest to all students;

2. Individual teachers' final grades based upon tests given and completion of other required tasks;

²See Appendix VI for Suggestions.

3. Official university reports of individual students' activity relative to their completed hours of college credit and cumulative grade point average;

4. A questionnaire dealing with students' past experience and satisfaction to serve as a precourse and postcourse measurement instrument;

5. The IDEA course evaluation instrument developed at the Center for Faculty Education and Development in Higher Education at Kansas State University, utilized as a postcourse standardized measurement.

Three of the five sources require further examination. Sources 1, 4, and 5 will be discussed in depth.

Experience/Satisfaction Measures

The questionnaire that dealt with past experience and satisfaction was developed by Dr. L. K. Michaelson and the researcher.³ The questionnaire, consisting of 20 questions, was used to measure: (1) feeling that one can receive needed help on class work, tests, and assignments; (2) having confidence in instructors, lab assistants, and other students; and (3) feeling that channels of communication are open and clear. Each item was rated on a seven-point scale (1 = strongly agree, 2 = agree fairly strongly, 3 = agree, 4 = can't decide, 5 = disagree, 6 = disagree fairly strongly, 7 = strongly disagree). The questionnaire was administered at the first class meeting of the semester, then again at one of the last class meetings of the semester.

³See Appendix IV for the entire questionnaire.

The factors tested here are the change in each of the variables from pre-class to post-class. This instrument served as a check to determine if the experimental manipulation measurably affected students' experience in the basic accounting course.

The course evaluation measurement instrument identified as "IDEA" was the post-course survey form that provided a course evaluation measurement input relative to student reactions to instruction and course. This instrument was developed by the Center for Faculty Evaluation and Development in Higher Education at Kansas State University.⁴ The actual survey form consisted of 38 questions (see Appendix I for the form). Following is the breakdown of the questions:

1. Ten questions dealing with students' evaluation of their personal progress related to subject matter, general skills, and personal development.
2. Four questions dealing with amount of reading, difficulty of subject, and content integration.
3. Four questions relative to desire to take: the course, the instructor again, and attitude toward field and consideration.
4. Twenty questions developed to answer the question, "How did the students describe instructional methods or procedures?"
5. Allows for up to 25 additional questions developed by researcher. For this study, eight special questions were used for additional measurement of satisfaction and performance (see Appendix II for special questions).

⁴W. E. Cashin and B. M. Perrin, Idea Technical Report No. 4: Description of Idea Standard Form Data Base (Manhattan, KS: Center for Faculty Education and Development, 1978), pp. .

The "IDEA" measures a given course against all college courses and then all similar courses, allowing for class size, motivation, and prior research as to weight of meaningful items. In addition, the current researcher is allowed to identify items deemed essential or important. For this study, six objectives were identified as essential or important.⁵

Essential items:

21. Gaining factual knowledge (terminology, classifications, methods, trends).
22. Learning fundamental principles, generalizations, or theories.
23. Learning to apply course material to improve rational thinking, problem-solving and decision-making.

Important Items:

24. Developing specific skills, competencies and points of view needed by professionals in the field most closely related to this course.
27. Developing a sense of personal responsibility (self-reliance, self-discipline).
29. Developing skill in expressing myself orally or in writing.

The "IDEA" course evaluation instrument was a standardized posttest to which the posttest results of the questionnaire dealing with past experience and satisfaction (developed by Dr. L. K.

⁵See Appendix III for "IDEA" interpretive guide.

Michaelsen and the researcher) were compared. The similarity of results suggests the reasonableness of this latter questionnaire as a pretest/posttest instrument.

Performance Measures

The American Institute of Certified Public Accountants (AICPA) publishes an examination designed to measure elementary accounting knowledge at the completion of the second course of elementary accounting. The instrument requires a 50-minute testing period and has an established national norm. The researcher accepted that students having completed only one accounting course would probably score low on a test designed to measure knowledge after completion of two courses.

Four of the six class sessions illustrated in Table 1 utilized a class period of 50 minutes. For this reason, the AICPA Achievement Test, Level I Financial Accounting Form-A was determined to be acceptable for administration to all sections of students in this study.

The AICPA Achievement Tests are considered to be well-developed instruments that can yield accurate discriminations among levels of accounting knowledge.⁶

The actual current content outline for the Level I Form A Achievement Test used in this study is as follows:

I. FINANCIAL ACCOUNTING	No. of Questions
A. Basic Financial Accounting	
1. Structure	5
2. Underlying Assumptions	5

⁶Information provided by Barbara B. Howell, Testing Program Director, American Institute of Certified Public Accountants, April 8, 1981.

B. Revenue and Expense Recognition	
1. Accrual Concept	6
2. Recording Process	3
C. Valuation Approaches	
1. Assets	5
2. Liabilities	4
3. Owners Equity	2
D. Intercompany Investments	2
E. Analysis of Financial Statements	4
F. Prices and Values	2
Total	<u>38</u>

One question may require knowledge from several areas. Thus, the statement: "The AICPA Achievement tests are considered to be well-developed instruments that can yield accurate discriminations among levels of accounting knowledge."⁷ The researcher selected this instrument to measure actual postcourse performance.⁸ In addition to the AICPA Achievement Tests, course grades and students' cumulative grade point average provided a basis for performance evaluation.

Statistical Techniques Used

In testing the difference in performance between groups of students, the instrument for measurement of performance was the American Institute of Certified Public Accountants Achievement Test, Level I Financial Accounting-Form A (AICPA).⁹

⁷Ibid.

⁸See Appendix VII for detailed data relative to AICPA validity.

⁹See Appendix VII for validity of AICPA Achievement Test.

The statistical tools used to test Hypotheses 1 and 2 (performance) are classical analysis of variance, the Wilcoxon Rank Sums Test, and the Kruskal-Wallis one-way analysis of variance. It was decided that both parametric and non-parametric tests would be used because the distribution of the dependent variable (AICPA scores) could not unequivocally be ruled non-normal.

The relationship between the variable of raw score on the AICPA test and CLASS (0 = lecture, 1 = group) first was examined using the Wilcoxon Rank Sums Test. In this procedure, the values of the dependent variable, AICPA test, are replaced by their rankings in the total sample of all students. These rankings then are summed for each value of the independent variable, CLASS, and the smaller sum or the sum based on the smaller sample is compared to a tabled value at the given sample size and a significance level established a priori.¹⁰

Classical parametric analysis of variance was used to test for any influence other variables might have on the relationship between raw AICPA scores and CLASS or raw AICPA scores and TEACHER. In the first step of ANOVA with covariates, the effects of total college hours completed and cumulative grade point average are removed by assigning them covariate status and using standard regression techniques to estimate the amount of variance in raw AICPA scores which can be statistically explained through their use. The variance in raw AICPA scores yet unexplained after this procedure is subjected to a standard

¹⁰J. V. Bradley, Distribution-free Statistical Tests (Englewood Cliffs, N.J.: Prentice-Hall, 1968), pp. 105-115.

analysis of variance using CLASS, TEACHER, and GRADE (grade earned in the class) as independent or explaining variables.¹¹

In testing Hypotheses 3 and 4, differences in satisfaction between the two groups of students (lecture or group-oriented classes), the trends in one group were compared to those in the other to see if they were similar. The possible outcomes include: (1) both groups may have no significant trend indicating no tendency for either group to change satisfaction levels during the semester; (2) the groups may have similar significant trends indicating a tendency for both groups to change in the same way; or (3) the groups may show different trends, that is, they may show significant trends in opposite directions or one may show a significant trend while the other shows no significant trend.¹²

The posttest of the levels of satisfaction was analyzed using the Wilcoxon Rank Sums Test and the Kruskal-Wallis analysis of variance.

The Kruskal-Wallis one-way analysis of variance is simply a higher-order version of the Wilcoxon Rank Sums Test, i.e., it is capable of testing for differences among any number of groups while the Wilcoxon test is limited to testing only two groups.¹³

¹¹N. H. Nie, C. H. Hull, J. G. Jenkins, K. Steinbrenner, and D. H. Bent, Statistical Package for the Social Sciences, 2nd edition (New York: McGraw-Hill, 1975), pp. 398-410.

¹²See Appendixes I, II, and IV for complete data collection instruments.

¹³Bradley, pp. 129-134.

Kendall's Tau-C is used as the test statistic for change in satisfaction measured as: (1) feeling that one can receive needed help on class work, tests and assignments; (2) having confidence in instructors, lab assistants, and other students; and (3) feeling that channels of communication are open and clear.¹⁴ Tau-C is a measure of relationship between variables of ordinal level. The test is based on the number of concordant and discordant pairs of observations in the sample. Any two cases are said to be concordant if the change in both variables tested is in the same direction from one case to another. This means if Person A has a higher score on Variable 1 than does Person B and also has a higher score on Variable 2, then we say Persons A and B constitute a concordant pair. If Person A has a higher score on Variable 1 but is lower than Person B on Variable 2, then the pair AB is said to be discordant. All possible pairs of cases (there are $N(N-1)/2$) are examined, and a count is kept of the number of concordant pairs (P) and discordant pairs (Q). Then, (P-Q) is the difference between the number of concordant pairs and the number of discordant pairs (positive if there are more concordant than discordant pairs, negative if the reverse is true, and 0 if the number of concordant pairs equals the number of discordant pairs). This means that Tau will be 0 if there is no relationship between the two variables (P-Q=0), less (more) than 0 if the variables are negatively related [P less (more) than Q]. The version of Tau used is corrected for tied observations so two or more observations are allowed to take the same value for a particular variable.

¹⁴Nie et al., pp. 222-230.

In the context of the current research, if respondents taking the survey at the end of the semester tend to report higher disagreement on an item than do respondents surveyed at the start of the class, then Tau will be positive.¹⁵ If, on the other hand, those surveyed at the end of the semester show generally less disagreement with an item than do students surveyed at the start of the class, Tau will be negative. Thus, depending on values of Tau, we say there is a "trend" toward more disagreement (Tau is positive) or toward less disagreement (Tau is negative) as the class moves through the semester.

The "IDEA" course evaluation instrument was scored by the Center for Faculty Evaluation and Development in Higher Education at Kansas State University. The researcher did perform an analysis of experimental versus control groups by instructor. This was accomplished by testing the difference of experimental versus control means from zero by individual instructor. The purpose of this action was to audit the report provided by Kansas State University.

Having presented a detailed description of the procedures of this study, we may continue to Chapter IV. In Chapter IV, the results of the statistical analysis will be presented.

¹⁵See Appendix IV for complete data collection instrument.

CHAPTER IV

RESULTS OF THE STUDY

Introduction

This chapter reports the results of the statistical analysis of the data for each of the four hypotheses. To preserve continuity, the results will be presented in the same sequence as the hypotheses were previously presented. Hypotheses 1 and 2 concern students' performance related to educational experience provided by the Accounting I class in which they were enrolled.

Results of Testing Hypotheses 1 and 2

Hypothesis 1: There is no significant difference in student performance between classes using the group learning techniques and classes using the lecture techniques.

Hypothesis 2: There is no significant difference between class performance due to instructor influence.

The results of testing hypotheses as stated above were:

1. The Wilcoxon Rank Sums Test yields a mean rank of 77.21 for the 84 people in lecture classes and 82.09 for the 74 students in group-oriented classes.

2. The W-statistic is 6075.0 with a corresponding z-score (corrected for ties in rankings) of $-.6710$.

3. The two-tailed probability of obtaining a test statistic greater than or equal to that found is $.5022$ (thus, the one-tailed probability that the students in group classes score higher than those in lecture classes is half the two-tailed probability or $.2511$).

Based on these results, Null Hypothesis 1, therefore, cannot be rejected at anything approaching the $.05$ level.

The classical ANOVA model was also employed to test the relationship so far revealed while accounting for the influence of AICPA scores versus completed credit hours and grade point; AICPA scores by class, teacher and grade; and AICPA scores by teacher/grade groupings. The results of this analysis are given in the Tables 2, 3, and 4 on the following pages.

As shown in Table 2, completed hours of college credit have no significant influence on performance as measured by raw AICPA score. Cumulative grade point average does have a significant relationship to performance and can be expected to explain approximately 14% of the variance in test scores. Once the effect of the covariates is discounted, the ANOVA by CLASS, TEACHER, and GRADE WAS PERFORMED.

As shown in Table 3, for the three variables CLASS, TEACHER, and GRADE, only GRADE, the mark achieved in the class, is significantly explanatory. CLASS appears to have literally no effect upon test scores when viewed in the context of this model with multi-independent variables.

TABLE 2

REGRESSION TEST OF AICPA SCORES VERSUS COMPLETED
CREDIT HOURS AND GRADE POINT RELATIONSHIPS

Covariates	Regression Coefficients	F-Ratio	Significance
Completed Hours of College Credit	.009	1.429	.234
Cumulative Grade Point	2.361	31.590	.000

TABLE 3

ANOVA TEST OF AICPA SCORES BY CLASS,
TEACHER, GRADE RELATIONSHIPS

Main Effects	Grouping	Deviation From Overall Mean	F-Ratio	Significance
Class	Lecture	+0.02	.007	.932
	Groups	-0.03		
Teacher	Amyx	-0.38	2.499	.090
	Chester	-0.55		
	Jeter	+1.02		
Grade*	D or F	-2.06	12.325	.000
	C	-1.60		
	B	+0.23		
	A	+4.21		

*Since the "F" did not occur in every class, "D"'s and "F"'s were combined to form the category "D/F" which has at least some observations for each class.

There are differences among instructors (students of two instructors score slightly below the overall mean on the average while students of the third have an average score that is somewhat higher) but the differences cannot be considered statistically significant once the effect of the covariates, completed hours of college credit and cumulative grade point, and the other dependent variables, GRADE and CLASS, has been removed.

TABLE 4
ANOVA TEST OF AICPA SCORES BY
TEACHER/GRADE GROUPINGS

Interactions**		F-Ratio	Significance	
Teacher and Grade:		2.215	.045	
Variance from Mean Table of Groupings				
	<u>D or F</u>	<u>C</u>	<u>B</u>	<u>A</u>
Amyx	-4.05	-2.31	-0.26	+6.83
Chester	+0.45	-3.05	-0.47	+3.65
Jeter	-1.69	+0.04	+1.87	+4.55

**The other two-way interactions, CLASS/TEACHER, CLASS/GRADE, and the three-way interaction CLASS/TEACHER/GRADE were found to be non-significant and results are not reported.

As shown in Table 4, the interaction of GRADE and TEACHER has an effect (independent of TEACHER or GRADE alone) which is significant if rather small, explaining approximately 6% of the variance in test scores.

The table shows that students who receive a grade of "A" under Amyx or Chester or a grade of "A" or "B" under Jeter can be expected (as a group) to score well above average. Those who receive a "B" from Amyx, a "B" or "D or F" from Chester or a "C" from Jeter can be expected to score near average. Below-average performances can be expected from groups of students receiving a "C" or below from Amyx, a "C" from Chester, or a "D or F" from Jeter. The apparent contradictions between grade received in class and scores on the standardized test for some categories may be due to differing grading procedures, the ability of some instructors to perform better with students who have a certain level of achievement, the small cell sizes at this level of analysis (largest cell is 31, smallest is 4, so certainly no absolute pronouncements are possible), and/or other variables not in the analysis. Mean ranks for the three teachers as shown in Table 5, were obtained by application of the Kruskal-Wallis ANOVA which produced the following mean ranks.

TABLE 5
MEAN RANK ON AICPA SCORE BY TEACHER

Teacher	Mean Rank on Raw AICPA
Amyx	69.93
Chester	81.50
Jeter	91.06

In summary, neither Null Hypothesis 1 (class format - lecture or group interaction - has no effect on performance) nor Null Hypothesis 2 (instructor influence has no effect on test performance) can be rejected at the .05 level of significance. Instructor influence may be a significant factor for students at a given grade level but the small sample size and other limits of the analysis make any definite conclusions concerning this effect impossible.

Results of Testing Hypothesis 3

Hypothesis 3: There is no significant difference in student satisfaction between classes using the group learning techniques and classes using the lecture technique.

Experience/Satisfaction Questionnaire

The results of analyzing the raw scores on individual items from the instrument developed by Dr. Michaelson and the researcher are presented in Table 6. The table reports the values of Tau and their significance levels for the satisfaction variables versus time (whether pre-class or post-class) for lecture classes and group-oriented classes.¹ Positive values in this table indicate that disagreement is higher after the class than it was before, while negative values indicate a decrease in disagreement from pre- to post-class (since the scale assigns agreement low values and disagreement high values). The statistical significance of this trend is given in the table following each Tau. The significance level is generally interpreted as the probability that such a trend could be a product of pure chance and that there is, in fact, no trend from pre-class to post-class. The adoption

¹See Appendix IV for complete data collection instrument.

TABLE 6

TRENDS IN DISAGREEMENT WITH QUESTIONNAIRE ITEM
FROM PRE-CLASS TO POST-CLASS

Item	Lecture		Groups	
	Tau	Statistical Significance	Tau	Statistical Significance
<u>Help From Instructor:</u>				
L+--In Class (1)	.144	.033	.033	.338
On Assignments (4)	.120	.081	.026	.375
On Tests (7)	.067	.201	-.055	.240
<u>Instructor Communication</u>				
Doesn't Understand (10)	.042	.295	.055	.242
Can Explain To Me (13)	.000	.499	-.058	.226
Answers Inspire Confidence (16)	-.038	.317	-.097	.100
<u>Help From Students:</u>				
G+--In Class (2)	.058	.227	-.280	.000
G+--On Assignments (5)	-.048	.278	-.148	.029
On Tests (8)	.025	.378	-.054	.244
<u>Student Communication</u>				
Doesn't Understand (11)	.029	.348	-.011	.445
Can Explain To Me (14)	.058	.224	-.058	.224
G+--Answers Inspire Confidence (17)	-.041	.303	-.164	.015
<u>Help from Lab Assistant:</u>				
In Class (3)	-.175	.030	-.441	.000
On Assignments (6)	-.296	.001	-.370	.000
G+--On Tests (9)	-.070	.230	-.174	.030
<u>Lab Assistant Communication</u>				
Doesn't Understand (12)	.135	.071	.214	.009
Can Explain To Me (15)	-.144	.063	-.280	.001
Answers Inspire Confidence (19)	-.192	.020	-.254	.002
<u>Confidence in Group:</u>				
G+--Group Answers Inspire Confidence (18)	-.009	.455	-.172	.013

G+ = Groups classes show a significant trend while the other lecture classes do not.

L+ = Lecture classes show a significant trend while the group classes do not.

The () under item column indicates item number from data collection instrument (see Appendix IV for complete instrument).

of a .05 level of significance as a test of a trend states that any trend which has only 5 or fewer chances out of 100 of occurring by chance is probably not due to chance but to an actual change in satisfaction from before-class to after-class.

While the two groups never show significant trends in opposite directions, there are six variables on which one group shows a significant tendency toward change while the other group shows no apparent change.

Item 1 - It is generally easy for me to get individual help from an instructor when I don't understand something we have talked about in class: The lecture-class students show a significant trend toward more disagreement after class than before ($Tau = .144$, significance = .033) while the group-class students show no significant trend ($Tau = .033$, significance = .338).

Item 2 - It is generally easy for me to get individual help from another student when I don't understand something we have talked about in class: The group-class students show a significant tendency toward less disagreement at the end of the semester ($Tau = -.280$, significance = .000) while the lecture-class students show no apparent change ($Tau = .058$, significance = .227).

Item 5 - It is generally easy to get individual help from a student so that I can tell whether or not I have

correctly completed assignments before they have to be turned in: Group-class students have a significant tendency to disagree less after the class than before ($\text{Tau} = -.148$, significance = .029) while lecture-class students show no significant trend ($\text{Tau} = -.048$, significance = .278).

Item 17 - When I have a question, I generally have a great deal of confidence in answers I get from another student on a one-to-one basis: The students in group-oriented classes experience significant decreasing trend in disagreement ($\text{Tau} = -.164$, significance = .015) and the students from lecture classes show no real tendency to change during the course of the semester ($\text{Tau} = .041$, significance = .303).

Item 9 - After I take a test, it is generally easy to get individual help from a lab assistant in understanding reasons for incorrect answers to the questions and problems: Again, group-class students show a decrease in disagreement ($\text{Tau} = -.174$, significance = .030) while lecture students show no trend ($\text{Tau} = -.070$, significance = .230).

Item 18 - When I have a question, I generally have a great deal of confidence in answers I get from a group discussion involving several other students: As before, students in group classes tend to show a

decrease in disagreement over the course of the semester ($T = -.172$, significance = .013) but lecture students show no change ($\text{Tau} = .009$, significance = .455).

In order to test the differences in satisfaction levels (once the class is completed) between group classes and lecture classes, the Wilcoxon Rank Sums Test is again employed. The results of this test are shown in Table 7 on the following page.

The test was run on only those students responding to the survey at the end of term. For every item, the observed level of satisfaction (again, indicated by disagreement with a negative item or agreement with a positive one) is higher, on the average, in the group classes than in the lectures. This difference is not always significant but is especially strong for the following items:

Help from instructor in class (1) (Satisfaction significantly higher in group classes)	$p = .044$	$<.05$
Help from instructor on assignments (4) (Satisfaction higher in group classes but difference is not significant at .05 level)	$p = .064$	not signif.
Instructor does not understand (10) (Satisfaction higher in group classes but difference is not significant at .05 level)	$p = .100$	not signif.
Help from students in class (2) (Satisfaction is significantly higher in group classes)	$p = .000$	$<.05$
Students can explain to me (14) (Satisfaction is significantly higher in group classes)	$p = .023$	$<.05$

TABLE 7

MEAN RANKS ON DISAGREEMENT BY CLASS FOR STUDENTS
SURVEYED AT END OF TERM

Item	Lecture	Groups	Significance
<u>Help From Instructor:</u>			
(L) * In Class (1)	84.0	72.2	.044
On Assignments (4)	80.2	69.8	.064
On Tests (7)	82.2	73.8	.114
<u>Instructor Communication</u>			
Doesn't Understand (10)	70.4	79.0	.100
Can Explain To Me (13)	82.1	75.9	.185
Answers Inspire Confidence (16)	84.4	76.6	.130
<u>Help From Students:</u>			
(L) * In Class (2)	93.2	67.3	.000
On Assignments (5)	84.7	76.4	.121
On Tests (8)	81.0	73.3	.132
<u>Student Communication</u>			
Doesn't Understand (11)	76.8	80.2	.308
(L) * Can Explain To Me (14)	85.9	72.4	.023
Answers Inspire Confidence (17)	81.6	75.6	.190
<u>Help from Lab Assistant:</u>			
(L) * In Class (3)	78.0	65.3	.024
On Assignments (6)	72.3	67.8	.246
On Tests (9)	68.5	61.9	.146
<u>Lab Assistant Communication</u>			
(G) * Doesn't Understand (12)	61.1	73.0	.028
Can Explain To Me (15)	72.7	65.6	.218
Answers Inspire Confidence (19)	71.9	67.4	.246
<u>Confidence in Group:</u>			
(L) * Group Answers Inspire Confidence (18)	85.5	68.6	.008

* = Difference in levels significant at .05 or less.

(L) = Lecture

(G) = Groups

Help from lab assistant in class (3) (Satisfaction is significantly higher in group classes)	p = .024	<.05
Lab assistant does not understand (12) (Satisfaction is significantly higher in group classes)	p = .028	<.05
Group answers inspire confidence (18) (Satisfaction is significantly higher in group classes)	p = .008	<.05

Armed with these results, we undertake to grapple with Null Hypothesis 3: There is no significant difference in satisfaction between classes using the group learning techniques and classes using the lecture technique.

Given our definition of satisfaction for the purposes of this study, satisfaction is defined as: (1) feeling that one can receive needed help on class work, tests, and assignments; (2) having confidence in instructors, lab assistants, and other students; and (3) feeling that channels of communication are open and clear. With the consistency of results found in the analysis, the following conclusions are reached:

1. Null Hypothesis 3 must be rejected for those satisfaction dimensions on which we find a significant difference in post-class levels of agreement/ disagreement (Items 1, 2, 3, 12, 14, and 18 just discussed and marked with a "*" in Table 7).

2. This hypothesis must be rejected for those dimensions on which we find a significant trend from pre- to post-class in one section (lecture or groups) and no trend (or an obviously non-significant trend) in the other section (Items 1, 2, 5, 9, 17, and 18 discussed earlier and marked with a "+" in Table 6).

3. Null Hypothesis 3 is, thus, rejected outright for 9 of the 19 satisfaction dimensions measured. The validity of this hypothesis for the other 10 dimensions must be seriously questioned given the consistent tendency for group-oriented classes to respond more positively and to change in more positive directions during the course of the semester.

In general, there appears to be a difference between group-class students and lecture students on satisfaction measures. The group-oriented class tends to score consistently higher on these measures of satisfaction than do lecture classes. This difference is found to be statistically significant on 9 of the 19 measures and was consistent throughout the range of items.

Course Evaluation Questionnaire

The results of analyzing the raw scores on individual items from the "IDEA" Instrument are presented in Table 8 on the following page. The table compares all six classes; i.e., three control and three experimental classes; and the three teachers. Table 8 also indicates that out of 42 measurements, the experimental group outperformed the control class in 30 measurements. This provides support for the validity of the pre-post satisfaction/experience instrument and the AICPA test from the student's perceptions.

It was interesting to note the results paralleled data gathered via other data instruments. For example, Jeter's experimental class equalled or outperformed the control group in all areas. For an expanded "IDEA" form analysis of experimental versus control groups by instructor see results of Hypothesis 4.

TABLE 8
IDEA REPORT - PART VIII SUMMARY PROFILE COMPARISONS OF ALL SIX CLASSES

		Comparison Group	Amyx			Chester			Jeter		
			Con.	Exper.	Diff. ¹	Con.	Exper.	Diff. ¹	Con.	Exper.	Diff. ¹
<u>Outcomes</u>											
Overall Evaluation (Progress on Relevant Objectives) E=21, 22, 23 I=24, 27, 29	All Courses	22	30	08	22	26	04	68	77	09	
	Similar Courses	19	30	11	16	10	-06	60	71	11	
Would Like Instructor Again	All Courses	53	34	-19	70	70	00	53	76	23	
	Similar Courses	54	29	-25	75	56	-19	34	65	31	
Improved Attitude Toward Field	All Courses	20	40	20	29	54	25	61	73	12	
	Similar Courses	10	32	22	18	24	06	32	54	22	
All Courses Total		95	104	9	121	150	29	182	226	44	
All Courses Mean		31.7	34.7	3.0	40.3	50.0	9.7	60.7	75.3	14.6	
Similar Courses Total		83	91	8	109	90	-19	126	190	64	
Similar Courses Mean		27.7	30.3	2.6	36.3	30.0	-6.3	42.0	63.3	21.3	
<u>Methods</u>											
Involving Students	All Courses	32	16	-16	26	10	-16	26	63	37	
	Similar Courses	40	18	-22	31	7	-24	20	62	42	
Communicating Content and Purpose	All Courses	52	36	-16	60	36	-24	77	77	00	
	Similar Courses	50	32	-18	61	18	-43	66	66	00	
Creating Enthusiasm	All Courses	24	24	00	19	29	10	65	65	00	
	Similar Courses	20	20	00	16	13	-03	51	51	00	
Preparing Examinations ²	All Courses	20	41	(21)	75	16	(-59)	61	54	(-07)	
	Similar Courses	25	51	(26)	88	11	(-77)	65	57	(-08)	
<u>All Courses Total</u>		128	117	-11	180	91	-89	229	259	30	
<u>All Courses Mean</u>		32.0	29.3	-2.7	45.0	22.8	-22.2	57.3	64.8	7.5	
<u>Similar Courses Total</u>		135	121	-14	196	49	-147	202	236	34	
<u>Similar Courses Mean</u>		33.8	30.3	-3.5	49.0	12.3	-36.7	50.5	59.0	8.5	

¹Experimental percentile minus control percentile equals difference.

²The parentheses indicates low scores are desirable.

Note: See Appendix IX for individual instructors' "IDEA" report tables.

Results of Testing Hypothesis 4

Hypothesis 4: There is no significant difference between class satisfaction due to instructor influence.

The test of this Hypothesis 4 is performed much like that of Hypothesis 3.

Experience/Satisfaction Questionnaire

Table 9 on the following page shows the Tau statistics and significant levels for trend in agreement/disagreement from pre- to post-class by teacher.

We find nine measures on which trends differ among teachers. As with differences between lecture and group students in Table 9, the trends are compared by direction and significance level. The measures on which differences are found are:

Item 1 - "Can get help from instructor in class": Anyx's students show a significant trend toward more disagreement after class than before (Tau = .165, significance = .035) while students under the other two instructors show no trends (Chester: Tau = .066, significance = .267; Jeter: Tau = .010, significance = .458).

Out of the nine variables on which one or two teachers show significant trends, Jeter has the most positive (in the satisfaction sense) changes on eight while satisfaction trends from pre- to post-class were least positive in Chester's classes for six of the nine.

Item 16 - "Instructor's answers inspire confidence": Jeter's students show a trend toward less disagreement

TABLE 9

TRENDS IN DISAGREEMENT WITH QUESTIONNAIRE ITEM
FROM PRE-CLASS TO POST-CLASS BY TEACHER

Item	Amyx		Chester		Jeter	
	Tau	Signf.	Tau	Signf.	Tau	Signf.
<u>Help From Instructor:</u>						
A+--In Class (1)	.165	.035	.066	.267	.010	.458
On Assignments (4)	.044	.323	.143	.111	.058	.279
On Tests (7)	.036	.344	-.106	.159	.047	.306
<u>Instructor Communication</u>						
Doesn't Understand (10)	.086	.173	.024	.411	.024	.399
Can Explain To Me (13)	.012	.448	.007	.474	-.115	.113
J+ Answers Inspire Confidence (16)	-.007	.471	.070	.253	-.236	.005
<u>Help From Students:</u>						
J+--In Class (2)	-.103	.126	-.019	.427	-.229	.006
J+--On Assignments (5)	-.087	.167	-.044	.342	-.232	.007
On Tests (8)	.046	.306	.049	.325	-.123	.094
<u>Student Communication</u>						
Doesn't Understand (11)	.005	.477	.020	.424	.008	.466
Can Explain To Me (14)	.004	.480	.024	.406	-.025	.393
J+--Answers Inspire Confidence (17)	-.103	.124	-.011	.457	-.192	.020
<u>Help from Lab Assistant:</u>						
In Class (3)	-.334	.000	-.186	.082	-.393	.000
On Assignments (6)	-.350	.000	-.281	.022	-.392	.000
On Tests (9)	-.150	.076	-.182	.100	-.081	.228
<u>Lab Assistant Communication</u>						
A+--Doesn't Understand (12)	.308	.002	.118	.187	.075	.233
J+--Can Explain To Me (15)	-.139	.088	-.096	.241	-.368	.000
A+,J+--Answers Inspire Confidence (19)	-.193	.030	-.050	.360	-.373	.000
<u>Confidence in Group:</u>						
J+--Group Answers Inspire Confidence (18)	-.018	.423	-.098	.186	-.177	.028

+ = At least one teacher's classes show a significant trend while at least one other teacher's classes do not. Identification of teacher or teachers: A = Amyx; C = Chester; J = Jeter.

(Tau = $-.236$, significance = $.005$), but students of the others show no significant trend (Amyx: Tau = $-.007$, significance = $.471$; Chester: Tau = $.070$, significance = $.253$).

Item 2 - "Can get help from students in class": Jeter's classes move toward less disagreement (Tau = $-.299$, significance = $.006$) and the other classes show no trends (Amyx: Tau = $-.103$, significance = $.126$; Chester: Tau = $-.019$, significance = $.427$).

Items 5 - "Can get help from students on assignments";
 17 - "Student's answers inspire confidence";
 15 - "Lab assistant can explain to me"; and
 18 - "Group answers inspire confidence," all display the same pattern shown by Items 2 and 16 just discussed. Jeter's students show significant movement toward greater satisfaction as the semester progresses (Tau ranges from $-.177$ to $-.368$, all significant at $.05$ or less) while students under the other instructors show no real shift in satisfaction.

Item 19 - "Lab assistant's answers inspire confidence": Both Jeter's and Amyx's students move toward greater satisfaction (Jeter: Tau = $-.373$, significance = $.000$; Amyx: Tau = $-.193$, significance = $.030$) while Chester's students seem not to change (Tau = $-.05$, significance = $.360$).

Item 12 - "Lab assistant doe not understand my question":

Amyx's students show a significant trend toward more agreement, i.e., less satisfaction ($\text{Tau} = .308$, significance = .002) while the students of Jeter ($\text{Tau} = .075$, significance = .233) and Chester ($\text{Tau} = .118$, significance = .187) show no real change.

Only two of the variables ("Instructor's answers inspire confidence," number 16 and "Lab assistant's answers inspire confidence," number 19) show significant differences across teachers, although Jeter's students have highest satisfaction levels on 10 of the 19 variables, including both of those with significant differences among teachers.

The test on levels of satisfaction across teachers is not very conclusive. Table 10, on the following page, shows the mean ranks by teacher variable with significance levels as measured by the Kruskal-Wallis analysis of variance.

We reject Null Hypothesis 4 for the variables marked with a "+" (significant trend differences among teachers) or a "*" (significant level differences among teachers post-class) in Table 10 but levels and trends across teachers on the other variables are unclear.

A classical two-way analysis of variance model was employed to test the interaction between TEACHER and CLASS, i.e., to see if different combinations of instructor and class format could influence levels of satisfaction as measured post-class. One might suspect that a given instructor may have a greater influence on satisfaction in his lecture classes than in the group-oriented classes or vice versa depending on

TABLE 10

MEAN RANKS ON DISAGREEMENT BY TEACHER FOR
STUDENTS SURVEYED AT END OF TERM

Item	Amyx	Chester	Jeter	Signif.
<u>Help From Instructor:</u>				
In Class (1)	82.9	76.9	73.1	.467
On Assignments (4)	77.0	70.9	75.5	.7876
On Tests (7)	82.0	68.6	80.2	.286
Instructor Communication				
Doesn't Understand (10)	74.7	78.8	72.5	.775
Can Explain To Me (13)	85.1	74.6	74.7	.331
(A)(C) * Answers Inspire Confidence (16)	88.0	90.9	63.2	.002
<u>Help From Students:</u>				
In Class (2)	82.5	81.1	76.0	.719
On Assignments (5)	82.0	83.5	76.2	.683
On Tests (8)	79.3	76.0	74.9	.846
Student Communication				
Doesn't Understand (11)	74.6	84.7	78.9	.492
Can Explain To Me (14)	78.6	77.2	80.9	.914
Answers Inspire Confidence (17)	82.8	73.0	77.1	.512
<u>Help from Lab Assistant:</u>				
In Class (3)	69.9	82.1	66.2	.160
On Assignments (6)	68.7	79.4	65.5	.255
On Tests (9)	64.7	67.5	63.7	.898
Lab Assistant Communication				
Doesn't Understand (12)	69.8	70.2	62.9	.560
Can Explain To Me (15)	74.7	75.6	60.7	.111
(C) * Answers Inspire Confidence (19)	71.3	80.4	60.0	.053
<u>Confidence in Group:</u>				
Group Answers Inspire Confidence (18)	79.3	71.8	76.6	.701

* = Level differences are significant at .05 or less.

(A) = Amyx

(C) = Chester

his own personal skill and habitual model of instruction. The ANOVA model tests levels of satisfaction in lecture versus group classes, levels across different instructors, and levels in the six different instructor-class combinations (3 instructors, 2 possible class formats, multiplying 3 by 2 gives 6) to see if any significant differences occur. The results show much the same pattern of satisfaction levels across class formats and instructors that was revealed by the non-parametric procedures whose results are shown in Tables 6 through 9 and discussed in the preceding paragraphs.

The test on instructor-format interaction finds no significant differences on any variables across the six combination. The validity of the parametric ANOVA model is somewhat suspect given the nature of the data (hence, the reliance on the non-parametric procedures heretofore employed). Significance levels for influence of instructor-format combinations, however, are so far removed from the .05 level established a priori that the model itself could probably not cause enough distortion to cause erroneous rejection at the .05 level of the hypothesis that the different combinations produce different satisfaction levels.

Course Evaluation Questionnaire: Combined Measures of the
Effect of Group Learning Techniques and Instructor
Upon Student Satisfaction

The "IDEA" instrument analysis of experimental versus central group by individual instructor provided the following:

AMYX--The questions on which significant differences occurred between lecture and group classes were 5, 12, 13, 16, 40 and 46.

QUESTION 5: Changed approaches to meet new situations.--The control classes scored significantly higher on this question.

QUESTION 13: Encouraged comments even if irrelevant.--The control classes scored significantly higher on this question.

QUESTION 16: Clearly stated objectives of the course.--The control classes scored significantly higher on this question.

QUESTION 12: Gave examination questions which were unclear.--The control classes scored significantly higher on this question. This is a negative item so exam questions were perceived to be clearer in experimental groups.

QUESTION 40: How many whole classes have you missed during the course.--The control classes scored significantly higher on this question. Attendance was therefore significantly better in the group classes.

QUESTION 46: Overall instructor rating.--The group classes rated the instructor significantly higher than did the lecture classes.

CHESTER--The questions on which significant differences occurred were: 13, 40, 45, 35, 12, and 19. (Night classes control 16 weeks, experimental 8 weeks.)

QUESTION 13: Encouraged comments even if irrelevant.--Lecture groups scored significantly higher than groups.

QUESTION 40: How many classes student missed.--Lecture groups scored significantly higher. Attendance was significantly better in group classes.

QUESTION 45: Impact of large class size.--Lecture classes scored significantly higher. This is a negative item so large class size impacted less negatively on the group classes.

QUESTION 35: Worked hard.--Experimental classes scored significantly higher.

QUESTION 12: Gave exam questions which were unclear.--Experimental classes scored significantly higher. Exams were perceived to be clearer in the lecture classes.

QUESTION 19: Exam questions unreasonably detailed.--Experimental groups scored significantly higher. Exams were perceived to be more reasonable by the lecture classes.

JETER--Questions on which significant differences occurred were 2 and 11.

QUESTION 2: Helped students answer own questions.--Experimental groups scored significantly higher.

QUESTION 11: Explained reasons for criticisms.--Experimental groups scored significantly higher.

ACROSS ALL TEACHERS--Significant differences occurred on questions 5, 40, 45, 2, and 46.

QUESTION 5: Changed approaches to meet new situations.--
Lecture groups scored higher.

QUESTION 40: How many classes student missed.--Lecture groups scored significantly higher. Attendance was better in groups.

QUESTION 45: Impact of large class size.--Lecture groups scored significantly higher. Large class size had a less negative impact in group classes.

QUESTION 2: Helped students answer own questions.--Group classes scored significantly higher.

QUESTION 46: Overall instructor rating.--Group classes scored significantly higher.

The above analysis was supportive of the Kansas State University report.

It was interesting to note that across all teachers question 5 which deals with "The instructor changed approaches to meet new situations," is the only one that was negative toward the experimental classes as the researcher expected.

Within the experimental classes:

1. Attendance was significantly better.
2. Large class size had significantly less negative impact.
3. Helping students answer own question score was significantly better.
4. Overall instructor ratings were significantly better.

The Kansas State University analysis of "IDEA" data results were supportive of prior satisfaction results. The report did disclose that in addition to satisfaction, the attitude of students toward the field of accounting improved more within the experimental group than the control group which may be related to satisfaction with achievement directly related to course work.

CHAPTER V

SUMMARY, CONCLUSIONS, AND DISCUSSION

Introduction

The content of this chapter is divided into three sections. The first part summarizes the purposes, procedures, and findings of the study. The second part discusses the conclusions drawn from the findings of the previous chapter. Conclusions will be related directly to the four hypotheses. Part three contains discussion and recommendations applicable to future studies in the area of permanent group teaching.

Summary of Purpose, Procedures, and Findings

The purpose of this study was to provide research evidence to either support or deny the hypothesis that there is no significant difference in performance or satisfaction of accounting students between classes using group learning techniques and classes using the lecture techniques. The source of data would be a quasi field experiment. This research could aid instructors and administrators of accounting programs in determining the effects of instructional methodology on student performance.

Performance was measured by posttest scores on the AICPA Achievement Test Level 1 Form A. The primary method of measurement of satisfaction was based upon a pretest and posttest consisting of the same questions. In addition, a second post-survey "IDEA" form developed by Kansas State University was used as a check on a prior pre/post satisfaction questionnaire developed by the researcher.

This study involved six Accounting I classes taught at Cameron University during the fall semester of 1981.

Due to the time of the offerings and the prearranged schedules of classes at Cameron University, it was impossible for the accounting instructors and administrator of the business program to cater completely to the desires of this investigator regarding the manipulation of students and instructors for research purposes. Therefore, it was necessary to deal with "intact" student groups for the purpose of this study. The random assignment of students to the experimental and control groups was unattainable.

Other uncontrolled personal variables would include the amount of study time each person had, the number of semester credit hours in which each was enrolled, their previous exposure to bookkeeping and/or accounting. Additional uncontrolled variables are the time of day of the class, length of the class period, the number of times each class meets per week and the number of students enrolled in each class section.

The initial total enrollment was 264 students with 185 earning a final letter grade. The classes were taught by three instructors, with each assigned to one experimental and one control class. All

classes were taught in the same classroom. All of the accounting students in the experimental and control groups were administered the same major tests for normal instructor measurement during the semester.

The study includes the following basic assumptions:

1. The student's ability as measured by the cumulative grade point average is homogeneous and normally distributed between the experimental and control groups in this study.

2. The desire of individual students to enroll in a specific section was not influenced by previous knowledge of the instructional methodology of the class. (The experimental and control classes were selected after enrollment.)

3. The desire of individual students to enroll in a specific section did not influence study in that each instructor taught an experimental and control class.

Each instructor was provided with a suggested scheme for the first three days to include required evaluation and grading of classes. In the experimental classes, the grades were determined by scores in three areas: (1) Individual Performance, (2) Group Performance, and (3) Group Maintenance.¹

The statistical tools used to test performance hypotheses are classical analysis of variance, the Wilcoxon Rank Sums Test, and the Kruskal-Wallis one-way analysis of variance. It was decided that both parametric and non-parametric tests would be used because the distribution of the dependent variable could not unequivocally be ruled

¹See Appendix V for the three instructor's syllabus for the experimental group.

normal according to the Kolmogorov-Smirnov test but the test statistic, though non-significant, was somewhat high in the distribution.

These rankings then are summed for each value of the independent variable, CLASS, and the smaller sum or the sum based on the smaller sample is compared to a tabled value at the given sample size and a significance level established a priori.

The Kruskal-Wallis one-way analysis of variance is simply a higher-order version of the Wilcoxon Rank Sums Test, i.e., it is capable of testing for differences among any number of groups while the Wilcoxon test is limited to testing two groups only. The Kruskal-Wallis test was used to test for differences in the three categories for Hypothesis 2.

The test of the levels of satisfaction at class end used the Wilcoxon Rank Sums Test and the Kruskal-Wallis analysis of variance as in the previous tests. The test of change in the variable used cross tabulation or contingency table analysis with the satisfaction measures as dependent variables and the time of survey (pre- or post-class) as the independent variable. Two tables were constructed for each variable - one for students in lecture classes and the other for students in group-oriented classes.

The test statistic for change in satisfaction is Kendall's Tau-C. Tau-C is a measure of relationship between variables of ordinal level. The test is based on the number of concordant and discordant pairs of observations in the sample.

The results of the statistical analysis of the student accounting achievement indicates that no significant difference in achievement

exists between the experimental group and the control group. In regards to students' satisfaction, the experimental classes show consistently higher satisfaction than the control group. The "IDEA" survey from Kansas State University reflected the same trends.

Conclusions

The conclusions are based upon the findings from Chapter IV and correspond with the null hypotheses presented in Chapter III.

Hypothesis 1: There is no significant difference in student performance between students in classes using the group format and those in lecture classes.

We accept this hypothesis at the .05 level of significance. There is no evidence to prove that the two groups score differently on the AICPA test. This result is similar to the three studies by Diener, Frazer, and Endreson on their 1971 study. The results are not compatible with Lightner's 1981 and Jones' 1982 studies. In this study performance was measured by a standardized test designed to measure accounting student performance.

Hypothesis 2: There is no significant difference in performance due to instructor influence.

We also accept this hypothesis at the .05 level. The differences between students under different instructors appeared to be borderline significant before the effects of the grade obtained in the class and cumulative grade point average were filtered out, but once this filtering was done, the students under one instructor were not found to score differently than students under either of the others at the .05 level. There may be some differences across instructors at a given grade level; for example, an instructor's "C" students may score

higher than his own "B" students or lower than another's "D" students, but this result is not fully supported due to the small sample size. If true, this could mean only that the instructors grade students differently or it could indicate that some instructors perform better with students who are at a certain competence level than they do with students at other levels. This result is supportive of an observation by C. Jones (1982) that he believed instructors' influence did affect performance outcome but not significantly.

Hypothesis 3: There is no significant difference in student satisfaction for students in classes using the group learning techniques and classes using the lecture technique.

Given the definition of satisfaction for the purposes of this study, satisfaction is defined as: (1) feeling that one can receive needed help on classwork, tests, and assignments; (2) having confidence in instructors, lab assistants, and other students; and (3) feeling that channels of communication are open and clear.

Based upon the above stated definition this hypothesis is rejected at the .05 level. Students in group-oriented classes score significantly higher on a number of satisfaction measures than do lecture students and tend to move more consistently toward higher satisfaction as the semester progresses. Even for those variables on which differences were not statistically significant, the group-oriented classes show consistently higher satisfaction. This result is supportive of S. Lightners' 1981 study. Lightner reported significant improvement in attitude toward group learning (satisfaction) by the participants.

Hypothesis 4: There is no significant difference between class satisfaction due to instructor influence.

This hypothesis is rejected for several satisfaction measures. The students under one instructor (Jeter) tend to score much higher on satisfaction measures and progress toward greater satisfaction more consistently than do students of the other two instructors. The hypothesis cannot be rejected across measures of satisfaction in general probably because the personalities of the various instructors will determine that some satisfaction dimensions will be strongly influenced by a particular instructor and others will not. So, while class format seems to affect satisfaction across the board, the influence of the instructor must be considered on an item-by-item basis. These results tent to support the C. Jones 1982 study of zoology students. His tests of satisfaction revealed that satisfaction was influenced by the instructor.

Discussion

The analysis and comparison of the data collected for this study indicated that the experimental groups' performance was equal to or exceeded the control groups in all cases. This raises a question as to the value of lecture in that the elimination of lecture did not adversely affect learning as measured by a standardized instrument. The three instructors were experienced instructors and used a text with which they were familiar. Thus despite the lack of significant scores relative to Hypothesis 1 and 2, the results have implications applicable to the field of education.

The analysis also identified a significant improvement in the students' satisfaction with group learning. Given the level of performance and satisfaction reported, the study clearly indicates that there is room for the development of permanent learning groups in teaching introductory accounting.

Concerns of This Study's Instructors²

This study's instructors expressed many reservations and concerns relative to group teaching. Dr. Chester was concerned that the group approach would not reflect the true learning of the students in accounting subject matter. Mr. Jeter expressed his concerns that the approach was so radically different from the traditional methods of accounting instruction that he was very skeptical. In fact, he stated that he "felt the whole idea of 'group work' was ill-suited for accounting instruction at the principles level." Other areas of concern involved the following: (1) establishment of grading weights by students, (2) start-up costs in time and effort for preparation of mini-tests and detailed planning of class time, (3) questioned rationale of giving mini-tests prior to class discussions, and (4) questioned the cost of time to complete individual mini-tests and then having the group collectively complete the same mini-tests.

In response to the above concerns, Dr. Larry K. Michaelsen and the researcher hosted a discussion session with the three instructors at Cameron University. The entire session was video taped for the instructors and made available for their review at any time during the

²See Appendix X for instructors' letters of the group teaching experiment.

study. Four articles by Michaelson were also given to the instructors one week prior to the discussion session.^{3,4,5,6}

In response to Dr. Chester's and Mr. Jeter's concerns, Dr. Michaelson and the researcher discussed their experience with permanent learning groups and discussed current related research.

In regard to the other previously stated areas of concern, the following responses are provided:

1. The process provides the students a say in how the grades are determined after the instructor has defined the course criteria.
2. The mini-tests are the primary mechanism through which the instructor assures students are developing an understanding of the course concepts. The detailed planning serves as a map for groups to effectively manage class time.
3. Given that the questions cover key areas, then only those areas not understood are discussed, which allows for efficient use of class time.

³Larry K. Michaelson, John P. Cragin, and Warren E. Watson, "Grading and Anxiety: A Strategy for Coping," Exchange: The Organizational Behavior Teaching Journal, VI (1981):32-36.

⁴Larry K. Michaelson, W. Watson, J. Cragin, and L. D. Fink, "Team Learning; Potential Solution of the Problems to Large Classes," Exchange: The Organizational Behavior Teaching Journal, VII, 1, (1982):13-22.

⁵Larry Michaelson and S. Scott Obenshain, "Developing Professional Competence--The Case Where Two Heads Really Are Better Than One," New Dimensions in Learning and Teaching, in press.

⁶Larry K. Michaelson, Warren Watson, and L. Dee Fink, "Peer Tutoring Through Preinstructional Minutests: A Practical Approach to Mastery Learning," (Manuscript, The University of Oklahoma, April, 1982), p. 8.

4. The group mini-test allows for peer-teaching, group building, and provides feedback of their group's understanding of accounting concepts.

It was interesting that the instructors' post-course letters reported the following:

1. Group classes appeared more relaxed and enjoyed the classes more than the lecture classes.
2. The instructors got to know their students on a personal basis.
3. Performance of the group classes equaled or exceeded the performance of the lecture classes.
4. Student attrition tended to be lower in the experimental group.
5. Mini-tests were a very valuable tool.
6. They had learned from the experiment and planned to adopt the group approach in other accounting classes.

Researcher's Concerns Relative to Future Applications of this Study

Is it possible that "we are victims of thought processes developed for a much earlier style of living? People still speak of the sun setting rather than the earth revolving away from the sun."⁷ This could apply to some methods of teaching. "If the human race is to survive, however, it will have to change more in its ways of thinking

⁷John D. Pulliam and Jim R. Bowman, Educational Futurism in Pursuance of Survival (Norman: University of Oklahoma Press, 1974), p. 18.

in the next twenty-five years than it has done in the past twenty-five thousand."⁸ Perhaps the application of the teaching methods used with the experimental groups will assist us in bringing about a small part of the required change in thinking, if we do not approach change in teaching methods with "closed minds and hasty feet."⁹

Recommendations Applicable to Future Studies

First, the present study requires replication, especially with respect to performance and satisfaction. Since this study indicated that permanent group teaching does provide a vehicle for improved performance and satisfaction, subsequent studies in this area would be appropriate. (See Appendix X for individual instructors' letters of impression of the group teaching experiment.) One important aspect of future research lies in the development of more sensitive measurement instruments. This would provide measures of individual differences between the learners' need for group work and aid the predictive power of research in this area.

A broader study should be conducted to determine a picture of student performance and satisfaction throughout the entire curriculum leading to a major in the field of accounting. If possible the administration of the CPA exam to the graduating control and experimental classes would provide the ultimate measure of performance. The measurement of both performance and satisfaction should be accomplished at

⁸Ibid., p. 66.

⁹Daniel A. Wren, The Evolution of Management Thought (New York: John Wiley and Sons, 1979), p. 262.

the completion of each course. The results of a study of this nature could have important implications for the field of accounting and possibly for several fields.

The results of this limited study have important implications for educational practice. The performance, satisfaction, and accepting interpersonal relationships have been improved by the permanent group teaching structure. Educators may wish to take note of the implications of these results for classroom teaching. Generalizations from the present study obviously must be made cautiously, due to such factors as the specialized population, sample size and length of the study.

BIBLIOGRAPHY

- Alber, Antone, and Blumberg, Melvin. "Team vs. Individual Approaches to Job Enrichment Programs." Personnel (January-February 1981).
- Allen, V. L., and Feldman, R. S. "Learning Through Tutoring: Low-achieving Children as Tutors." Journal of Experimental Education, 42 (1974):1-5.
- Aubrecht, Judith D. Idea Paper No. 2: Are Student Ratings of Teacher Effectiveness Valid? Manhattan: Center for Faculty Evaluation and Development in Higher Education, Kansas State University, November 1979.
- Aubrecht, Judith D. Idea Paper No. 6: Reliability Validity and Generalizability of Student Ratings of Instruction. Manhattan: Center for Faculty Evaluation and Development in Higher Education, Kansas State University, November 1981.
- Baker, H. Kent. "Tapping Into the Power of Informal Groups." Supervisory Management (February 1981).
- Bargh, John A., and Schul, Yaacov. "On the Cognitive Benefits of Teaching." Journal of Educational Psychology, 72, 5 (1980):593-604.
- Beaman, A. L., Fraser, S. C., and Diener, E. "Effects of Voluntary and Semi-Voluntary Peer-Monitoring Programs on Academic Performance." Journal of Educational Psychology, 69 (1977):109-114.
- Berkman, Harold W. Consumer Behavior: Concepts and Strategies. 2nd ed. New York: Gilson and Frankel, Inc., 1981.
- Blitz, B. The Open Classroom: Making It Work. Boston: Allyn and Bacon, 1973.
- Bobbitt, H. R., Jr., and Ford, J. D. "Decision-Maker Choice as a Determinant of Organizational Structure." The Academy of Management Review, 5 (1980):13-23.

- Bormann, E. Discussion and Group Methods. New York: Harper and Row, 1969.
- Bradley, J. V. Distribution-free Statistical Tests. Englewood Cliffs, N.J.: Prentice-Hall, 1968.
- Bruner, Jerome S. On Knowing: Essays for the Left Hand. Cambridge: Belknap Press of Harvard University Press, 1963.
- Bruner, Jerome S., and Drech, David, eds. Perception and Personality. New York: Greenwood Press, Publishers, 1968.
- Butterfield, D. Anthony, and Powell, Gary N. "Effect of Group Performance, Leader Sex, and Rater Sex on Ratings of Leader Behavior." Organizational Behavior and Human Performance, 28, 1 (1981):129-141.
- Cartwright, D., and Zander, A. Group Dynamics: Research and Theory. 3rd ed. Evanston, Ill.: Row-Peterson, 1968.
- Chasin, W. E., and Peprin, B. M. Idea Technical Report 4: Description of Idea Standard Form Data Base. Manhattan: Center for Faculty Education and Development in Higher Education, Kansas State University, 1978.
- Castle, E. G. Ancient Education and Today. Baltimore: Penguin, 1961.
- Centra, J. A. "Effectiveness of Student Feedback in Modifying College Instruction." Journal of Educational Psychology, 65 (1973):395-401.
- Chickering, W. Arthur. Education and Identity. San Francisco: Jossey-Bass, 1969.
- Clark, Charles T., and Schkade, Lawrence L. Statistical Analysis for Administrative Decisions. Cincinnati, Ohio: Southwestern Publishing Co., 1974.
- Cohen, E. "Modifying the Effects of Social Structure." American Behavioral Scientist, 16 (1973):861-878.
- Collins, B., and Raven, B. "Group Structure: Attraction, Coalitions, Communication and Power." In The Handbook of Social Psychology. Vol. 4, 2nd ed., pp. 102-204. Edited by G. Lindzey and E. Aronson. Reading, Mass.: Addison-Wesley, 1969.
- Constantin, James A. Principles of Logistics Management. New York: Appleton-Century-Crofts, 1966.

- Cooper, Carl J. "Some Relationships Between Paired-Associates Learning and Foreign-Language Aptitude." Journal of Educational Psychology, 55, 3 (1964):132-138.
- Davis, R. "Peer-Group Teaching or Involving Students in Teaching." Educational Development Program Report, 14. East Lansing: Michigan State University, [1967].
- Devin-Sheehan, L., Feldman, R. S., and Allen, V. L. "Research on Children Teaching Children: A Critical Review." Review of Educational Research, 46 (1976):355-385.
- Diamond, M. "Improving the Undergraduate Lecture Class by Use of Student Led Discussion Groups." American Psychologist, 27 (1972):978-981.
- Durling, R., and Schick, C. "Concept Attainment by Pairs and Individuals as a Function of Vocalization." Journal of Educational Psychology, 68 (1976):83-91.
- Eble, Kenneth E. A Guide to Mastering the Professor's Art. San Francisco: Jossey-Bass, Inc., 1976.
- Erickson, G. R., and Erickson, B. L. "Improving College Teaching." Journal of Higher Education, 50 (1979):670-683.
- Evans, J. "Motivational Effects of Being Promised an Opportunity to Engage in Social Comparison." Psychological Reports, 34 (1974):117-140.
- Faw, H. W., and Waller, T. G. "Mathemagenic Behaviors and Efficiency in Learning From Prose." Review of Educational Research, 46 (1976):691-720.
- Feldman, K. A. "Grades and College Students' Evaluations of Their Courses and Teachers." Research in Higher Education, 4 (1976):69-111.
- Feldman, Robert S., Devin-Sheehan, Linda, and Allen, Vernon. Children Tutoring Children: A Critical Review of Research. New York: Academic Press, Inc., 1976.
- Ferber, Robert, ed. A Synthesis of Selected Aspects of Consumer Behavior. Washington, D.C.: National Science Foundation, 1976.
- Festinger, L. "A Theory of Social Comparison Processes." Human Relations, 7 (1954):117-140.
- Fishbein, Martin, and Ajzen, Icek. Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research. Reading, Mass.: Addison-Wesley Company, Inc., 1975.

- Foster, Lawrence, and Swanson, J. W., eds. Experience and Theory. Massachusetts: The University of Massachusetts Press, 1970.
- Frazer, S. C., Beaman, A. L., Diener, E., and Kelem, R. T. "Two, Three or Four Heads Are Better Than One: Modification of College Performance by Peer Monitoring." Journal of Educational Psychology, 69 (1977):101-108.
- Frey, P. W. "Validity of Student Instructional Ratings: Does Timing Matter?" Journal of Higher Education, 47 (1976):327-336.
- Frick, F. C. Study of Peer Training With the Lincoln Training System. AFATC Report KE 73-116. Mississippi: Keesler Air Force Base, 1973.
- Gibb, C. "Leadership." In The Handbook of Social Psychology. Vol. 4, 2nd ed., pp. 205-282. Edited by G. Lindzey and E. Aronson. Reading, Mass.: Addison-Wesley, 1969.
- Gibson, James L., Ivancevich, John M., and Donnelly, James H., Jr. Organizations. Dallas: Business Publications, Inc., 1976.
- Glidwell, J., et al. "Socialization and Social Structure in the Classroom." In Review of Childhood Development Research, pp. 221-256. Edited by M. Hoffman and L. Hoffman. New York: Russell Sage Foundation, 1966.
- Goldman, M. "A Comparison of Individual and Group Performance for Varying Combinations of Initial Ability." Journal of Personal Social Psychology, 1 (1965):210-216.
- Goldschmid, B., and Goldschmid, M. "Peer Teaching in Higher Education, A Review." Higher Education, 5 (1976):9-33.
- Goldstine, I. L. "Training in Work Organizations." In Annual Review of Psychology, pp. 229-272. Palo Alto: Annual Reviews, 1980.
- Graen, G. "Role-making Processes Within Complex Organizations." In Handbook of Industrial and Organizational Psychology, pp. 1201-1246. Chicago: Rand McNally, 1976.
- Gruder, C. "Determinants of Social Comparison Choices." Journal of Experimental Social Psychology, 7 (1971):473-489.
- Hamner, W. C., and Organ, D. W. Organizational Behavior: An Applied Psychological Approach. Dallas: Business Publications, 1978.
- Hare, A. "Theory of Group Development and Categories for Interaction Analysis." Small Group Behavior, 4 (1973):259-304.
- Harnack, Robert Victor, and Fest, Thorrel B. Group Discussion Theory and Technique. New York: Appleton-Century-Crofts, 1964.

- Hertz-Lazarowitz, Rachel, Shlomo, Sharan, and Steinberg, Ruth. "Classroom Learning Style and Cooperative Behavior of Elementary School Children." Journal of Educational Psychology, 72, 1 (1980):99-106.
- Hill, Raymond E. "Managing Interpersonal Conflict in Project Teams." Sloan Management Review Massachusetts Institute of Technology, 18, 2 (Winter 1977):45-61.
- Hoffman, L. "Group Problem-Solving." In Group Processes, pp. 67-100. Edited by L. Berkowits. New York: Academic Press, 1978.
- Hudgins, B. "Effects of Group Experience on Individual Problem Solving." Journal of Educational Psychology, 51 (1960):37-42.
- Hudgins, B., and Smith, L. "Group Structure and Productivity in Problem-Solving." Journal of Educational Psychology, 57 (1966):289-296.
- Hughes, Ann, and Grawoig, Dennis. Statistics: A Foundation for Analysis. Reading, Mass.: Addison-Wesley Publishing Co., 1971.
- Hurlock, R., and Hurlock, J. "Paired Students Trained by CAI. Proceedings, American Psychological Association." 1972, pp. 495-496.
- Jacobson, Wally D. Power and Interpersonal Relations. Belmont, Calif.: Wadsworth Publishing Company, Inc., 1972.
- Johnson, D., and Johnson, R. "Instructional Goal Structure: Cooperative, Competitive, or Individualistic." Review of Educational Research, 44 (1974):213-240.
- Johnson, D. W., and Johnson, R. Learning Together and Alone: Cooperative, Competitive, and Individualization. Englewood Cliffs, N.J.: Prentice-Hall, 1975.
- Johnson, D. W., and Johnson, R. "Cooperative, Competitive, and Individualistic Learning." Journal of Research and Development in Education, 12 (1978):3-15.
- Johnson, D. W., and Johnson R. "Conflict in the Classroom: Controversy and Learning." Review of Educational Research, 49 (1979):51-70.
- Johnson, D. W., Johnson, R. T., Johnson, J., and Anderson, D. "Effects of Cooperative Versus Individualized Instruction on Student Pro-social Behavior, Attitudes Toward Learning, and Achievement." Journal of Educational Psychology, 68 (1976):446-452.

- Johnson, D. W., Skon, L., and Johnson, R. "Effects of Cooperative, Competitive, and Individualistic Learning on Problem-solving Performance." American Educational Research Journal, 17 (1980):83-94.
- Johnson, R., Johnson, D. W., and Tauer, M. "Effects of Cooperative, Competitive, and Individualistic Goal Structures on Students' Attitudes and Achievement." Journal of Psychology, 102 (1979):191-198.
- Jones, Coy A. "Peer Teaching in Permanent Project Teams (PT²)."
Doctoral dissertation, The University of Oklahoma, 1982.
- Julier, Laura. "Small Groups Dynamics: Teaching Students How to Use Knowledge." Notes on Teaching. Number 2. Norman: The University of Oklahoma, May, 1980.
- Kelley H., and Thibaut, J. "Group Problem Solving." In Handbook of Social Psychology. Vol. 4, 2nd ed. Edited by G. Lindzey and E. Aronson. Reading, Mass.: Addison-Wesley Publishing Company, 1969.
- Kimberly, J. R. "Organization Size and the Structuralist Perspective: A Review, Critique, and Proposal." Administrative Sciences Quarterly, 21 (1976):571-597.
- Klausmeier, Herbert J., Wiersma, William, and Harrison, Chester W. "Efficiency of Initial Learning and Transfer by Individuals, Pairs, and Quads." Journal of Educational Psychology, 54 (1963):160-164.
- Laughlin, P. "Ability and Group Problem Solving." Journal of Research and Development in Education, 12 (1978):114-120.
- Laughlin, P., and Johnson, H. "Group and Individual Performance on a Complementary Task as a Function of Initial Ability Level." Journal of Experimental Social Psychology, 2 (1966):407-414.
- Laughlin, Patrick R., and Barth, Joan M. "Group-to-Individual and Individual-to-Group Problem-solving Transfer." Journal of Personality and Social Psychology, 41, 6 (1981):1087-1093.
- Leathers, Park. "Relationship of Test Scores to CPA Examination Performance." Journal of Accountancy (September 1972):101.
- Leavitt, H. J. "Applied Organizational Change in Industry: Structural, Technological and Humanistic Approaches." In the Handbook of Organizations, pp. 144-170. Chicago: Rand McNally, 1965.

- Leavitt, H. J. "Educational Organizations as Loosely Coupled Systems." Administrative Science Quarterly, 21 (1976):1-19.
- Lemke, Elmer A., Randle, Kenneth, and Robertshaw, C. Stuart. "Effects of Degree of Initial Acquisition, Group Size and General Mental Ability on Concept Learning and Transfer." Journal of Educational Psychology, 60 (1969):75-78.
- Lightner, Sharon M. "Accounting Education and Participatory Group Dynamics." Collegiate News and Views, XXXV, 1 (Fall 1981):5-9.
- Likert, Rensis, and Likert, Jane Gibson. New Ways of Managing Conflict. New York: McGraw-Hill, Inc., 1976.
- Locke, E. "The Nature and Causes of Job Satisfaction." In Handbook of Industrial and Organizational Psychology, pp. 1297-1350. Chicago: Rand McNally, 1976.
- Maguire, Edward Randall. The Group Study Plan. New York: Scribner's Sons, 1928.
- McGuire, William J. "Some Internal Psychological Factors Influencing Consumer Behavior." Journal of Consumer Research, 2 (March 1976):302.
- McClintock, E., and Sonquist, J. A. "Cooperative Task-Oriented Groups in a College Classroom: A Field Application." Journal of Educational Psychology, 68 (1976):588-596.
- McCormick, Ronald R., and Montgomery, James B. "The Use of AICPA Tests in Evaluating Transfer Students at a University." Journal of Accountancy (August 1974):82.
- Meehan, M., and Schusler, R. "Small Groups in Sixth Grade." Elementary School Journal (1966-1967):241-245.
- Michaelson, Larry K., Watson, W., Cragin, J., and Fink, L. "Team Learning; Potential Solution of the Problems to Large Classes." Exchange: The Organizational Behavior Teaching Journal, VII, 1 (1982):13-22.
- Michaelson, Larry K., Watson, Warren, and Fink, L. Dee. "Peer Tutoring Through Preinstructional Minitests: A Practical Approach to Mastery Learning." Manuscript, the University of Oklahoma, April 1982.
- Michaelson, Larry, Watson, Warren E., and Obenshain, S. Scott. "Developing Professional Competence--The Case Where Two Heads Really Are Better Than One." New Dimensions in Learning and Teaching. In press.

- Miles, R. Macro Organizational Behavior. Santa Monica: Goodyear, 1980.
- Mills, Theodore M. Group Transformation: An Analysis of a Learning Group. Englewood Cliffs, N.J.: Prentice-Hall, Inc. 1964.
- Mood, Alexander M. The Future of Higher Education. New York: McGraw-Hill Book Company, 1973.
- Nie, N. H., Hull, C. H., Jenkins, J. G., Steinbrenner, K., and Bent, D. H. Statistical Package for the Social Sciences. 2nd ed. New York: McGraw-Hill Book Company, 1975.
- Nungester, Ronald J., and Duchastel, Philippe C. "Testing Versus Review: Effects on Retention." Journal of Educational Psychology, 74, 1 (1982):18-22.
- Pulliam, John D., and Bowman, Jim R. Educational Futurism in Pursuance of Survival. Norman: The University of Oklahoma Press, 1974.
- Radloff, R. "Opinion, Evaluation and Affiliation." Journal of Abnormal and Social Psychology, 62 (1961):578-585.
- Rohrbaugh, John. "Improving the Quality of Group Judgment: Social Judgment Analysis and the Nominal Group Technique." Organizational Behavior and Human Performance, 28, 2 (October 1981):272-288.
- Rosen, S., Powell, E. R., and Schubot, D. B. "Peer-Tutoring Outcomes as Influenced by the Equity and Type of Role Assignment." Journal of Educational Psychology, 69 (1977):244-252.
- Rosenbaum, P. Peer-Mediated Instruction. New York: Teachers College Press, 1973.
- Ross, S. M., and Divesta, F. J. "Oral Summary as a Review Strategy for Enhancing Recall of Textual Material." Journal of Educational Psychology, 68 (1976):698-695.
- Rothkopf, E. Z. "The Concept of Mathemagenic Activities." Review of Educational Research, 40, 3 (1970):325-336.
- Schwab, D. P. and Cummings, L. L. "Theories of Performance and Satisfaction: A Review." Industrial Relations, 9 (1970):408-430.
- Seashore, Stanley E. Group Cohesiveness in the Industrial Work Group. Ann Arbor: University of Michigan, 1954.
- Shaw, M. Group Dynamics: The Psychology of Small Group Behavior. New York: McGraw-Hill, 1971.

- Shlomo, Sharan, and Yael, Sharan. Small Group Teaching. Englewood Cliffs, N.J.: Educational Technology Publications, Inc., 1976.
- Skon, Linda, Johnson, David W., and Johnson, Roger T. "Cooperative Peer Interaction Versus Individual Competition and Individualistic Efforts: Effects on the Acquisition of Cognitive Reasoning Strategies." Journal of Educational Psychology, 73, 1 (1981):83-92.
- Slavin, Robert E. "Student Teams and Achievement Divisions." Journal of Research and Development in Education, 12 (1978):39-49.
- Slavin, Robert E., and Karweit, Nancy L. "Cognitive and Affective Outcomes of an Intensive Student Team Learning Experience." Journal of Experimental Education, 50, 1 (1981):29-35.
- Smith, Karl, Johnson, David W., and Johnson, Roger T. "Can Conflict Be Constructive? Controversy Versus Concurrence Seeking in Learning Groups." Journal of Educational Psychology, 73, 5 (1981):651-663.
- Webb, N. M. Learning in Individual and Small Group Settings. Technical Report No. 7. Washington, D.C.: Personnel and Training Research Programs, Office of Naval Research, and Advanced Research Projects Agency, October 1977.
- Wickens, D. "Piagetian Theory as a Model for Open Systems of Education." In Piaget in the Classroom, pp. 179-198. Edited by M. Schwebel and J. Ralph. New York: Basic Books, 1973.
- Willis, Jerry, and Gueldenpfenning, Joerg. "The Relative Effectiveness of Lecturing, Modeling, and Role Playing in Training Paraprofessional Reading Tutors." Psychology in the Schools, 18 (1981):323-329.
- Wilson, Robert Charles. College Professors and Their Impact on Students. Canada: John Wiley and Sons, 1975.
- Woolf, Donald Auston. "The Management Theory Jungle Revisited." Advanced Management Journal, 30, 4 (October 1965):6-15.
- Wren, Daniel A. The Evolution of Management Thought. New York: John Wiley and Sons, 1979.
- Zajonc, R. "The Effects of Feedback and Probability of Group Success on Individual and Group Performance." Human Relations, 15 (1962):149-161.
- Zander, A., and Medow, H. "Individual and Group Level of Aspiration." Human Relations, 16 (1963):89-105.

APPENDICES

APPENDIX I

IDEA - POST-COURSE SURVEY FORM

SURVEY FORM--STUDENT REACTIONS TO INSTRUCTION AND COURSES

Your thoughtful answers to these questions will provide helpful information to your instructor.

Describe the frequency of your instructor's teaching procedures, using the following code:

1 - Hardly Ever	3 - Sometimes	
2 - Occasionally	4 - Frequently	5 - Almost Always

The Instructor:

1. Promoted teacher-student discussion (as opposed to mere responses to questions).
2. Found ways to help students answer their own questions.
3. Encouraged students to express themselves freely and openly.
4. Seemed enthusiastic about the subject matter.
5. Changed approaches to meet new situations.
6. Gave examinations which stressed unnecessary memorization.
7. Spoke with expressiveness and variety in tone of voice.
8. Demonstrated the importance and significance of the subject matter.
9. Made presentations which were dry and dull.
10. Made it clear how each topic fit into the course.
11. Explained the reasons for criticisms of students' academic performance.
12. Gave examination questions which were unclear.
13. Encouraged student comments even when they turned out to be incorrect or irrelevant.
14. Summarized material in a manner which aided retention.
15. Stimulated students to intellectual effort beyond that required by most courses.
16. Clearly stated the objectives of the course.

17. Explained course material clearly, and explanations were to the point.
18. Related course material to real life situations.
19. Gave examination questions which were unreasonably detailed (picky).
20. Introduced stimulating ideas about the subject.

On each of the objectives listed below, rate the progress you have made in this course compared with that made in other courses you have taken at this college or university. In this course my progress was:

- 1 - Low (lowest 10 percent of course I have taken here)
- 2 - Low Average (next 20 percent of courses)
- 3 - Average (middle 40 percent of courses)
- 4 - High Average (next 20 percent of courses)
- 5 - High (highest 10 percent of courses)

Progress on:

21. Gaining factual knowledge (terminology, classifications, methods, trends).
22. Learning fundamental principles, generalizations, or theories.
23. Learning to apply course material to improve rational thinking, problem-solving and decision-making.
24. Developing specific skills, competencies and points of view needed by professions in the field most closely related to this course.
25. Learning how professionals in this field go about the process of gaining new knowledge.
26. Developing creative capacities.
27. Developing a sense of personal responsibility (self-reliance, self-discipline).
28. Gaining a broader understanding and appreciation of intellectual-cultural activity (music, science, literature, etc.).
29. Developing skill in expressing myself orally or in writing.
30. Discovering the implications of the course material for understanding myself (interests, talents, values, etc.).

On the next four questions, compare this course with others you have taken at this institution, using the following code:

- 1 - Much Less than Most Courses
- 2 - Less than Most
- 3 - About Average
- 4 - More than Most
- 5 - Much More than Most

The Course:

- 31. Amount of reading.
- 32. Amount of work in other (non-reading) assignments.
- 33. Difficulty of subject matter.
- 34. Degree to which the course hung together (various topics and class activities were related to each other).

Describe your attitudes toward and behavior in this course, using the following code:

- | | |
|--------------------------|--------------------------|
| 1 - Definitely False | |
| 2 - More False than True | 4 - More True than False |
| 3 - In Between | 5 - Definitely True |

Self-rating:

- 35. I worked harder on this course than on most courses I have taken.
- 36. I had a strong desire to take this course.
- 37. I would like to take another course from this instructor.
- 38. As a result of taking this course, I have more positive feelings toward this field of study.
- 39. Leave this space blank. Continue with question A.

A. Blacken space number 3 on the Response Card.

For the following five questions, B-F, describe your attitudes, feelings, and behaviors by filling in the appropriate space:

- | | |
|--------------------------|--------------------------|
| 1 - Definitely False | |
| 2 - More False than True | 4 - More True than False |
| 3 - In Between | 5 - Definitely True |

- B. I am glad it was this teacher who taught this course.
- C. As a result of taking this course, I like this subject more.
- D. I learned a great deal in this class.
- E. Overall, I rate this instructor a good teacher.
- F. Leave this space blank.

If your instructor has extra questions, answer them in the space designated on the Response Card.

Your comments are invited on how the instructor might improve this course or teaching procedures. Use the back of the Response Card (unless otherwise directed).

APPENDIX II

SPECIAL QUESTIONS FOR IDEA POST-COURSE SURVEY

SPECIAL QUESTIONS

NOTE: Please answer the following questions on the computer card.

40. How many whole classes have you missed during the course _____.
1. None 2. one 3. two 4. three 5. four or more
41. Your attendance in this course was _____ than other courses.
1. much lower 3. no different 5. much higher
2. lower 4. higher
42. Which of the following was the most important in determining whether or not you studied the reading assignments.
1. The class/material was interesting
2. The instructor expected it
3. Feelings of responsibility for your group
4. Expectations of your group
5. To help earn a better grade
43. Which of the following was the most important in determining how much effort you put into the course?
1. The class/material was interesting
2. The instructor expected it
3. Feelings of responsibility for your group
4. Expectations of your group
5. To help earn a better grade
44. Which of the following was the most important in determining whether or not you attended class, particularly on days when you had (or could have had) a good reason not to?
1. The class/material was interesting
2. The instructor expected it
3. Feelings of responsibility for your group
4. Expectations of your group
5. To help earn a better grade
45. Which of the following most accurately describes the impact of the large size of your class on what you gained from taking the course.
1. It helped (e.g., provided illustrations of course concepts such as individual vs. group scores on mini-tests) more than it hurt (e.g., less opportunity to participate in total class discussion)
2. It both helped and hurt (about equally)
3. Didn't have much effect
4. Hurt more than it helped
5. Hurt a great deal

46. All things considered, how would you rate the instructor compared to all other instructors you have had?
1. Top 10%
 2. Next 20%
 3. Middle 40%
 4. Next 20%
 5. Bottom 10%
47. All things considered, how would you rate the course compared to all other courses you have had?
1. Top 10%
 2. Next 20%
 3. Middle 40%
 4. Next 20%
 5. Bottom 10%

APPENDIX III

IDEA INTERPRETIVE GUIDE

INTERPRETING YOUR IDEA REPORT

DIAGNOSTIC SUMMARY

A. The DIAGNOSTIC SUMMARY (Part VI on page 3 of your REPORT) is the single most important part of your IDEA REPORT because it combines other parts of the report. The DIAGNOSTIC SUMMARY lists your objectives (the objectives you selected when you completed the FACULTY INFORMATION FORM). It shows the students' RATING of their progress on each of your objectives. If your students reported AVERAGE progress or less, it identifies (in most cases) TEACHING METHODS you should consider improving in order to help your students make greater progress. You must consider what actually went on in your course related to each teaching method. Usually, such consideration will suggest how you might teach the course differently and more effectively.

B. PROGRESS RATINGS

Your objectives are listed according to the amount of progress the students reported on each, starting with the lowest (since these objectives are usually the ones you will want to work on first). If LOW is printed, it means that your average fell in the bottom 10% of averages for instructors teaching SIMILAR COURSES (similar in size and level of student motivation); LOW AVERAGE, the next 20%; AVERAGE, the middle 40%; HIGH AVERAGE, the next 20%; and HIGH, the top 10%. With the IDEA system, the students' rating of their progress on your objectives is the primary criterion of your teaching effectiveness. We recommend that you first concentrate your improvement efforts on those objectives, if any, where the students reported LOW or LOW AVERAGE progress.

C. TEACHING METHODS MOST NEEDING ATTENTION

1. WEAKNESSES RELEVANT TO PROGRESS refer to teaching methods which our research shows are correlated with students' reports of progress on the given objective. We suggest that improving your use of these teaching methods will lead to greater student progress on your objectives. (The numbers refer to the item numbers on the IDEA Survey Form, a copy of which is printed on the back page of this guide.)

WEAKNESSES were taken from the methods in Part IV. They are teaching methods where the students gave you a LOW rating, i.e., where they reported that you used the method less frequently than instructors in SIMILAR COURSES (similar in size and level of student motivation). WEAKNESSES are listed **only** when your students reported AVERAGE or less progress on your ESSENTIAL or IMPORTANT objectives. Note, that for methods 6, 9, 12, and 19, where infrequent ratings are desirable, methods which the students reported you used with HIGH frequency are considered WEAKNESSES.

2. STRENGTHS RELEVANT TO PROGRESS are methods related to your objectives which you used frequently. We have found that in trying to improve certain teaching methods, instructors sometimes lose ground on others which are satisfactory. You should be careful **not** to change methods indicated as STRENGTHS when you try to improve WEAKNESSES.

3. If your students reported HIGH or HIGH AVERAGE progress, we do not suggest that you change any of your teaching methods, no matter how "atypical" your approach may be.

D. Since the twenty teaching methods which the IDEA system uses obviously do not include all of the methods which could help students make progress on an objective, occasionally the DIAGNOSTIC SUMMARY will not list any specific teaching methods as WEAKNESSES, even though the progress which the students reported on objectives is not as high as one might wish. In such a case, you are best advised to look beyond the IDEA items for suggestions about improvement: consider the specifics of the course as you taught it; look at the additional questions (items 40-65) if you asked any, and at the open-ended comments by your students (on the back of the Response Cards); also consult with your on-campus coordinator, a colleague, your department head, or other appropriate people on your campus.

If you really understand your DIAGNOSTIC SUMMARY, you understand how the IDEA REPORT can help you to consider what you might do to improve your teaching. The rest of this guide explains the other six parts of your report.

PART I. EVALUATION (PROGRESS RATINGS)

- A. This part of the REPORT is concerned with how much progress your students said they made on the objectives you chose as ESSENTIAL or IMPORTANT for the course. Such progress is the IDEA system's primary criterion of teaching effectiveness.
- B. Objectives you chose as ESSENTIAL are marked with two asterisks; your IMPORTANT objectives, with one asterisk.
- C. Under the column headed MEAN are the averages of the students' responses to each objective. Students made their ratings on a scale of "1" (low) to "5" (high). (See the IDEA SURVEY FORM, back page.)
- D. Under the column COMPARISON WITH, your averages are compared with those of other teachers who have used the IDEA system.
 - 1. ALL COURSES compares your averages with all classes in the database.
 - 2. SIMILAR COURSES compares your averages only with classes of similar size (based upon the number of students you said were enrolled) and of similar level of motivation (based upon the way your students answered item 36: "I had a strong desire to take this course.").
We recommend that you concentrate on the SIMILAR COURSES comparison because class size and motivation affect most ratings. Generally speaking, larger classes and lower motivated classes are more difficult to teach, i.e., those instructors receive lower student ratings.
 - 3. For objectives which you rated, "Of no more than minor importance," NOT APPLICABLE is printed.
- E. OVERALL EVALUATION is a weighted average of the means of the students' progress ratings on your ESSENTIAL objectives (double weighted) and IMPORTANT objectives (single weighted.)

PART II. COURSE DESCRIPTION

The students' responses give you some idea of how demanding (at least in terms of time), how difficult, and how well integrated they thought your course was.

PART III. STUDENTS' SELF-RATINGS

This part reports what the students said about their effort and motivation and their attitudes toward you, the field of study, and the IDEA questions. Items 37 and 38 (see SURVEY FORM) refer to course outcomes which are generally regarded as desirable; therefore, the students' responses to these items can be used as secondary criteria of your teaching effectiveness. Students may learn despite the instructor, but usually will not want to take another course from him or her. "Good" students tend to make progress in all of their courses, but they may also acquire a distaste for the field. In both of the above cases, the instructor has not been completely successful.

PART IV. METHODS

- A. This part reports the students' rating of how frequently you used twenty teaching methods or approaches.
- B. The column headed DIFFERENCE shows the difference of your average rating minus the average for SIMILAR COURSES. The standard error of measurement for these methods was about .3. If your DIFFERENCE was between -.2 and +.2, you probably used that method about as frequently as other instructors teaching SIMILAR COURSES, and so we translate it as MEDIUM frequency. If your DIFFERENCE was -.3 or lower, you probably use the method less frequently and so received a LOW. DIFFERENCES of +.3 or higher are translated as HIGH.
- C. While high frequency ratings on the teaching methods are generally desirable (except items 6, 9, 12, and 19), these frequency ratings should not be interpreted as "good" or "bad" unless that method is identified as a STRENGTH or WEAKNESS in the DIAGNOSTIC SUMMARY, which would indicate that the given method has a direct relationship to the accomplishment of one of your objectives.

PART V. ADDITIONAL QUESTIONS

The IDEA system provided you with the opportunity to ask up to 25 additional questions which would be reported as Items 40 through 65. The report gives the percent of your students choosing each option and the mean for each question you asked. You will need to consult your copy of the questions in order to interpret their responses.

PART VI. DIAGNOSTIC SUMMARY

This part is explained on the front page of this guide.

PART VII. SUMMARY PROFILE

This profile presents data from your report graphically.

A. OUTCOMES. If your students reported **AVERAGE** or above ratings on: **PROGRESS ON RELEVANT OBJECTIVES**, **WOULD LIKE INSTRUCTOR AGAIN**, and **IMPROVED (their) ATTITUDE TOWARD FIELD**, their overall evaluation was favorable, especially if your **PERCENTILE RANKS** compared to **SIMILAR COURSES** fell at the 50th percentile or higher.

B. METHODS. The profile of the four teaching methods describes your general teaching style. It should not be used for evaluation because it considers all of the teaching methods whether they were related to your objectives or not.

We **DO NOT** recommend that the **SUMMARY PROFILE**, or even the entire **IDEA REPORT**, be used as the **SOLE** measure of teaching effectiveness.

APPENDIX IV

SATISFACTION AND LEVEL OF EXPERIENCE

DATA COLLECTION INSTRUMENT

INSTRUCTORS - JACK, JOHN, JIM

PLEASE:

- Complete this questionnaire on Day One.
- Ask students to complete questions based upon Their Personal Experience at this point in time.
- Explain Lab Assistant, i.e., Accounting lab assistance as related to task they perform (a quasi instructor that does not grade students).
- On ANSWER SHEET have students write MALE or FEMALE in space for name.
- Answer sheets will remain anonymous.
- Answer sheets will be maintained by class section.
- We will complete the same questionnaire during the last week of class.
- THANK YOU FOR YOUR TIME.

Wayne

DATA COLLECTION - ACCOUNTING I CLASSES
Fall 1981; Cameron University; Lawton, Oklahoma

PLEASE PROVIDE YOUR RESPONSES ON ANSWER SHEETS PROVIDED.

There are no preferred or correct/incorrect responses. Responses should reflect your opinion of feelings based upon your personal experience.

All answer sheets will remain anonymous; do NOT identify yourself on answer sheet.

Please place the number or letter of your degree of agreement or disagreement with each of the following statements on the answer sheet.

1. Agree very strongly
2. Agree fairly strongly
3. Agree
4. Undecided
5. Disagree
6. Disagree fairly strongly
7. Disagree very strongly
8. Don't know

THANK YOU FOR YOUR TIME.

1. It is generally easy for me to get individual help from an instructor when I don't understand something we have talked about in class.
2. It is generally easy for me to get individual help from another student when I don't understand something we have talked about in class.
3. It is generally easy for me to get individual help from a lab assistant when I don't understand something we have talked about in class.
4. It is generally easy to get individual help from an instructor so that I can tell whether or not I have correctly completed assignments before they have to be turned in.
5. It is generally easy to get individual help from a student so that I can tell whether or not I have correctly completed assignments before they have to be turned in.
6. It is generally easy to get individual help from a lab assistant so that I can tell whether or not I have correctly completed assignments before they have to be turned in.

7. After I take a test it is generally easy to get individual help from an instructor in understanding reasons for incorrect answers to the questions and problems.
8. After I take a test it is generally easy to get individual help from another student in understanding reasons for incorrect answers to the questions and problems.
9. After I take a test it is generally easy to get individual help from a lab assistant in understanding reasons for incorrect answers to the questions and problems.
10. When I try to get help from instructors they frequently have difficulty understanding what my question is.
11. When I try to get help from another student they frequently have difficulty understanding what my questions is.
12. When I try to get help from a lab assistant they frequently have difficulty understanding what my question is.
13. When I try to get individual help from instructors they can usually explain things in a way that I can understand.
14. When I try to get individual help from another student they can usually explain things in a way that I can understand.
15. When I try to get individual help from a lab instructor he/she can usually explain things in a way that I can understand.
16. When I have a question I generally have a great deal of confidence in answers I get from the instructor.
17. When I have a question I generally have a great deal of confidence in answers I get from another student on a one to one basis.
18. When I have a question I generally have a great deal of confidence in answers I get from a group discussion involving several other students.
19. When I have a question I generally have a great deal of confidence in answers I get from a lab assistant.
20. I have attended academic classes where a great deal of class time was in students groups working to learn subject content.

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APPENDIX V

THREE INSTRUCTORS' SYLLABUS FOR
EXPERIMENTAL GROUPS

ACCOUNTING 2013

August 26 through December 22, 1981

10:30 - 11:20 M W F Howell Hall, Room 201, Section 0440

INSTRUCTOR: Jack Amyx

OFFICE: N-B 1082

TELEPHONE: 248-2200, Ext. 265

REQUIRED TEXTS:

Principles of Accounting, by Needles, Anderson, and Caldwell, Houghton Mifflin, 1981.

Workbook for Principles of Accounting.

OFFICE HOURS: Daily - 8:30; T TH - 9:30-11:30; M W - 2:00.

EXAMS:

1. Chapters 1-4
2. Chapters 5-7
3. Chapters 8-11
4. Chapters 12-14
5. Final 1-14 - Wednesday, December 16, 1981, 10:00-12:00

NOTE: The exam over chapters 12-14 and the final may be combined into one exam which will be given during the scheduled final exam time.

MINI-EXAMS:

Unannounced quizzes and/or announced quizzes will be given during the semester.

DECISION PROBLEMS:

Occasional problems will be assigned which require combining several concepts to come to a conclusion or decision asked about.

HOMEWORK:

Each chapter of the textbook contains several problems. Several of these will be assigned to be completed and turned in. The workbook contains the paperwork on which to work the problems. Specific assignments will be distributed later.

GRADING:

The grades will be determined by scores in three areas: 1) Individual performance, 2) group performance, and 3) group maintenance. Within these three areas, the graded assignments will be as follows:

<u>Individual Performance</u>	<u>Percentage of Score within area</u>
1. Major exams	60 %
2. Homework problems	30 %
3. Mini-Exams	10 %
<u>Group Performance</u>	
1. Homework	40 %
2. Mini-Exams	40 %
3. Decision Problems	20 %
<u>Group Maintenance</u>	
Peer Evaluation	100 %

The percentage of the grade that will be determined by scores in the major three areas (Individual Performance, Group Performance, or Group Maintenance) and the relative weight of the major exams, homework problems, and mini-exams within individual performance will be determined by students as a class as soon as the student work groups are formed. The procedure through which the grade weights are set will be as follows:

1. Groups will be formed within the class from members of the class.
2. Groups will set preliminary weights for each area and select a member to meet with representatives of other groups.
3. Representatives assemble in the center of the classroom and discuss until a consensus about the desired grade weights in the three areas is reached.

NOTE: The only limitations on the grade weights are that 1) a minimum of 10% must be assigned to each major area, and 2) at least 60% of the Individual Performance grade must be determined by the major exams.

EXAMS: There will be several short Individual and Group****mini evaluations given during the course. On group exams each group will turn in only one exam and all group members will receive the same score.

*****All group members will receive the same score.

Peer Evaluation

Individual peer evaluation scores will be the average of the points they receive from the other members of their group. Each individual will rate all of the other members of their group. Assuming arbitrarily that 1) the peer evaluation is worth 10 points, and 2) that there are six members in a group, an example of the peer evaluation procedure will be as follows:

1. Each individual must assign a total of 50 points to the other five members in their group.

2. Raters must differentiate some in their ratings, e.g., each rater must give at least one score of 11 or higher and at least one score of 9 or lower.

NOTE: As a result of this procedure, the average peer evaluation score for each group will be identical although there will be some variation in scores within groups.

WITHDRAWAL FROM CLASS:

If for any reason you stop attending class, please officially withdraw from the class. Otherwise, you may receive an "F" or a "WF" for the semester. Also, if you have excessive absences for the class you may be withdrawn from the class at the request of the instructor. Excessive absences are defined as a sufficient number of absences so that a student is not progressing in a satisfactory manner in class.

The Percent of Weight Determined by Students:

A - Individual Performance	70%
B - Group Performance	20%
C - Group Maintenance	<u>10%</u>
Total	100%

CLASS: Principles of Accounting 2013 11:30 M W F --Howell Hall, Room 201
 TEXT: Principles of Accounting, 1st ed.; Needles, Anderson, Caldwell

INSTRUCTOR: John S. Jeter
 OFFICE: Howell Hall 212 D
 PHONE: 248-2200, extension 367 or 365

OBJECTIVE: To provide the basic accounting knowledge necessary for additional study in accounting.

ATTENDANCE:

The nature of accounting requires class attendance. If absences become excessive (4 or more during day classes, more than 1 per night session), the instructor reserves the right to drop any student. The grade assigned in such a situation will be W or F depending on the individual case.

If for any reason a student must drop the class it is his or her responsibility to drop in the proper manner as outlined in the catalog.

ACCOUNTING LAB

We have established an accounting lab. This lab will be staffed (full time) by a faculty member. Details concerning location and hours will be forth coming.

EVALUATION AND GRADING

The grades will be determined by scores in three areas: 1) Individual performance, 2) group performance, and 3) group maintenance. Within these three areas, the graded assignments will be as follows:

<u>Individual Performance</u>	<u>% of score within areas</u>
(1) Homework Problems	0-10
(2) Mini-evaluations	10-40
(3) Major exams (3+ 1 final)	40-100
<u>Group Performance</u>	
(1) Mini evaluation	40
(2) Homework Problems	20
(3) Special group problems	40
<u>Group Maintenance</u>	
Peer Evaluation	100

The percentage of the grade that will be determined by scores in the major three areas (Individual Performance, Group Performance, or Group Maintenance) and the relative weight of the mini-evaluations, Mid-term vs the final exam within individual performance will be determined by students as a class as soon as the student work groups are formed. The procedure through which the grade weights are set will be as follows:

1. Groups will set preliminary weights for each area and select a member to meet with representatives of other groups.
2. Representatives assemble in the center of the classroom and discuss until a consensus about the desired grade weights in the three areas is reached.

NOTE: The only limitations on the grade weights are that (1) a minimum of 10% must be assigned to each major area, and (2) at least 60% of the Individual Performance grade must be determined by the major exams.

EXAMS:

There will be several short, mini-evaluations given during the course. All other exams will be major hour-exams. All exams will be graded based on total points with the following % guidelines:

90-100 - A
80-89 - B
70-79 - C
60-69 - D
Under 60 F

MAKE-UP EXAMS:

There will be no make-up exams given in this class unless the reason for missing an exam has been approved in advance by the instructor. By the way, this instructor rarely approves an absence.

NOTE: A study guide for the course is available and can be purchased at the book-store. This guide will prove to be very helpful to all students.

PEER EVALUATION

Individual peer evaluation scores will be the average of the points they receive from the other members of their group. Each individual will rate all of the other members of their group. Assuming arbitrarily that 1) the peer evaluation is worth 10 points, and 2) that there are six members in a group, an example of the peer evaluation procedure will be as follows:

1. Each individual must assign a total of 50 points to the other five members in their group.
2. Raters must differentiate some in their ratings, e.g., each rater must give at least one score of 11 or higher and least one score of 9 or lower.

NOTE: As a result of this procedure, the average peer evaluation score for each group will be identical although there will be some variation in scores within groups.

THE PERCENTAGE OF WEIGHT DETERMINED BY STUDENTS :

A- Individual Performance	55%
B- Group Performance	35%
C- Group Maintenance	<u>10%</u>
Total	100%

ACCOUNTING 2013

Oct.22 through December 22, 1981

7:00 - 9:40 PM T& TH Howell Hall, Room 201, Section 3015

INSTRUCTOR: Dr. J. W. Chester

OFFICE: NB 1089

TELEPHONE: 248-2200, Ext. 270

REQUIRED TEXTS: Principles of Accounting, by Needles, Anderson, and Caldwell,
Houghton Mifflin 1981.Workbook for Principles of Accounting.

OFFICE HOURS: Daily 8:30 -11:00 AM

- EXAMS: 1. Chapters 1-3
 2. Chapters 4-5
 3. Chapters 6-9
 4. Chapters 10-14

MINI-EXAMS: Unannounced quizzes and/or announced quizzes will be given during the semester.

HOMEWORK: Each chapter of the textbook contains several problems. Several of these will be assigned to be completed and turned in. The workbook contains the paperwork on which to work the problems. Specific assignments will be distributed later.

GRADING: The grades will be determined by scores in three areas: 1) Individual performance, 2) group performance, and 3) group maintenance. Within these three areas, the graded assignments will be as follows:

<u>INDIVIDUAL PERFORMANCE</u>	<u>PERCENT OF SCORE WITHIN AREA</u>
1. Major Exams	60-90%
2. Homework problems	5-30%
3. Mini-Exams	5-30%
<u>GROUP PERFORMANCE</u>	
1. Homework	50%
2. Mini-Exams	50%
<u>GROUP MAINTENANCE</u>	
Peer Evaluation	100%

The percentage of the grade that will be determined by scores in the major three areas (Individual Performance, Group Performance, or Group Maintenance) and the relative weight of the major exams, homework problems, and mini-exams within individual performance will be determined by students as a class as soon as the student work groups are formed. The procedure through which the grade weights are set will be as follows:

1. Groups will be formed within the class from members of the class.
2. Groups will set preliminary weights for each area and select a number to meet with representatives of other groups.
3. Representatives assemble in the center of the classroom and discuss until a consensus about the desired grade weights in the three areas is reached.

NOTE: The only limitations on the grade weights are that (1) a minimum of 10% must be assigned to each major area, and (2) at least 60% of the Individual Performance grade must be determined by the major exams.

EXAMS: There will be several short Individual and Group ***** mini evaluations given during the course. On group exams each group will turn in only one exam and all group members will received the same score.

***** All group members will received the same score.

Peer Evaluation

Individual peer evaluation scores will be the average of the points they receive from the other members of their group. Each individual will rate all of the other members of their group. Assuming arbitrarily that 1) the peer evaluation is worth 10 points, and 2) that there are six members in a group, an example of the peer evaluation procedure will be as follows:

1. Each individual must assign a total of 50 points to the other five members in their group.
2. Raters must differentiate some in their ratings, e.g., each rater must give at least one score of 11 or higher and at least one score of 9 or lower.

NOTE: As a result of this procedure, the average peer evaluation score for each group will be identical although there will be some variation in scores within groups.

WITHDRAWAL FROM CLASS:

If for any reason you stop attending class, please officially withdraw from the class. Otherwise, you may receive an "F" or a "WF" for the semester. Also, if you have excessive absences for the class you may be withdrawn from the class at the request of the instructor. Excessive absences are defined as a sufficient number of absences so that a student is not progressing in a satisfactory manner in class.

The Percent of Weight Determined by Students:

A - Individual Performance	60%
B - Group Performance	30%
C - Group Maintenance	<u>10%</u>
Total	100%

APPENDIX VI

SUGGESTIONS FOR ACCOUNTING EXPERIMENT

SUGGESTIONS FOR ACCOUNTING EXPERIMENT

Day 1

- A. Overview of course objective/goals
- B. Collection of data you may desire for selection of groups, i.e.,
Business courses, Accounting, Bookkeeping
Accounting experience
Math
Computer
Whatever you want to know that will help you to assign students to groups on Day "2".
- C. Homework assigned for Day 2 reading or problem.
- D. Distribute handout on "grading system"
Individual, group, peer evaluation.
Do Not Discuss. This will give you some indication of their ability to read.

SUGGESTED FORMAT FOR DATA COLLECTION YOU
MAY DESIRE FOR SELECTION OF GROUPS:

1. AGE 20 or below _____ 21-25 _____ 26-30 _____ Over 30 _____
2. SEX Female _____ Male _____
3. Number of credit hours completed in college _____
4. Grade point average in college _____
5. Grade point average in high school _____
6. Have you had Bookkeeping or Accounting in high school? _____
7. How many hours per week will you be working for pay?
Under 10 _____ 10 to 20 _____ 20 to 30 _____ Over 30 _____
8. Are you married? _____
9. Are you or have you been on active duty in some branch of service?

10. Total number of credit hours you are enrolled in this semester? _____

11. What was the last math class you have had (either high school or college?) _____

What grade did you make in that class? _____

Day 2

- A. Assign students to their permanent work groups.
- B. Assign group location in the classroom.
- C. Inform groups they will work in their area and group throughout the semester.
- D. Inform the groups that after each meeting they must return all furniture to original placement.
- E. Establish grade weight - in each group then - group representatives - establish - class weights
- F. Give individual mini-test over homework. (Set time allowed for test)
- G. Each individual will hand in answer sheet upon completion.
- H. When all members of a group are complete, give the group one answer sheet to complete that will reflect a consensus of their opinion.
- I. Inform groups in the future only one time limit will be given for both individual and group performance.
- J. Cover any theory you desire. Make assignments for Day 3. Suggest the groups may want to get names and phone number of their members.

Day 3 Be - a - couple of minutes late.

- A. Tell the groups you expect them to be reviewing work, time is limited.
- B. Take up a part or all the homework, your choice.
- C. Ask if there are any questions over assignment.
- D. Mini test. Both individual, and group under one "time" allocation.
- E. Cover what you want and make assignment for Day 4.

Day 4 Go on, You Have It ALL! Remember the experimental group takes the same major tests as the control group.

APPENDIX VII

VALIDITY OF THE AICPA ACHIEVEMENT TESTS

AICPA DEVELOPMENT

The achievement test developed by the American Institute of Certified Public Accountants (AICPA) was used as a standardized measurement of all students' achievement. The AICPA achievement tests were developed according to strict psychometric standards. The first step is the delineation of a content outline or test blueprint, which contains all of the knowledges that are considered to be appropriate for a specified level of achievement. This outline is derived by AICPA Subcommittee on Testing, which comprises accounting practitioners and educators. Thus the content outline represents the expert judgment of practicing professionals in accounting.

Once the content outline is delineated, weights are assigned to the various components, in order that the number of questions for each component can be established. The content outline for the Level I Achievement Test, Form A, is shown on the following pages.

The next step in the development of a test is the actual writing of the test items. This is done by the individual members of the Subcommittee on Testing, who then jointly review all of the items and revise them as necessary. In general, at least twice as many items are written as are actually called for by the test blueprint, since it can be expected that some items will be discarded. Once the items are written and reviewed, they are pretested on groups of accounting student. Data from these pretests provide information about the reliability or consistency of the test and the effectiveness of each item in discriminating among high and low scorers. Based on the pretest

data, bad items are discarded, remediable items are revised, and good items are retained. Thus the final form of the test is developed according to an empirical basis.

The Level I Achievement Test, Form A, was pretested on a sample of 392 first-year students in accounting at four-year colleges. The original seventy-five items were subjected to an item analysis, and the final form of thirty-eight items was derived based on this item analysis.

Psychometric issues related to the AICPA Achievement tests include concepts of validity--that is, evidence that the test actually measures accounting knowledge rather than knowledge of some other subject, and reliability, or how accurately the test measures that accounting knowledge.

Among the several kinds of validity, two are particularly relevant to achievement tests. The first is content validity, which refers to the actual content that the test is assessing and is demonstrated through the careful preparation described above. That is, content validity may be inferred as a result of a method that includes expert opinion and consensus among practicing professionals.

The second kind of validity relevant to achievement tests is criterion-related validity, in which performance on the test is shown to be related to an independent measure of that which the test assesses. A standard criterion measure is GPA. Since the Level I Achievement Test, Form A, is relatively new, the relationship of the test to GPA has not yet been demonstrated. However, there have been

¹See Appendix XI for full reprint.

studies showing the criterion-related validity of other forms of the Level I test.¹ It seems fairly safe to assume that a new form of a test will demonstrate comparable validity with older forms, at least until new validity studies can be completed.

The reliability of a test refers to the accuracy with which it measures. Reliability is expressed in the form of a correlation coefficient: the nearer the coefficient approaches to 1, the more the test variance represents true differences among respondents rather than measurement error. The KR20 reliability index for the Level I Achievement Test, Form A, was computed on the sample (N = 392) of students on whom the test was pretested, and was shown to be .78. Since some methods of estimating the reliability of a test involve correlation coefficients, there must be either two administrations of the test to the same group of respondents, or the test must be split in half and the two halves correlated. Either method is problematic: two administrations for the same group is wasteful of time and may result in spurious second scores due to carry-over effects; and splitting a test into two halves involves an arbitrary decision as to how the test will be split, since there are numerous ways that the test may be divided. Methods of estimating the reliability of a test from a single administration, without splitting the test, were developed by G. V. Kuder and M. W. Richardson in 1937 and provide a measure of the internal consistency or equivalence of the test items. One of their formulas, called the Kuder-Richardson Formula 20 (KR20), is based on the proportion of persons passing each item and the standard deviation of the total scores. The result is equal to the average of all possible

split-half correlation coefficients for the group tested. It may be expected that this value would increase as bad items were deleted from the test.

In summary, the AICPA achievement tests are considered to be well-developed instruments that can yield accurate discriminations among levels of accounting knowledge.²

The actual current content outline for the Level I Form A Achievement Test used in this study:

I. FINANCIAL ACCOUNTING	No. of Questions
A. Basic Financial Accounting	
1. Structure	5
a. Statement of Operations	
(1) Revenues	
(2) Expenses	
(3) Net Income	
(4) Extraordinary Items, Restatements and Dis- continued Operations	
(5) Segments	
b. Statement of Financial Position	
(1) Assets	
(a) Current	
(b) Non-current	
(2) Liabilities	
(a) Current	
(b) Non-current	
(3) Owners Equity	
(a) Corporate	
(b) Other Legal Forms	
c. Statement of Changes in Financial Position ("Total funds")	
(1) Sources	
(2) Applications	

²Information provided by Barbara B. Howell, Testing Program Director, American Institute of Certified Public Accountants, April 8, 1981.

	No. of questions
2. Underlying Assumptions	5
(a) Realization	
(b) Conservatism	
(c) Going Concern	
(d) Monetary Unit	
(e) Exchange Prices	
B. Revenue and Expense Recognition	
1. Accrual Concept	6
a. Periodic Determination	
b. Adjustments	
c. Errors and Omissions	
d. Product vs. Period	
2. Recording Process	3
a. Basic cycle	
b. Basis Books of Accounting	
C. Valuation Approaches	
1. Assets	5
a. Current	
(1) Cash and Marketable Securities	
(2) Receivables	
(3) Inventories	
(4) Prepaids	
b. Non-Current	
(1) Tangible	
(2) Intangible	
2. Liabilities	4
a. Current	
b. Non-current	
(1) Bonds (Premium and Discount)	
(2) Pensions	
(3) Leases	
(4) Tax Allocations	
3. Owners Equity	2
a. Corporate	
(1) Capital Stock	
(2) Other Contributed Net Worth	
(3) Retained Earnings	
(4) Treasury Stock	
b. Partnership or Proprietorships	

	No. of questions
D. Intercompany Investments	2
1. Various Methods (viz, cost, equity, consolidated)	
2. Consolidated Reports (viz, intercompany transactions, majority and minority interest)	
3. Purchase	
4. Pooling	
E. Analysis of Financial Statements	
1. Profitability and Activity Measures (e.g., EPS and ROI) . . .	2
2. Liquidity Measures (e.g., current ratios)	1
3. Safety of Investment (e.g., debt to equity ratio)	1
F. Prices and Values	
1. General Price Level Adjustments .	1
2. Current Value Adjustments	1

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One question may require knowledge from several areas. For example, a question dealing with structure could deal with information from all three sub-units:

- a. statement of operations,
- b. statement of financial position,
- c. statement of changes in financial position ("total funds").

Thus, one can readily accept the statement: "The AICPA achievement tests are considered to be well developed instruments that can yield accurate discriminations among levels of accounting knowledge."³

³Ibid.

Validity of the AICPA Achievement Tests

The Achievement Tests of the College Accounting Testing Program show a high degree of validity as predictors of accounting course grades and accounting grade-point averages in this study reported by Dr. Mildred E. Katzell, Staff Consultant with the Professional Examinations Division of The Psychological Corporation.

The AICPA Testing Project Office is continually engaged in studies of the effectiveness of the various accounting testing programs that it offers. Earlier reports from this office have dealt with the validity of the AICPA personnel tests in accounting firms and of the aptitude and achievement tests as predictors of success in the profession, to name but a few.

Reports of local validation studies of the College Accounting Testing Program have also appeared from time to time in the *Journal of Accountancy*. McCormick and Montgomery (August, 1974) reported the experience of Florida Atlantic University in assessing the elementary accounting achievement and probable success in an accounting curriculum of entering transfer students. David M. Buehlmann (May, 1975) later described the use of the program as a predictor of success in advanced accounting study and as a counseling device for slow-starting accounting students at Illinois State University at Bloomington-Normal.

This report presents validation data derived from analyses of AICPA Achievement Test results in relation to accounting course grades and grade-point averages provided by nine

colleges and universities. The test forms that were used in the studies included Level I Forms E, ES, and FS, and Level II Forms J, K, and L. The tests were administered between April 1971 and December 1974 by the respective colleges. Late in 1974 and early in 1975 the colleges provided the AICPA Testing Program Office with the accounting course grades and grade-point averages for the tested students. These data served as the basis for the validity studies reported here.

Testing Instruments

For the reader who is not familiar with the AICPA College Accounting Testing Program, a brief description is provided of the achievement tests that were used in this series of studies.

The Level I Achievement Tests emphasize understanding of financial and managerial accounting concepts as presented in accounting courses. These tests are designed to evaluate accounting knowledge at the end of the first year of college accounting. They have also proved useful in assessing whether prospective employees are likely to be successful accountants. Form E of the Level I test requires two hours for completion;

TABLE 1
VALIDITY OF LEVEL I ACHIEVEMENT TESTS IN RELATION TO GRADES IN ACCOUNTING

College	Criterion	No. of Students	Correlation	Test Score		Criterion		S. E. Est. #	Test Form
				Mean	Std. Dev.	Mean	Std. Dev.		
C	1st Yr. Acctg. GPA, 3/73	18	.71**	23.4	6.3	3.9	0.6	0.45	ES
	2nd Yr. Acctg. GPA, 2/74	34	.68**	21.4	7.0	4.1	0.7	0.53	FS
D	Accounting, 72-73	11	.53	61.2	10.0	4.2	0.7	0.66	E
H	Principles of Acctg., 9/73	60	.45**	29.1	6.0	3.6	0.6	0.54	FS
	Intermediate Acctg., 9/73	60	.60**	29.1	6.0	3.1	0.8	0.65	FS
	Cost Accounting, 9/73	60	.59**	29.1	6.0	3.4	0.6	0.49	FS
	Advanced Accounting, 9/73	60	.41**	29.1	6.0	3.4	0.6	0.56	FS
	Accounting Problems, 9/73	60	.45**	29.1	6.0	3.2	0.5	0.45	FS
	Contemporary Acctg. Problems, 9/73	60	.53**	29.1	6.0	3.3	0.7	0.60	FS
	Accounting GPA, 9/73	60	.67**	29.1	6.0	3.3	0.5	0.38	FS

S. E. Est. = Standard Error of Estimate, computed by the use of the following formula:

$$SE_{est} = s_c \sqrt{(1 - r^2) \left(\frac{N}{N - 2} \right)}$$

in which s_c is the standard deviation of the criterion; N is the number of students;

and r is the validity coefficient. This formula includes a correction for any bias that may result from the use of small (50 or fewer) samples.

** = Less than 1 chance in 100 that a correlation of this size would occur by chance.

TABLE 2
VALIDITY OF LEVEL II ACHIEVEMENT TEST, FORM J, IN RELATION TO ACCOUNTING GRADE-POINT AVERAGES

College	Criterion	No. of Students	Correlation	Test Score		Criterion		S. E. Est. #
				Mean	Std. Dev.	Mean	Std. Dev.	
A	Accounting GPA, 5/73	32	.64**	42.4	16.6	4.7	0.4	.32
	Accounting GPA, 5/73	41	.78**	46.5	16.7	6.5	0.4	.26
	Accounting GPA, 12/73	54	.73**	41.3	17.1	4.3	0.3	.21
	Accounting GPA, 12/73	40	.75**	47.7	19.2	6.5	0.4	.27
	Accounting GPA, 5/74	46	.63**	46.7	13.2	5.7	0.4	.32
	Accounting GPA, 5/74	62	.67**	46.3	15.0	6.5	0.4	.30
E	3rd Yr. Acctg. GPA, 4/71	16	.83**	37.6	15.4	3.3	0.6	.36
	Senior Acctg. GPA, 10/72	29	.75**	30.3	13.2	2.8	0.5	.34
	3rd Yr. Acctg. GPA, 4/73	18	.65**	36.2	12.7	2.9*	0.6	.48
G	Accounting GPA, 3/73	23	.54**	33.8	12.8	2.8	0.4	.35
	Accounting GPA, 11/73	33	.67**	36.8	15.4	2.9	0.5	.38
	Accounting GPA, 3/73	41	.78**	35.2	15.4	2.9	0.5	.32
	Accounting GPA, 12/74	43	.60**	31.5	13.0	2.9	0.5	.41
I	Accounting GPA, 3/74	35	.33*	23.3	10.7	2.7	0.5	.49

See Table 1 for interpretation.

* = Less than 5 chances in 100 that a correlation of this size would occur by chance.

** = Less than 1 chance in 100 that a correlation of this size would occur by chance.

Forms ES and FS are shorter forms that require only 50 minutes of working time.

The Level II Achievement Tests feature problems in managerial accounting, auditing, statistical sampling, operations research, systems, and electronic data processing. The results have demonstrated practical utility as measures of knowledge of accounting principles and procedures, as guides to personnel decisions regarding advanced positions, as estimates of the equivalence of accounting experience to formal academic preparation, and as predictors of performance on the CPA examination. Form J of the Level II Test takes two hours; Forms K and L each take 50 minutes.

The College Accounting Testing Program also includes the Orientation Test and the Strong Vocational Interest Blank. The Orientation Test is an aptitude test which covers vocabulary, business reading, and business arithmetic. The Strong Vocational Interest Blank permits comparison of individual interests with those of persons engaged in many occupations, including practicing accountants.

Statistical Tables

The four accompanying tables set forth the data for the Level I and Level II Achievement Tests in the nine colleges. To preserve anonymity, the colleges have been identified only by letters, which appear in the first column of each table. Criteria against which the test scores were correlated were either individual accounting course grades or accounting grade-point averages, as shown in the second column. The third column indicates the number of students in each sample. The samples ranged in size from 11 to 70, with most exceeding 30.

The validity coefficients are presented in the column headed "Correlation." They are followed by the mean and

standard deviation of the achievement test scores and then the mean and standard deviation of the criterion measures. The column titled "S.E. Est." presents the standard errors of estimate. It will be noted that the standard errors vary from a low of .21 (Table 2, College A) to a high of .96 (Table 4, College B). Since most of the standard errors were less than .50, the grade predicted for a student from performance on the Achievement Test in most instances would be less than .5 grade point from the grade the student actually received. Thus, for example, if a grade-point average of 3.5 were predicted from a student's test performance, in about two-thirds of the cases one could expect the actual grade-point average to fall between 3.0 and 4.0, when the standard error of estimate is .5. Of course, when the standard error is less, the prediction is more accurate; when the standard error is larger, it is more variable.

Table 1 has an additional column to indicate the Form of the Level I Achievement Test to which the data pertain. Tables 2, 3, and 4 each deal with a different form of the Level II Achievement Test, Forms J, K, and L, respectively.

Discussion

During the first six months of 1974, 279 colleges administered over 19,000 tests from the College Accounting Testing Program to their students. During the comparable period in 1975, 292 colleges administered over 23,000 of the comparable tests. In each year, over 80% of those tests were the Level I and Level II Achievement Tests.

It would appear that the competition among students entering the field of business and majoring in accounting is providing an incentive for students to measure up to the challenge of national competition. An article by Park Leathers

(September, 1972) reported that students whose Level II Achievement Test scores were at the 50th percentile or higher were about twice as likely to pass each of the four parts of the CPA examination (Auditing, Theory, Practice, and Law) as those whose Level II scores were below the 50th percentile. That article also showed that the higher the scores on the Level II Achievement Test, the greater was the likelihood that a first-time CPA candidate would pass all parts of the examination. Those findings demonstrate a form of predictive validity for the Level II Achievement Test against criteria based on CPA examination performance.

The present study has viewed the relationship between Achievement Test scores and more immediate criteria. While the results should still be classified as criterion-related validity, in most instances the criteria were obtained shortly after the administration of the predictor test. That is to say, the Achievement Tests were administered just before the end of the terms from which the grades served as criteria. These results might, therefore, be considered to be either predictive or concurrent validity studies.

In reviewing the validity coefficients in the four tables, it is important to recall that a higher correlation coefficient is required for statistical significance to be attained with a small sample than with a large sample. Thus, for example, with the

sample of eleven students in College D (Table 1), the correlation of .53 fails to reach a level beyond that which could have occurred by chance. Similarly in College B (Table 3), the correlation of .32 based on 19 students failed to attain statistical significance. In contrast, the correlations of .54 based on the records of 23 students in College G (Table 2) and of .32 based on 73 students in College B (Table 4) are significant at the .01 level. This can be interpreted to mean that a correlation of that size is likely to occur by chance less than once in 100 times.

Among the four tables, 43 coefficients are reported. Of these, only three are too low to attain significance, given the size of the samples on which they are based, indicating that correlations of that magnitude might have occurred by chance in those groups. Another three coefficients are statistically significant at the five per cent level, meaning that correlations of that size could occur by chance five times in a hundred, in groups composed of those numbers of students. The remaining 37 coefficients are significant at the one per cent level or better. Those correlations are unlikely to occur by chance even once in a hundred instances. This evidence of validity is especially noteworthy in view of the variety of courses and institutions from which the data were gathered, and the diversity of the factors that enter into the determination of individual grades.

TABLE 3
VALIDITY OF LEVEL II ACHIEVEMENT TEST, FORM K, IN RELATION TO GRADES IN ACCOUNTING

College	Criterion	No. of Students	Correlation	Test Score		Criterion		S. E. Est. #
				Mean	Std. Dev.	Mean	Std. Dev.	
B	Advanced Accounting, 12/73	19	.53*	15.8	4.9	3.0	0.9	.81
	Internal Auditing, 12/73	19	.32	15.8	4.9	3.3	0.7	.70
C	Senior Accounting GPA, 2/72	45	.74**	16.9	7.0	3.9	0.7	.48
H	Principles of Acctg., 9/74	52	.54**	31.4	6.9	3.6	0.6	.51
	Intermediate Acctg., 9/74	52	.52**	31.4	6.9	3.1	0.8	.70
	Cost Accounting, 9/74	52	.58**	31.4	6.9	3.4	0.5	.42
	Advanced Accounting, 9/74	52	.48**	31.4	6.9	3.4	0.6	.54
	Accounting Problems, 9/74	52	.54**	31.4	6.9	3.2	0.5	.42
	Contemporary Acctg. Prob., 9/74	52	.47**	31.4	6.9	3.4	0.6	.54
	Accounting GPA, 9/74	52	.70**	31.4	6.9	3.4	0.5	.36

See Table 1 for interpretation.

* = Less than 5 chances in 100 that a correlation of this size would occur by chance.

** = Less than 1 chance in 100 that a correlation of this size would occur by chance.

TABLE 4
VALIDITY OF LEVEL II ACHIEVEMENT TESTS, FORM L, IN RELATION TO GRADES IN ACCOUNTING

College	Criterion	No. of Students	Correlation	Test Score		Criterion		S. E. Est. #
				Mean	Std. Dev.	Mean	Std. Dev.	
B	Advanced Acctg., 5/73	71	.56**	10.5	6.4	2.8	1.0	.84
	Internal Auditing, 5/73	71	.63**	10.5	6.4	3.0	1.1	.86
	Advanced Accounting, 5/73	73	.32**	11.3	6.3	2.8	1.0	.96
	Internal Auditing, 5/74	73	.55**	11.3	6.3	3.5	0.9	.76
C	Accounting GPA, 3/73	53	.48**	13.5	6.3	4.0	0.6	.54
	Accounting GPA, 2/74	65	.66**	13.1	8.0	3.9	0.6	.45
J	Principles of Acctg., 73-74	47	.26	13.0	7.6	3.2	0.8	.79
	Intermediate Acctg., 73-74	49	.30*	13.7	7.6	2.6	0.8	.78
	Advanced Accounting, 73-74	47	.42**	13.5	7.7	2.6	0.9	.83

See Table 1 for interpretation.

* = Less than 5 chances in 100 that a correlation of this size would occur by chance.

** = Less than 1 chance in 100 that a correlation of this size would occur by chance.

Summary

The Level I and Level II Achievement Tests of the College Accounting Testing Program show a high degree of validity against criteria of accounting course grades and accounting grade-point averages. This generalized statement is applicable in different institutions, with different forms of the tests, and for different courses in the accounting program. This high degree of validity gives further assurance to accounting firms as well as to accounting educators with respect to the quality of the preparation of those whose test results are included in their academic records.

BIBLIOGRAPHY

- Buehlmann, David M. "ISU's use of the AICPA's College Testing Program", *Journal of Accountancy* (May, 1975), p. 93.
- Leathers, Park. "Relationship of Test Scores to CPA Examination Performance", *Journal of Accountancy* (September, 1972), p. 101.
- McCormick, Ronald R. and Montgomery, James B. "The Use of AICPA Tests in Evaluating Transfer Students at a University", *Journal of Accountancy*, (August, 1974), p. 82.

APPENDIX VIII

EXPANDED TABLE 1 OF CLASS SCHEDULING INFORMATION;

TABLE 1A STUDENT INFORMATION: NUMBER

ENROLLED AND INSTRUMENTS COMPLETED

TABLE 1
PRINCIPLES OF ACCOUNTING I CLASS SCHEDULING INFORMATION
CAMERON UNIVERSITY, FALL 1981

Control/ Experimental	Section	Instructor	Time Scheduled*	Class Length	Number of Meetings Per Week**	Clock Hours per Semester**	Course Length	Location of Class
Control	0430	Jeter	8:30 A.M.	50 min.	3	40	16 weeks	Howell Hall Room 201
Control	0435	Amyx	9:30 A.M.	50 min.	3	40	16 weeks	Howell Hall Room 201
Experimental	0440	Amyx	10:30 A.M.	50 min.	3	40	16 weeks	Howell Hall Room 201
Experimental	0445	Jeter	11:30 A.M.	50 min.	3	40	16 weeks	Howell Hall Room 201
Control	6025	Chester	5:30 P.M.	74 min.	2	40	16 weeks	Howell Hall Room 201
Experimental	8015	Chester	7:00 P.M.	160 min.	2	40	8 weeks	Howell Hall Room 201

*All classes were assigned to the same classroom for period of time scheduled (Howell Hall Room 201).

**Amount of actual instructional time available in the classroom.

TABLE 1A

PRINCIPLES OF ACCOUNTING I STUDENT INFORMATION
CAMERON UNIVERSITY, FALL 1981

Section	Total Students Enrolled	Experience and Satisfaction		Post AIDS	AICPA Posttest	Letter Grade	Withdrew	% Withdrew	Grade Point Average
		Pretest	Posttest						
J 0430 (C)	45	42	28	28	28	29	16	.35	1.93
A 0435 (C)	49	42	34	34	34	37	12	.24	2.24
A 0440 (E)	48	45	34	35	35	34	14	.29	2.38
J 0445 (E)	47	44	25	23	25	28	19	.40	2.28
C 6025 (C)	34	28	19	21	21	25	9	.26	2.56
E 8015 (E)	41	38	22	22	22	32	9	.24	2.78
Totals	264	239	162	163	165	185	79		
Total Mean	44	39.8	27.0	27.2	27.5	30.8	13.1	.30	2.36

Control Grade Point Mean 2.24
Experimental Grade Point Mean 2.48
Control Withdraw Mean 12
Experimental Withdraw Mean 14

(C) = Control
(E) = Experimental
J = Jeter
A = Amyx
C = Chester

APPENDIX IX

INDIVIDUAL INSTRUCTORS' "IDEA" REPORT TABLES

IDEA REPORT
Part I Evaluation (Progress Ratings)
Amyx - Classes 435-440

Question Number	Control Mean	Experimental Mean	Difference ¹	Comparison With			
				All Courses		Similar Courses	
				Control	Exper.	Control	Exper.
A. Subject Matter Mastery							
21. ** Factual-Knowledge	3.4	3.6	0.2	Avg.	Avg.	Low Avg.	Avg.
22. ** Principles & Theories	3.5	3.7	0.2	Avg.	Avg.	Low Avg.	Avg.
24. * Professional Skills & Viewpoints	3.4	3.1	-0.3	Avg.	Low Avg.	Avg.	Low Avg.
B. Development of General Skills							
23. ** Thinking & Problem Solving	3.3	3.4	0.1	Low Avg.	Avg.	Low Avg.	Avg.
29. * Effective Communication	2.7	2.9	0.2	Avg.	Avg.	Avg.	Avg.
C. Personal Development							
27. * Personal Responsibility	3.4	3.5	0.1	Avg.	Avg.	Avg.	Avg.
Overall Evaluation (Progress on Relevant Objectives)				Low Avg.	Avg.	Low Avg.	Avg.
Sum of Means	19.7	20.2	0.5				
Mean Average	3.3	3.4	0.1				

¹Experimental mean minus control mean equals difference.

**Professors rated the objective as essential.

*Professors rated the objective as important.

IDEA REPORT
Part II Course Description
Amyx - Classes 435-440

Question Number	Control Mean	Experimental Mean	Difference ¹	Comparison With			
				All Courses Control	Exper.	Similar Courses Control	Exper.
31. Amount of Reading	3.1	3.2	0.1	Avg.	Avg.	Avg.	Avg.
32. Amount of Other Work (Non-reading)	3.9	3.9	0.0	High Avg.	High Avg.	High	High
33. Difficulty of Subject Matter	3.7	3.9	0.2	High Avg.	High Avg.	High Avg.	High
34. Content Integration	3.6	3.7	0.1	Avg.	Avg.	Avg.	Avg.
Sum of Means	14.3	14.7	0.4				
Mean Average	3.6	3.7	0.1	Avg.	Avg.	Avg.	Avg.

¹Experimental mean minus control mean equals difference.

IDEA REPORT
Part III Students' Self Ratings
Amyx - Classes 435-440

Question Number	Control Mean	Experimental Mean	Difference ¹	Comparison With			
				All Courses		Similar Courses	
				Control	Exper.	Control	Exper.
35. Worked Hard	4.3	4.1	-0.2	High	High Avg.	Avg.	High
36. Strong Desire to Take Course	3.7	3.8	0.1	Avg.	Avg.	High	----
37. Would Like Instructor Again	4.0	3.6	-0.4	Avg.	Avg.	High Avg.	Avg.
38. Improved Attitude Toward Field	3.3	3.7	0.4	Low Avg.	Avg.	Avg.	Avg.
Sum of Means	15.3	15.2	-0.1				
Mean Average	3.8	3.8	0.0	Avg.	Avg.	Avg.	Avg.

¹Experimental mean minus control mean equals difference.

IDEA REPORT
Part IV Methods
Amyx - Classes 435-440

Question Number	Control Mean	Experimental Mean	Difference ¹	Difference From A Similar Course Mean ²		Translation ³		
				Control	Exper.	Control	Exper.	
A. Involving Students								
1. Promoting Teacher Student Discussion	3.3	3.5	0.2	-0.4	-0.2	Low	Medium	
2. Helped Students Answer Own Questions	3.6	3.7	0.1	0.1	0.2	Medium	Medium	
3. Encouraged Students to Express Themselves	3.7	3.6	0.1	-0.3	-0.4	Low	Low	
5. Changed Approaches to Meet New Situations	3.7	2.8	0.9	0.2	-0.7	Medium	Low	
11. Explained Reasons for Criticisms	2.9	2.8	0.1	-0.2	-0.4	Medium	Low	
13. Encouraged Comments Even if Irrelevant	3.6	3.0	0.6	-0.1	-0.7	Medium	Low	
Sum of Means	20.8	19.4	-1.4	--	--	--	--	
Mean Average	3.5	3.2	-0.3	--	--	--	--	
B. Communicating Content and Purpose								
8. Demonstrated the Significance of the Subject	4.1	3.9	-0.2	-0.0	-0.2	Medium	Medium	
10. Made it Clear How Each Topic Fit	3.9	3.9	0.0	-0.0	-0.0	Medium	Medium	
14. Summarized in Ways Which Aided Retention	3.7	3.4	-0.3	0.1	-0.2	Medium	Medium	
16. Clearly Stated Objectives of the Course	4.3	4.0	-0.3	0.4	-0.0	High	Medium	
17. Explained Course Material Clearly	4.1	3.9	-0.2	0.2	-0.0	Medium	Medium	
18. Related Material to Real Life Situation	3.6	3.8	0.2	-0.6	-0.4	Low	Low	
Sum of Means	23.7	22.9	-0.8	--	--	--	--	
Mean Average	4.0	3.8	-0.2	--	--	--	--	
C. Creating Enthusiasm								
4. ⁴ Seemed Enthusiastic About the Subject Matter	3.9	3.9	0.0	-0.5	-0.5	Low	Low	
7. Spoke With Expressiveness and Variety	3.6	3.1	-0.5	-0.4	-0.8	Low	Low	
(9.) Made Dry and Dull Presentations	*(2.2)	*(2.0)	(-0.2)	(0.1)	(-0.1)	(Medium)	(Medium)	
15. Stimulated Students to High Intellectual Effort	3.0	3.3	0.3	-0.3	0.0	Low	Medium	
20. Introduced Stimulating Ideas About the Subject	3.0	3.0	0.0	-0.7	-0.7	Low	Low	
Sum of Means	*13.5	13.3	-0.2	--	--	--	--	
Mean Average	*3.4	3.3	0.1	--	--	--	--	

Part IV Methods (Continued)
Anyx - Classes 435-440

Question Number	Control Mean	Experimental Mean	Difference ¹	Difference From A Similar Course Mean ²		Translation ³	
				Control	Exper.	Control	Exper.
D. Preparing Examinations							
(6.) ⁴ Gave Exams Stressing Unnecessary Memorization	(2.5)	(2.1)	(-0.4)	(0.3)	(-0.1)	(High)	(Medium)
(12.) Gave Examination Questions Which Were Unclear	(2.3)	(1.8)	(-0.5)	(0.2)	(-0.4)	(Medium)	(Low)
(19.) Exam Questions Were Unreasonably Detailed	(2.6)	(2.6)	(0.0)	(0.4)	(0.3)	(High)	(High)
Sum of Means	*(9.6)	(6.5)	(-3.1)	--	--	--	--
Mean Average	*(2.4)	(2.2)	(-0.2)	--	--	--	--

¹Experimental mean minus control mean equals difference.

²This is the difference in relative frequency between the average for your class and the average for similar classes. The difference is calculated for each item by subtracting the mean for the appropriate comparative group from the means of your ratings. (Extracted from "Idea" Interpretive Guide, published by Kansas State, 1976, p. 8.)

³Translation interprets the difference between the frequency with which you used a given teaching method and the frequency with which that method is typically used in similar courses. "High" is printed if the instructor's mean is 0.3 or more above the mean for similar courses. This suggests that the instructor used that method or engaged in that behavior more frequently than did most instructors teaching similar classes. It was decided to use 0.3 to make this determination because the standard error of measurement for most of these items was approximately 0.3. For most items, "High" (4 or 5) is desirable. For the four items in parenthesis, however, low ratings (1 or 2) are considered desirable. Thus, for item (9) Made Dry and Dull Presentations, Professor A's "(Low)" rating is desirable. (Extracted from "Idea" Interpretive Guide, published by Kansas State, 1976, p. 8.)

⁴The parentheses refers to items where low scores are desirable. Applies to questions (9), (6), (12), and (19).

*C. (9) excluded from "C" sum of means; included in "D" sum of means.

IDEA REPORT
Part V Additional Questions
Amyx - Classes 435-440

Item	Complete Question	1		2		3		4		5		Omit		Control Mean %	Exper. Mean %	Differ- ence ¹ %
		C	E	C	E	C	E	C	E	C	E	C	E			
40.	How many whole classes have you missed during the course _____? 1. none 2. one 3. two 4. three 5. four or more	9	17	18	29	9	23	24	20	41	3	0	9	3.7	2.6	-1.1
41.	Your attendance in this course was _____ than other courses: 1. much lower 3. no different 5. much higher 2. lower 4. higher	0	3	6	3	59	40	24	31	12	11	0	11	3.4	3.5	0.1
42.	Which of the following was the <u>most important</u> in determining whether or not you <u>studied</u> the reading assignments. 1. The class/material was interesting 2. The instructor expected it 3. Feelings of responsibility for your group 4. Expectations of your group 5. To help earn a better grade	15	6	6	6	0	26	3	14	74	43	3	6	4.2	3.9	-0.3
43.	Which of the following was the <u>most important</u> in determining how much effort you put into the course? 1. The class/material was interesting 2. The instructor expected it 3. Feelings of responsibility for your group 4. Expectations of your group 5. To help earn a better grade	21	9	6	3	3	26	0	9	71	37	0	17	3.9	3.8	-0.1
44.	Which of the following was the <u>most important</u> in determining whether or not you <u>attended class</u> , particularly on days when you had (or could have had) a good reason not to? 1. The class/material was interesting 2. The instructor expected it 3. Feelings of responsibility for your group 4. Expectations of your group 5. To help earn a better grade	15	6	12	9	9	34	0	11	62	34	3	6	3.8	3.6	-0.2

Part V Additional Questions (Continued)
Amyx - Classes 435-440

Item	Complete Question	1		2		3		4		5		Omit		Control Mean %	Exper. Mean %	Differ- ence ¹ %
		C	E	C	E	C	E	C	E	C	E	C	E			
45.	Which of the following most accurately describes the impact of the <u>large size of your class</u> on what you gained from taking the course? 1. It helped (e.g., provided illustrations of course concepts such as individual vs. group scores on mini-tests) more than it hurt (e.g., less opportunity to participate in total class discussion) 2. It both helped and hurt (about equally) 3. Didn't have much effect 4. Hurt more than it helped 5. Hurt a great deal	18	14	9	26	65	37	3	0	0	20	6	20	2.6	2.4	-0.2
46.	All things considered, how would you rate the instructor compared to all other instructors you have had? 1. Top 10% 2. Next 20% 3. Middle 40% 4. Next 20% 5. Bottom 10%	59	17	12	37	24	37	6	6	0	0	0	0	1.8	2.4	1.2
47.	All things considered, how would you rate the course compared to all other courses you have had? 1. Top 10% 2. Next 20% 3. Middle 40% 4. Next 20% 5. Bottom 10%	26	23	26	29	35	26	9	14	3	6	0	0	2.4	2.4	0.0

¹Experimental mean minus control mean equals difference.

²All quantity numbers are expressed as percent.

IDEA REPORT
Part VI Diagnostic Summary
Amyx - Classes 435-440

Student's Progress	Objective Importance	Rating	Weakness Highly Relevant
<u>Control Class 435</u>			
21. Factual Knowledge	Essential	Low Avg.	15
22. Principles & Theories	Essential	Low Avg.	15
23. Thinking & Problem Solving	Essential	Low Avg.	20, 15
24. Professional Skills & Viewpoint	Important	Avg.	20, 15
27. Personal Responsibility	Important	Avg.	20, 15
29. Effective Communication	Important	Avg.	
<u>Experimental Class 440</u>			
24. Professional Skills & Viewpoint	Important	Low Avg.	20, 5
21. Factual Knowledge	Essential	Avg.	
22. Principles & Theories	Essential	Avg.	5
23. Thinking & Problem Solving	Essential	Avg.	20, 5
27. Personal Responsibility	Important	Avg.	20, 5
29. Effective Communication	Important	Avg.	

IDEA REPORT
Part VII Summary Profile
Amyx - Classes 435-440

	Comparison Group	Control Percentile Rank	Experimental Percentile Rank	Difference ¹
<u>Outcomes</u>				
Overall Evaluation (Progress on Relevant Objectives) E=21, 22, 23 I=24, 27, 29	All Courses	22	30	08
	Similar Courses	19	30	11
Would Like Instructor Again	All Courses	53	34	-19
	Similar Courses	54	29	-25
Improved Attitude Toward Field	All Courses	20	40	20
	Similar Courses	10	32	22
<u>Methods</u>				
Involving Students	All Courses	32	16	-16
	Similar Courses	40	18	-22
Communicating Content and Purpose	All Courses	52	36	-16
	Similar Courses	50	32	-18
Creating Enthusiasm	All Courses	24	24	00
	Similar Courses	20	20	00
Preparing Examinations	All Courses	20	41	21
	Similar Courses	25	51	26

¹Experimental percentile minus control percentile equals difference.

IDEA REPORT
Part I Evaluation (Progress Ratings)
Chester - Classes 025-015

Question Number	Control Mean	Experimental Mean	Difference ¹	Comparison With			
				All Courses		Similar Courses	
				Control	Exper.	Control	Exper.
A. Subject Matter Mastery							
21. ** Factual-Knowledge	3.4	3.5	0.1	Avg.	Avg.	Low Avg.	Low Avg.
22. ** Principles & Theories	3.4	3.3	-0.1	Avg.	Low Avg.	Low Avg.	Low
24. * Professional Skills & Viewpoints	3.3	3.3	0.0	Avg.	Avg.	Low Avg.	Low Avg.
B. Development of General Skills							
23. ** Thinking & Problem Solving	3.4	3.5	0.1	Avg.	Avg.	Avg.	Low Avg.
29. * Effective Communication	2.7	3.0	0.3	Avg.	Avg.	Avg.	Avg.
C. Personal Development							
27. * Personal Responsibility	3.3	3.7	0.4	Avg.	Avg.	Avg.	Avg.
Overall Evaluation (Progress on Relevant Objectives)				Low Avg.	Low Avg.	Low Avg.	Low Avg.
Sum of Means	19.5	20.3	0.8				
Mean Average	3.3	3.4	0.1				

¹Experimental mean minus control mean equals difference.

**Professors rated the objective as essential.

*Professors rated the objective as important.

IDEA REPORT
Part II Course Description
Chester - Classes 025-015

Question Number	Control Mean	Experimental Mean	Difference ¹	Comparison With			
				All Courses		Similar Courses	
				Control	Exper.	Control	Exper.
31. Amount of Reading	3.4	3.8	0.4	Avg.	High Avg.	Avg.	High Avg.
32. Amount of Other Work (Non-reading)	3.7	3.9	0.2	High Avg.	High Avg.	High Avg.	High Avg.
33. Difficulty of Subject Matter	3.7	3.7	0.0	High Avg.	High Avg.	High Avg.	High Avg.
34. Content Integration	3.8	3.7	-0.1	Avg.	Avg.	Avg.	Low Avg.
Sum of Means	14.6	15.1					
Mean Average	3.7	3.8	0.1	High Avg.	High Avg.	High Avg.	High Avg.

¹Experimental mean minus control mean equals difference.

IDEA REPORT
Part III Students' Self Ratings
Chester - Classes 025-015

Question Number	Control Mean	Experimental Mean	Difference ¹	Comparison With			
				All Courses		Similar Courses	
				Control	Exper.	Control	Exper.
35. Worked Hard	3.4	4.4	1.0	Avg.	High	Avg.	High
36. Strong Desire to Take Course	3.8	4.3	0.5	Avg.	High Avg.	----	----
37. Would Like Instructor Again	4.3	4.3	0.0	High Avg.	High Avg.	High Avg.	Avg.
38. Improved Attitude Toward Field	3.5	3.9	0.4	Avg.	Avg.	Low Avg.	Low Avg.
Sum of Means	15.0	16.9	1.9				
Mean Average	3.8	4.2	0.4	Avg.	High Avg.	Avg.	High Avg.

¹Experimental mean minus control mean equals difference.

IDEA REPORT
Part IV Methods
Chester - Classes 025-015

Question Number	Control Mean	Experimental Mean	Difference ¹	Difference From A Similar Course Mean ²		Translation ³		
				Control	Exper.	Control	Exper.	
A. Involving Students								
1. Promoting Teacher Student Discussion	3.3	3.2	-0.1	-0.4	-0.7	Low	Low	
2. Helped Students Answer Own Questions	3.3	3.5	0.2	-0.2	-0.1	Medium	Medium	
3. Encouraged Students to Express Themselves	4.1	3.6	-0.5	0.1	-0.5	Medium	Low	
5. Changed Approaches to Meet New Situations	3.4	2.8	-0.6	-0.1	-0.8	Medium	Low	
11. Explained Reasons for Criticisms	2.2	2.1	-0.1	-0.9	-1.1	Low	Low	
13. Encouraged Comments Even if Irrelevant	3.9	2.9	-1.0	0.2	-0.9	Medium	Low	
Sum of Means	20.2	18.1	-2.1	--	--	--	--	
Mean Average	3.4	3.0	-0.4	--	--	--	--	
B. Communicating Content and Purpose								
8. Demonstrated the Significance of the Subject	4.3	4.0	-0.3	0.2	-0.2	Medium	Medium	
10. Made it Clear How Each Topic Fit	4.0	3.9	-0.1	0.1	-0.2	Medium	Medium	
14. Summarized in Ways Which Aided Retention	3.4	3.3	-0.1	-0.2	-0.4	Medium	Low	
16. Clearly Stated Objectives of the Course	4.6	4.2	-0.4	0.6	0.1	High	Medium	
17. Explained Course Material Clearly	4.0	3.5	-0.5	0.1	-0.6	Medium	Low	
18. Related Material to Real Life Situation	4.2	3.7	-0.5	0.0	-0.6	Medium	Low	
Sum of Means	24.5	22.6	-1.9	--	--	--	--	
Mean Average	4.1	3.8	-0.3	--	--	--	--	
C. Creating Enthusiasm								
4. ⁴ Seemed Enthusiastic About the Subject Matter	3.4	3.9	0.5	-0.9	-0.6	Low	Low	
7. Spoke With Expressiveness and Variety	3.8	3.8	0.0	-0.2	-0.3	Medium	Low	
(9.) Made Dry and Dull Presentations	*(2.4)	*(1.8)	(-0.6)	(0.4)	(-0.0)	(High)	(Medium)	
15. Stimulated Students to High Intellectual Effort	3.1	3.3	0.2	-0.1	0.2	Medium	Medium	
20. Introduced Stimulating Ideas About the Subject	2.9	2.7	-0.2	-0.8	-1.2	Low	Low	
Sum of Means	*13.2	*13.7	*0.5	--	--	--	--	
Mean Average	*3.3	*3.4	*0.1	--	--	--	--	

Part IV Methods (Continued)
Chester - Classes 025-015

Question Number	Control Mean	Experimental Mean	Difference ¹	Difference From A Similar Course Mean ²		Translation ³	
				Control	Exper.	Control	Exper.
D. Preparing Examinations							
(6.) ⁴ Gave Exams Stressing Unnecessary Memorization	(1.4)	(1.8)	(0.4)	-0.8	-0.3	(Low)	(Low)
(12.) Gave Examination Questions Which Were Unclear	(1.8)	(2.9)	(1.1)	-0.3	0.8	(Low)	(High)
(19.) Exam Questions Were Unreasonably Detailed	(1.5)	(3.1)	(1.5)	-0.7	1.0	(Low)	(High)
Sum of Means	(7.1)	(9.6)	(-2.5)				
Mean Average	(1.8)	(2.4)	(-0.6)				

¹Experimental mean minus control mean equals difference.

²This is the difference in relative frequency between the average for your class and the average for similar classes. The difference is calculated for each item by subtracting the mean for the appropriate comparative group from the means of your ratings. (Extracted from "Idea" Interpretive Guide, published by Kansas State, 1976, p. 8.)

³Translation interprets the difference between the frequency with which you used a given teaching method and the frequency with which that method is typically used in similar courses. "High" is printed if the instructor's mean is 0.3 or more above the mean for similar courses. This suggests that the instructor used that method or engaged in that behavior more frequently than did most instructors teaching similar classes. It was decided to use 0.3 to make this determination because the standard error of measurement for most of these items was approximately 0.3. For most items, "High" (4 or 5) is desirable. For the four items in parenthesis, however, low ratings (1 or 2) are considered desirable. Thus, for item (9) Made Dry and Dull Presentations, Professor A's "(Low)" rating is desirable. (Extracted from "Idea" Interpretive Guide, published by Kansas State, 1976, p. 8.)

⁴The parentheses refers to items where low scores are desirable. Applies to questions (9), (6), (12), and (19).

*C. (9) excluded from "C" sum of means; included in "D" sum of means.

IDEA REPORT
Part V Additional Questions
Chester - Classes 025-015

Item	Complete Question	1		2		3		4		5		Omit		Control Mean %	Exper. Mean %	Differ- ence ¹ %
		C	E	C	E	C	E	C	E	C	E	C	E			
40.	How many whole classes have you missed during the course _____? 1. none 2. one 3. two 4. three 5. four or more	29	68	29	27	19	0	5	0	19	5	0	0	2.6	1.5	-1.1
41.	Your attendance in this course was _____ than other courses: 1. much lower 3. no different 5. much higher 2. lower 4. higher	0	5	14	5	62	50	14	32	5	9	5	0	3.1	3.4	0.3
42.	Which of the following was the most important in determining whether or not you studied the reading assignments. 1. The class/material was interesting 2. The instructor expected it 3. Feelings of responsibility for your group 4. Expectations of your group 5. To help earn a better grade	14	23	0	5	10	14	0	5	76	50	0	5	4.2	3.6	-0.6
43.	Which of the following was the most important in determining how much effort you put into the course? 1. The class/material was interesting 2. The instructor expected it 3. Feelings of responsibility for your group 4. Expectations of your group 5. To help earn a better grade	19	14	0	5	5	14	0	0	76	68	0	0	4.1	4.0	-0.1
44.	Which of the following was the most important in determining whether or not you attended class, particularly on days when you had (or could have had) a good reason not to? 1. The class/material was interesting 2. The instructor expected it 3. Feelings of responsibility for your group 4. Expectations of your group 5. To help earn a better grade	0	9	19	0	10	18	0	18	71	50	0	5	4.2	4.0	-0.2

Part V Additional Questions (Continued)
Chester - Classes 025-015

Item	Complete Question	1		2		3		4		5		Omit		Control Mean %	Exper. Mean %	Differ- ence ¹ %
		C	E	C	E	C	E	C	E	C	E	C	E			
45.	Which of the following most accurately describes the impact of the <u>large size of your class</u> on what you gained from taking the course? 1. It helped (e.g., provided illustrations of course concepts such as individual vs. group scores on mini-tests) more than it hurt (e.g., less opportunity to participate in total class discussion) 2. It both helped and hurt (about equally) 3. Didn't have much effect 4. Hurt more than it helped 5. Hurt a great deal	5	55	5	14	81	27	10	0	0	0	0	5	3.0	1.7	-1.3
46.	All things considered, how would you rate the instructor compared to all other instructors you have had? 1. Top 10% 2. Next 20% 3. Middle 40% 4. Next 20% 5. Bottom 10%	48	41	29	41	19	9	0	0	5	5	0	5	1.9	1.8	-0.1
47.	All things considered, how would you rate the course compared to all other courses you have had? 1. Top 10% 2. Next 20% 3. Middle 40% 4. Next 20% 5. Bottom 10%	29	27	29	45	24	14	10	0	10	9	0	5	2.4	2.1	-0.3

¹Experimental mean minus control mean equals difference.

²All quantity numbers are expressed as percent.

IDEA REPORT
Part VI Diagnostic Summary
Chester - Classes 025-015

Student's Progress	Objective Importance	Rating	Weakness Highly Relevant
<u>Control Class 025</u>			
21. Factual Knowledge	Essential	Low Avg.	
22. Principles & Theories	Essential	Low Avg.	9
24. Professional Skills & Viewpoint	Important	Low Avg.	20
23. Thinking & Problem Solving	Essential	Avg.	20
27. Personal Responsibility	Important	Avg.	20, 9
29. Effective Communication	Important	Avg.	
<u>Experimental Class 015</u>			
22. Principles & Theories	Essential	Low	5, 17, 14
21. Factual Knowledge	Essential	Low Avg.	17, 14
23. Thinking & Problem Solving	Essential	Low Avg.	20, 5
24. Professional Skills & Viewpoint	Important	Low Avg.	20, 5
27. Personal Responsibility	Important	Avg.	20, 5
29. Effective Communication	Important	Avg.	

IDEA REPORT
Part VII Summary Profile
Chester - Classes 025-015

	Comparison Group	Control Percentile Rank	Experimental Percentile Rank	Difference ¹
<u>Outcomes</u>				
Overall Evaluation (Progress on Relevant Objectives) E=21, 22, 23 I=24, 27, 29	All Courses	22	26	04
	Similar Courses	16	10	-06
Would Like Instructor Again	All Courses	70	70	00
	Similar Courses	75	56	-19
Improved Attitude Toward Field	All Courses	29	54	25
	Similar Courses	18	24	06
<u>Methods</u>				
Involving Students	All Courses	26	10	-16
	Similar Courses	31	7	-24
Communicating Content and Purpose	All Courses	60	36	-24
	Similar Courses	61	18	-43
Creating Enthusiasm	All Courses	19	29	10
	Similar Courses	16	13	-03
Preparing Examinations	All Courses	75	16	-59
	Similar Courses	88	11	-77

¹Experimental percentile minus control percentile equals difference.

IDEA REPORT
Part I Evaluation (Progress Ratings)
Jeter - Classes 430-445

Question Number	Control Mean	Experimental Mean	Difference ¹	Comparison With			
				All Courses		Similar Courses	
				Control	Exper.	Control	Exper.
A. Subject Matter Mastery							
21. ** Factual-Knowledge	4.1	4.0	-0.1	High Avg.	High Avg.	High Avg.	Avg.
22. ** Principles & Theories	3.9	4.1	0.2	High Avg.	High Avg.	Avg.	High Avg.
24. * Professional Skills & Viewpoints	3.8	4.0	0.2	Avg.	High Avg.	Avg.	High Avg.
B. Development of General Skills							
23. ** Thinking & Problem Solving	3.9	4.0	0.1	High Avg.	High Avg.	Avg.	High Avg.
29. * Effective Communication	2.7	2.9	0.2	Avg.	Avg.	Avg.	Avg.
C. Personal Development							
27. * Personal Responsibility	4.0	4.0	0.0	High Avg.	High Avg.	High Avg.	High Avg.
Overall Evaluation (Progress on Relevant Objectives)				Avg.	High Avg.	Avg.	High Avg.
Sum of Means	22.7	23.0	0.3				
Mean Average	3.7	3.8	0.1				

¹Experimental mean minus control mean equals difference.

**Professors rated the objective as essential.

*Professors rated the objective as important.

IDEA REPORT
Part II Course Description
Jeter - Classes 430-445

Question Number	Control Mean	Experimental Mean	Difference ¹	Comparison With			
				All Courses		Similar Courses	
				Control	Exper.	Control	Exper.
31. Amount of Reading	3.6	3.8	0.2	High Avg.	High Avg.	High Avg.	High Avg.
32. Amount of Other Work (Non-reading)	4.1	4.2	0.1	High	High	High	High
33. Difficulty of Subject Matter	3.6	3.8	0.2	High Avg.	High Avg.	High Avg.	High Avg.
34. Content Integration	3.8	4.0	0.2	Avg.	High Avg.	Avg.	Avg.
Sum of Means	15.1	15.8	0.7				
Mean Average	3.8	4.0	0.2	High Avg.	High Avg.	High Avg.	High Avg.

¹Experimental mean minus control mean equals difference.

IDEA REPORT
Part III Students' Self Ratings
Jeter - Classes 430-445

Question Number	Control Mean	Experimental Mean	Difference ¹	Comparison With			
				All Courses		Similar Courses	
				Control	Exper.	Control	Exper.
35. Worked Hard	4.2	4.3	0.1	High	High	High Avg.	High
36. Strong Desire to Take Course	4.1	4.2	0.1	High Avg.	High Avg.	----	----
37. Would Like Instructor Again	4.0	4.4	0.4	Avg.	High Avg.	Avg.	Avg.
38. Improved Attitude Toward Field	4.0	4.2	0.2	Avg.	High Avg.	Avg.	Avg.
Sum of Means	16.3	17.1	0.8				
Mean Average	4.1	4.3	0.2	High Avg.	High	High Avg.	High

¹Experimental mean minus control mean equals difference.

IDEA REPORT
Part IV Methods
Jeter - Classes 430-445

Question Number	Control Mean	Experimental Mean	Difference ¹	Difference From A Similar Course Mean ²		Translation ³		
				Control	Exper.	Control	Exper.	
A. Involving Students								
1. Promoting Teacher Student Discussion	3.4	3.5	0.1	-0.5	-0.4	Low	Low	
2. Helped Students Answer Own Questions	3.1	4.2	1.1	-0.5	0.5	Low	High	
3. Encouraged Students to Express Themselves	3.7	4.0	0.3	-0.5	-0.1	Low	Medium	
5. Changed Approaches to Meet New Situations	3.6	3.9	0.3	-0.0	0.2	Medium	Medium	
11. Explained Reasons for Criticisms	2.9	3.6	0.7	-0.4	0.4	Low	High	
13. Encouraged Comments Even if Irrelevant	3.5	4.0	0.5	-0.3	0.2	Low	Medium	
Sum of Means	20.2	23.2	3.0	--	--	--	--	
Mean Average	3.4	3.9	.5	--	--	--	--	
B. Communicating Content and Purpose								
8. Demonstrated the Significance of the Subject	4.3	4.1	-0.2	0.0	-0.1	Medium	Medium	
10. Made it Clear How Each Topic Fit	4.1	4.3	0.2	-0.0	0.2	Medium	Medium	
14. Summarized in Ways Which Aided Retention	3.9	3.7	-0.2	0.1	-0.0	Medium	Medium	
16. Clearly Stated Objectives of the Course	4.4	4.6	0.2	0.3	0.4	High	High	
17. Explained Course Material Clearly	4.5	4.5	0.0	0.4	0.3	High	High	
18. Related Material to Real Life Situation	4.5	4.5	0.0	0.2	0.2	Medium	Medium	
Sum of Means	25.7	25.7	0.0	--	--	--	--	
Mean Average	4.3	4.3	0.0	--	--	--	--	
C. Creating Enthusiasm								
4. ⁴ Seemed Enthusiastic About the Subject Matter	4.2	4.3	0.1	-0.3	-0.2	Low	Medium	
7. Spoke With Expressiveness and Variety	4.0	4.4	0.4	-0.1	0.3	Medium	High	
(9.) Made Dry and Dull Presentations	*(1.4)	*(1.5)	(1.1)	(-0.4)	(-0.3)	(Low)	(Low)	
15. Stimulated Students to High Intellectual Effort	3.9	3.6	-0.3	0.4	0.1	High	Medium	
20. Introduced Stimulating Ideas About the Subject	3.7	3.6	-0.1	-0.2	-0.3	Medium	Low	
Sum of Means	*15.8	15.9	0.1	--	--	--	--	
Mean Average	*4.0	4.0	0.0	--	--	--	--	

Part IV Methods (Continued)
Jeter - Classes 430-445

Question Number	Control Mean	Experimental Mean	Difference ¹	Difference From A Similar Course Mean ²		Translation ³	
				Control	Exper.	Control	Exper.
D. Preparing Examinations							
(6.) ⁴ Gave Exams Stressing Unnecessary Memorization	(1.7)	(1.8)	(0.1)	(-0.3)	(-0.2)	(Low)	(Medium)
(12.) Gave Examination Questions Which Were Unclear	(1.7)	(2.2)	(0.5)	(-0.3)	(0.2)	(Low)	(Medium)
(19.) Exam Questions Were Unreasonably Detailed	(1.9)	(1.7)	(-0.2)	(-0.2)	(-0.4)	(Medium)	(Low)
Sum of Means	*(6.7)	(7.2)	(0.5)	--	--	--	--
Mean Average	*(1.7)	(1.8)	(0.1)	--	--	--	--

¹Experimental mean minus control mean equals difference.

²This is the difference in relative frequency between the average for your class and the average for similar classes. The difference is calculated for each item by subtracting the mean for the appropriate comparative group from the means of your ratings. (Extracted from "Idea" Interpretive Guide, published by Kansas State, 1976, p. 8.)

³Translation interprets the difference between the frequency with which you used a given teaching method and the frequency with which that method is typically used in similar courses. "High" is printed if the instructor's mean is 0.3 or more above the mean for similar courses. This suggests that the instructor used that method or engaged in that behavior more frequently than did most instructors teaching similar classes. It was decided to use 0.3 to make this determination because the standard error of measurement for most of these items was approximately 0.3. For most items, "High" (4 or 5) is desirable. For the four items in parenthesis, however, low ratings (1 or 2) are considered desirable. Thus, for item (9) Made Dry and Dull Presentations, Professor A's "(Low)" rating is desirable. (Extracted from "Idea" Interpretive Guide, published by Kansas State, 1976, p. 8.)

⁴The parentheses refers to items where low scores are desirable. Applies to questions (9), (6), (12), and (19).

*Excluded from "C" sum of means; included in "D" sum of means.

IDEA REPORT
Part V Additional Questions
Jeter - Classes 430-445

Item	Complete Question	<u>1</u>		<u>2</u>		<u>3</u>		<u>4</u>		<u>5</u>		<u>Omit</u>		Control Mean %	Exper. Mean %	Differ- ence ¹ %
		C	E	C	E	C	E	C	E	C	E	C	E			
40.	How many whole classes have you missed during the course _____? 1. none 2. one 3. two 4. three 5. four or more	11	22	7	13	25	30	36	9	21	26	0	0	3.5	3.0	-0.5
41.	Your attendance in this course was ____ than other courses: 1. much lower 3. no different 5. much higher 2. lower 4. higher	0	0	11	4	46	70	29	22	14	4	0	0	3.5	3.3	-0.2
42.	Which of the following was the most important in determining whether or not you studied the reading assignments. 1. The class/material was interesting 2. The instructor expected it 3. Feelings of responsibility for your group 4. Expectations of your group 5. To help earn a better grade	0	4	11	9	4	13	0	13	82	57	4	4	4.6	4.1	-0.5
43.	Which of the following was the most important in determining how much effort you put into the course? 1. The class/material was interesting 2. The instructor expected it 3. Feelings of responsibility for your group 4. Expectations of your group 5. To help earn a better grade	14	9	14	4	4	9	0	9	68	70	0	0	3.9	4.3	0.4
44.	Which of the following was the most important in determining whether or not you attended class, particularly on days when you had (or could have had) a good reason not to? 1. The class/material was interesting 2. The instructor expected it 3. Feelings of responsibility for your group 4. Expectations of your group 5. To help earn a better grade	11	13	29	13	4	22	0	0	57	52	0	0	3.6	3.7	0.1

Part V Additional Questions (Continued)
Jeter - Classes 430-445

Item	Complete Question	<u>1</u>		<u>2</u>		<u>3</u>		<u>4</u>		<u>5</u>		Omit C E	Control Mean %	Exper. Mean %	Differ- ence ¹ %	
		C	E	C	E	C	E	C	E	C	E					
45.	Which of the following most accurately describes the impact of the large size of <u>your class</u> on what you gained from taking the course? 1. It helped (e.g., provided illustrations of course concepts such as individual vs. group scores on mini-tests) more than it hurt (e.g., less opportunity to participate in total class discussion) 2. It both helped and hurt (about equally) 3. Didn't have much effect 4. Hurt more than it helped 5. Hurt a great deal	14	35	14	17	58	39	4	9	0	0	0	0	2.6	2.2	-0.4
46.	All things considered, how would you rate the instructor compared to all other instructors you have had? 1. Top 10% 2. Next 20% 3. Middle 40% 4. Next 20% 5. Bottom 10%	68	70	25	13	7	13	0	4	0	0	0	0	1.4	1.5	1.1
47.	All things considered, how would you rate the course compared to all other courses you have had? 1. Top 10% 2. Next 20% 3. Middle 40% 4. Next 20% 5. Bottom 10%	61	65	25	9	7	22	4	0	0	0	4	4	1.5	1.5	0.0

¹Experimental mean minus control mean equals difference.

²All quantity numbers are expressed as percent.

IDEA REPORT
Part VI Diagnostic Summary
Jeter - Classes 430-445

Student's Progress	Objective Importance	Rating	Weakness Highly Relevant
<u>Control Class 430</u>			
22. Principles & Theories	Essential	Avg.	2
23. Thinking & Problem Solving	Essential	Avg.	2
24. Professional Skills & Viewpoint	Important	Avg.	2
29. Effective Communication	Important	Avg.	2
21. Factual Knowledge	Essential	High Avg.	*
27. Personal Responsibility	Important	High Avg.	*
<u>Experimental Class 445</u>			
21. Factual Knowledge	Essential	Avg.	---
29. Effective Communication	Important	Avg.	---
22. Principles & Theories	Essential	High Avg.	*
23. Thinking & Problem Solving	Essential	High Avg.	*
24. Professional Skills & Viewpoint	Important	High Avg.	*
27. Personal Responsibility	Important	High Avg.	*

*Favorable Progress: Present Methods Effective

IDEA REPORT
Part VII Summary Profile
Jeter - Classes 430-445

	Comparison Group	Control Percentile Rank	Experimental Percentile Rank	Difference ¹
<u>Outcomes</u>				
Overall Evaluation (Progress on Relevant Objectives) E=21, 22, 23 I=24, 27, 29	All Courses	68	77	09
	Similar Courses	60	71	11
Would Like Instructor Again	All Courses	53	76	23
	Similar Courses	34	65	31
Improved Attitude Toward Field	All Courses	61	73	12
	Similar Courses	32	54	22
<u>Methods</u>				
Involving Students	All Courses	26	63	37
	Similar Courses	20	62	42
Communicating Content and Purpose	All Courses	77	77	00
	Similar Courses	66	66	00
Creating Enthusiasm	All Courses	65	65	00
	Similar Courses	51	51	00
Preparing Examinations	All Courses	61	54	-07
	Similar Courses	65	57	-08

¹Experimental percentile minus control percentile equals difference.

APPENDIX X

INSTRUCTORS' LETTERS OF IMPRESSIONS OF THE
GROUP TEACHING EXPERIMENT

Department of Business



2800 West Gore Blvd.

Lawton, Oklahoma 73505

TO: Jack Amyx, James Chester, John Jeter

FROM: Wayne R. Wilson *Wayne R. Wilson*

DATE: February 2, 1982

SUBJECT: Accounting Field Experiment

Gentlemen, I wish to express my appreciation for your many hours of hard work that you willingly devoted to the accounting field experiment. You are truly the professional's professional educators.

It is my belief that the data gathered will add to the body of knowledge in the fields of education, management, and marketing.

I would like for you to provide in writing your perceptions and thoughts for inclusion in my dissertation to the following questions.

1. Your perceptions of the project during explanation and preparation for the experiment; prior to actual start of classes.
2. Your perceptions and thoughts while the class was being conducted.
3. Your personal evaluation of the field experiment with the full understanding you have not been provided access to data gathered. Later you will be provided the data and given an opportunity to respond.
4. Do you plan to or are presently using any of the methods used with the experimental group.
5. Your permission for use of your name in the dissertation.

I shall consider it an honor to be associated with people of your caliber and shall strive to reach your standards. Once again, thank you for your support.

Department of Business



2800 West Gore Blvd.

Lawton, Oklahoma 73505

TO: Mr. Wayne Wilson

FROM: Jack Anyx *Jack Anyx*

DATE: May 13, 1982

SUBJECT: Impressions of the Group Teaching Experiment

My participation with you and your study in the group teaching experiment proved to be a unique experience for me. I am happy to provide you with some reactions to my experiences in the Principles of Accounting I class.

1. I got to know the students in the experimental class on a more personal basis than I would have in the traditional lecture and question/answer setting. In the process of responding to a group question I would often be told other extraneous information or would hear the exchange of information between group members. Often, the points would go beyond the class material and involve comments which allowed me to share a part of their personal feelings.
2. The students in the experimental class got to talk with me in a more informal manner and, I think, got to become acquainted with me in a less "official" manner. I have no idea how this may have affected their perception of me or their attitude toward me.
3. The in-class demand on me for help in the experimental class seemed to be a "feast or famine" situation. There were times when no group asked me questions. However, my impression is that when we did reach a problem area, that I was wanted by several groups at approximately the same time. I believe there may have been a little frustration at times when a group could not get their question immediately answered by me.
4. I had difficulty in having the experimental class members follow my request that any questions I answered would be group questions--not individual questions. I believe the group-question requirement may have caused some frustration to some students during those times when I was not "busy" with another group, but would still respond to a question only after they had exhausted their group resources.

• Mr. Wayne Wilson
May 13, 1982
Page 2

5. The group setting was very good for the "how to" part of the course, but I feel that the average and below average student still did not pick up any added understanding of the theory of accounting by being in the group setting. I'm not sure they were hurt on the understanding of accounting theory by being in the group setting, but I don't believe the average student was greatly helped. On the other hand, the above-average student had a chance to reinforce his understanding of the application of accounting by helping to explain troublesome areas to other students in his group. However, there were still areas of theory which even the above-average student did not grasp without asking a question about it and having some instructor help.
6. I believe that there was no significant difference between the two classes (experimental and control) in the level of letter grades assigned for the semester grades, nor in the number of students who withdrew from the course. The experimental group had 15 A's and B's assigned, while the control group had 13. There were the same number of D's and F's in both groups. The experimental class had 14 students withdraw during the semester while the control class had 12. My personal observation is that I seldom have two sections which conclude with such similar grade distributions, with the experimental class having a 2.38 class average and the control class averaging 2.24.
7. The groups within the experimental class were very different from each other in their process of operation. Students were randomly assigned to groups, but I made an overt effort to try to get students of similar abilities and backgrounds distributed among all the groups. The groups started with either six or seven members. However, the semester ended with the size of the groups ranging from three to seven. Four groups lost three members each, one group lost two members, and two groups ended the semester with all members still attending class. Also, the groups varied in their approach to the in-class work. One group worked the entire semester as one large discussion group with no one dominant leader. Another group immediately segmented itself into three smaller sub groups to discuss individual situations, while a third group had very little general group discussion until one member asked another for help on a specific problem. Two other groups each worked as one large

Mr. Wayne Wilson
May 13, 1982
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discussion group with a dominant leader emerging in each group. However, I felt each group worked in its own way within the general guidelines outlined to them.

8. I plan to use some form of group work in my future accounting classes. Since it is a principles class, I plan to structure it so it will have a little more instructor-directed discussion on the beginning theory section and on three or four other areas where students traditionally have problems grasping the theory.

I enjoyed working as a part of the experiment. I think I learned from it and I believe it will modify my approach and method of teaching in the future.

vj

Department of Business



2800 West Gore Blvd.

Lawton, Oklahoma 73505

January 20, 1982

Mr. Wayne Wilson
Assistant Professor of Management
Cameron University
Lawton, Oklahoma 73505

Dear Wayne:

The purpose of this communication is to share a few of my observations with you after having completed the recent research in group participation as a method of presenting Accounting I at Cameron University.

Needless to say, I did have my reservations in regards to presenting Accounting to freshmen students utilizing this methodology. My bias was derived from the preconceived notion that the approach would not reflect the true learning of the students in this type subject matter. Fortunately, the experience has alleviated those past fears.

The following observations were noted by this instructor during the course of instruction. I realize no empirical evidence is available to back up some of the following statements, but nevertheless, there could be some elements in these observations that could trigger creative thought in others interested in this type research.

- a) The experimental group appeared more relaxed and seemed to enjoy the classroom environment to a greater degree than the control.
- b) Student attrition seemed rather low in the experimental group (20%) as compared with the control (33%) and a national figure (40%).
- c) The experimental group was more prepared to discuss homework assignments than the control.
- d) The instructor was able to cover all the necessary material in the experimental group and was not able to cover the last chapter in the control group.
- e) The grades were higher in the experimental group (Mean = 2.78) as compared with the control (Mean = 2.56).

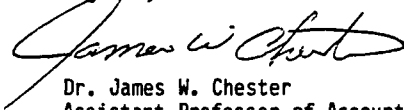
Mr. Wayne Wilson
January 20, 1982
Page 2

It appears to be very obvious that some of the differences previously mentioned were caused by the interaction in the experimental group which was evidently lacking in the control.

Currently, I am teaching a section of Principles of Accounting I. It is my pleasure to report to you that I am trying the group methodology again. Perhaps this method of instruction will aid in removing Accounting Instructors out of their 12th century form of presentation of subject matter.

Good luck in your research!

Regards,

A handwritten signature in cursive script, appearing to read "James W. Chester".

Dr. James W. Chester
Assistant Professor of Accounting

Department of Business



2800 West Gore Blvd.

Lawton, Oklahoma 73505

TO: Wayne Wilson
FROM: John Jeter
DATE: March 30, 1982

SUBJECT: Evaluation of Accounting Field Experiment

Perceptions Prior to Start:

I had employed the group method in my business policy classes, therefore, I was somewhat familiar with the idea. However, the approach was so radically different from the traditional methods of accounting instruction that I was very skeptical at first. In fact, I felt the whole idea of "group work" was ill-suited for accounting instruction at the principles level.

Perceptions During Experiment:

My initial skepticism began to lessen as the students began to understand the idea behind the experiment. For the most part, they became very enthusiastic. As class proceeded, I began to enjoy the rapport within the class. It seemed that many of the normal barriers were broken. The students seemed more relaxed and uninhibited with their questions and ideas. While this was evident within the groups, it was especially evident between the groups and myself. The only negative feelings I had during the experiment was the fact that a student could do failing work on the individual level and still pass the course because of the group grade. This may have been peculiar to my class. The students assigned a high value to the group grade (35%).

General Impression of the Experiment:

I feel that the experimental class performed at least as well if not better than the control group. They certainly seemed to enjoy the class more. I also feel the mini-tests were a very valuable tool. They provided a constant incentive within the group to study and prepare. This "lack of incentive" is a constant problem in our beginning accounting classes.

Page 2
March 30, 1982

At the start I had some serious doubts about the experiment. Looking back, however, I find most of those doubts have been erased and I am left with a favorable impression of the idea of group process in the accounting classroom. I am using a group approach in my business policy classes this semester, and I plan on adopting it in the future in other accounting classes.