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A STUDY OF SELECTED VARIABLES IN THE ACHIEVEMENT OF COMMUNITY COLLEGE STUDENTS FROM DIFFERENT BUSINESS OFFICE EDUCATION INSTRUCTIONAL PROGRAMS

by

Bella Mildred Gilchrist Reddick

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
(Education)
in The University of Michigan
1972

Doctoral Committee:

Professor Malcolm A. Lowther, Chairman
Professor Rutherford E. Lockette
Professor Elton B. McNeil
Associate Professor Betty M. Morrison

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CHAPTER I

INTRODUCTION

Background of the Problem

The two-year community or junior college is one of the most significant developments in American education in the twentieth century. The terms community college, junior college and two-year college are often used interchangeably. Originally, the term junior college referred to a college that offered the first two years of a four-year degree program, the term, however, is seldom used in this narrow sense. While it is possible to trace the conceptual roots of the community college back to colonial days and its institutional roots to the mid-nineteenth century, the period of greatest and most rapid development of this type of post-secondary education has been since the end of World War II.

The relatively recent emergence and rapid growth of the community college is the direct result of an educational void which was not filled by other types of training or educational institutions. Two major forces have been particularly

instrumental in its development. One is the popularization of the idea that in an affluent democracy, college education should be available to the largest possible number of individuals. The other is that in an increasingly complex and technological society there is a need for more educated and more highly trained workers of all kinds for various occupational levels, especially the levels classified as semi-professional, technical and skilled.

Because of the influence of these two forces, the community college has become an institution which offers both liberal arts and science courses and one- and two-year terminal technical and non-technical programs. Other types of programs offered include remedial-developmental courses for the upgrading of basic academic skills and community service courses and programs of various kinds in response to local community needs.

The present community college movement reflects the faith of the American people in the value of education. The following statement by Hannah (1968) reflects public sentiment toward the two-year college movement:

> One of the most dynamic movements in American higher education today is the development of junior colleges. This should not be considered as isolated phenomenon; it is instead the renewed outbreak of the determination of the American people to have the benefits of education. It is a heartening indication of the

> strength of our democratic philosophy, encouraging evidence that we as a people intend to make continuing progress towards the realization of our ideal of equality in educational opportunity.

The rapid increase in the number of community colleges and the proliferation of courses and programs offered has been accompanied by increasingly flexible admissions practices in most publicly sponsored colleges. Many two-year colleges today enroll a high percentage of students who could not meet the standard admissions criteria of most four-year colleges and universities, such as successful completion of a college preparatory curriculum in high school and above-average standardized test scores. Consequently, community colleges enroll many marginal students who view college attendance as a necessary and logical extension of their earlier schooling but whose previous academic performance would permit only very guarded predictions of college success. In recent years, many community colleges have been actively recruiting students from among the poor, minorities, and ill-prepared. However, it must be pointed out that every two-year college enrolls some very able students who choose to attend for reasons such as cost, proximity, opportunity, and so on. Also some of these high-ability individuals may not have demonstrated their academic potential in high school and would not, therefore, have qualified for admission to selective institutions.

Community colleges have evolved their own modes of operation, distinct from most other institutions of higher education, because of the unique role they are attempting to serve. Notably, most community colleges have as one of their philosophical objectives the "open-door" policy of admissions. The implementation of this policy means that community colleges with this policy frequently depart from traditional collegiate procedures in many unique ways. One obvious result of the open-door policy is a student body with a broad range of abilities, interests, experiences, and needs. It follows that traditional curriculum and instructional procedures may not adequately serve such a diverse student population.

Dwyer (1966) has stated, "The open-door policy of admissions has implications which the colleges have not realistically faced. Purpose or philosophy must dictate practice." A review of the literature on admission policies of public two-year colleges reveals that the concept of openness has at least four interpretations. For example, a completely nonselective policy of admissions is suggested by Clark (1960): "In effect, the junior college is expected to admit all applicants, without regard to ability, type of curriculum completed in high school, or any other aspect of background."

A second more selective interpretation is described by Thornton (1966): "The basic admission policy of many community junior colleges is starkly simple: 'any high school

graduate, or any person over 18 years of age who seems capable of profiting by the instruction, is eligible for admission.'"

A third interpretation, even more selective, is just as firmly stated by Reynolds (1965): "The Junior College with an open-door policy sets an absolute minimum, graduation from high school, for admission."

A fourth interpretation is expressed by O'Connell (1968): "At Berkshire we don't quite have an 'open-door' but we do admit any high school graduate who looks to us like a reasonably good bet to do the job in one program or other at our college."

It is clear then that the openness of the open-door varies greatly. Consequently, the students of community colleges today, full- or part-time, day or evening enrollees, comprise a very diverse group in terms of academic preparedness and/or ability, socio-economic status, cultural background, interests, personality characteristics, and age range. Also, their ideas about themselves and the society in which they live and their reasons for attending college and their perceptions of the college may differ widely from students at four-year selective institutions.

Institutional Responses to Diverse Student Populations

Heterogeneity of the student body may be very desirable, as Riesman (1963) has argued, but it places an extra and necessary responsibility on college administrators and faculty to

know and understand their student population in all its diversity. The same skills of expression and communication for all students, the same manipulation of figures, and the same understanding of man's role in history may be desirable, but the effectiveness of such a curriculum under an open-door policy of admissions depends to a large extent on the degree to which the institution is able to take each student from his present level of achievement and move him toward his ultimate educational goal.

Observations such as those indicated above lead one to a consideration of instructional programs which have been developed to accommodate the needs of students with a variety of personal and vocational goals; students from different socio-economic and cultural backgrounds; students with different personality characteristics; students with different types of academic preparedness; and other interests.

Historically, curriculum and instructional responses to accommodate the educational and training needs of students have been standardized to the point where objectives are basically the same for all members of the group and where there is an attempt to cause the levels of learning of all students to approach homogeneity.

However, during the past decade, change and innovation have been hallmarks of education. Attempts of community

college educators to accommodate the learner's unique needs have resulted in application of new educational technological systems. For example, there has been a concentrated effort to improve education by making it more relevant through the use of procedures such as programmed instruction, television instruction, audio-visual-tutorial instruction, simulated instruction, and computer assisted instruction to name but a few. All of these procedures are geared toward the need to treat the learner as an individual. Thus, they are frequently called learner-centered approaches to instruction. A learner-centered approach to instruction refers to allowing for adjustment of instruction to the student's pace of learning, his style of learning, his selection of the learning content, or to all three.

It is not uncommon to find in many community colleges that the office occupations programs often attract many educationally disadvantaged students who have not demonstrated high academic capabilities in high school. One response to these students has been wide integration of various learner-centered approaches in the vocational office preparation sequences. Two examples of instructional approaches used by business educators which place emphasis on individualized instruction are: (1) audio-visual-tutorial instruction; and (2) simulated instruction. Audio-visual-tutorial instruction

is a method of learning in which primary instruction is presented by the use of audio-visual media to one student at a time with additional assistance available from a tutor when needed. Simulated instruction is an approach which is completely individualized. The learning objectives are specified for each learner and these are diverse among the members of the entire group. In both the audio-visual-tutorial and the simulated instructional methods, there is the opportunity for each learner to pursue investigations and study according to his own particular interests; to try out previous learnings on his own; to derive conclusions based on his own particular style of problem solving. The basic differences in the two types of approaches are in classroom organization, teaching techniques, instructional materials, facility utilization, learning experiences provided for the learner, and evaluation procedures.

In general, community college office occupations instructional programs are to be commended for the individual attention they give their students, particularly those business and office education programs placing emphasis on instructional approaches which are learner-centered. However, learning does not occur merely because of the instructional approaches; it occurs through the interplay of many significant environmental forces. Fox, Luskzi, Schmuck (1966) reported that many factors within the classroom environment

can affect a student's motivation to learn. These factors include: (1) how students feel about their class; (2) how interested and diligent they see themselves as students; (3) how attracted are students to schoolwork, teachers and one another; (4) how students evaluate each other in terms of social and learning objectives; (5) how students perceive their peers' attitudes.

In summary, the nature of the students attending the community college presents serious challenges to the business and office educator in that they represent a conglomeration of individual differences, academic abilities, needs (both occupational and transfer), and socio-economic strata. Although these situations are encouraged by the "open-door" policy of admission which characterizes the majority of these institutions, the fact that such variables do exist places unique demands and challenges upon the business educator. Because of the nature of its student body, more than any thing else, the teacher must be student oriented. The office clerical educator must provide classroom experiences and opportunities to match the real activities of the business office as well as meet the needs of the students who enroll in business courses; students whose backgrounds are varied.

If it could be determined that characteristics other than previous grades and standardized test scores are significantly related to achievement, this information could be

useful in developing teaching strategies and learning environments that creatively nurture academic potential and personal development.

Therefore, a study of selected variables in the achievement of office occupations students from three different instructional programs (audio-visual-tutorial, simulated, and traditional) proposes to provide some insights into how community colleges deal with students for whom traditional measures of ability may not be appropriate.

Statement of the Problem

The purpose of this study is to determine if there are certain teaching methods which are more effective for certain types of students than other types of students.

The major intentions are: (1) to determine which instructional method--audio-visual-tutorial, simulated, or traditional--will appear more favorable to students based on selected variables related to achievement; (2) to determine what effect demographic characteristics have on selected variables related to achievement; and (3) what effect affective characteristics have on selected variables related to achievement. The selected variables are student involvement in the classroom, student interaction in the classroom, student satisfaction with instructors, student satisfaction with their preparation in the training program, student confidence in

ability to achieve in the instructional program, class grade point average, and over-all college grade point average. The study's purpose may be expressed in terms of four significant questions, as follows:

Question I:	Which instructional method, audio-visual-tutorial, simulated, or traditional, is more effective for students?
Question II:	Is there a relationship between family background factors and selected variables related to achievement?
Question III:	Is there a relationship between affective characteristics and selected variables related to achievement?
Question IV:	Is there a relationship between high school grade point average and variables related to achievement?

Significance of the Study

The value of this study rests with its potential for providing empirical data which can be used to compare the audio-visual-tutorial instructional method, the simulated instructional method and the traditional instructional method for preparing students enrolled in office education programs in community colleges. The significance is further enhanced by the fact that there is the need of providing instructional approaches in office education to a student body with diverse

abilities, interests, needs, ages, and experiences in order to help each student obtain his vocational goal.

It is generally agreed that the attitudes and aspirations of students are crucial to the teaching-learning process since student motivation, feelings, and aspirations are related to student learning. Thus, it can be assumed that the findings derived from a comparison of student motivation for school achievement; a comparison of student self-concept of ability; a comparison of student occupational values; a comparison of student attitudes toward life in the classroom; and a comparison of student class achievement and over-all school achievement will hold important implications for further curriculum planning in community college office education programs, regardless of the students' background characteristics and academic preparation.

Hypotheses

Research Hypotheses

The three major hypotheses to be explored in this study are:

Hypothesis 1	Instructional methods will differ in their effectiveness with students.
Hypothesis 2	Demographic characteristics of the students will be related to the effectiveness of instructional methods.

Hypothesis 3 — Affective characteristics of the students will be related to the effectiveness of instructional methods.

Operational Hypotheses

These hypotheses will be stated in null form for the purpose of testing.

Hypothesis 1a* — The mean student involvement scores for students taught using the audio-visual-tutorial, simulated, and traditional methods will differ.

Hypothesis 1b — The mean student interaction scores for students taught using the audio-visual-tutorial, simulated, and traditional methods will differ.

Hypothesis 1c — The mean satisfaction with instructors score for students taught using the audio-visual-tutorial, simulated, and traditional methods will differ.

Hypothesis 1d — The mean satisfaction with training scores for pupils taught using the audio-visual-tutorial, simulated, and traditional methods will differ.

Hypothesis 1e — The mean confidence in ability to achieve scores for students taught using the audio-visual-tutorial, simulated, and traditional methods will differ.

Hypothesis 1f — The mean class grade point average for students taught using audio-visual-tutorial, simulated and traditional methods will differ.

---

*1a = Theoretical Hypothesis, dependent variable.

Hypothesis 1g	The mean over-all school grade point average scores for students taught using the audio-visual-tutorial, simulated, and traditional methods will differ.
Hypothesis $2a_1$*	The mean student involvement scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to father's education.
Hypotheses $2b_1$	The mean student interaction scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to father's education.
Hypothesis $2c_1$	The mean student satisfaction with instructors score for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to father's education.
Hypothesis $2d_1$	The mean student satisfaction with training scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to father's education.
Hypothesis $2e_1$	The mean student confidence in ability to achieve scores for students taught using audio-visual-tutorial, simulated and traditional methods will differ according to father's education.
Hypothesis $2f_1$	The mean student grade point average in instructional program scores for students taught using audio-visual-tutorial, simulated and traditional methods will differ according to father's education.

*$2a_1$ = Theoretical Hypothesis, dependent variable, independent variable.

Hypothesis $2g_1$ The mean student grade point average in over-all school achievement scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to father's education.

Hypothesis $2a_2$ The mean student involvement scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to mother's education.

Hypothesis $2b_2$ The mean student interaction scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to mother's education.

Hypothesis $2c_2$ The mean student satisfaction with instructors score for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to mother's education.

Hypothesis $2d_2$ The mean student satisfaction with training scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to mother's education.

Hypothesis $2e_2$ The mean student confidence in ability to achieve scores for students taught using audio-visual-tutorial, simulated and traditional methods will differ according to mother's education.

Hypothesis $2f_2$ The mean student grade point average in instructional program scores for students taught using audio-visual-tutorial, simulated and traditional methods will differ according to mother's education.

Hypothesis $2g_2$ The mean student grade point average in over-all school achievement scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to mother's education.

Hypothesis $2a_3$ The mean student involvement scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to father's occupation.

Hypothesis $2b_3$ The mean student interaction scores for students taught using audio-visual-tutorial, simulated and traditional methods will differ according to father's occupation.

Hypothesis $2c_3$ The mean student satisfaction with instructors score for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to father's occupation.

Hypothesis $2d_3$ The mean student satisfaction with training scores for students taught using audio-visual-tutorial, simulated and traditional methods will differ according to father's occupation.

Hypothesis $2e_3$ The mean student confidence in ability to achieve scores for students taught using audio-visual-tutorial, simulated and traditional methods will differ according to father's occupation.

Hypothesis $2f_3$ The mean student grade point average in over-all school achievement scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to father's occupation.

Hypothesis $2g_3$ The mean student grade point average in instructional program scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to father's occupation.

Hypothesis $2a_4$ The mean student involvement scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to mother's occupation.

Hypothesis $2b_4$ The mean student interaction scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to mother's occupation.

Hypothesis $2c_4$ The mean student satisfaction with instructors score for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to mother's occupation.

Hypothesis $2d_4$ The mean student satisfaction with training scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to mother's occupation.

Hypothesis $2e_4$ The mean student confidence in ability to achieve scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to mother's occupation.

Hypothesis $2f_4$ The mean student grade point average in instructional program scores for students taught using audio-visual-tutorial, simulated and traditional methods will differ according to mother's occupation.

Hypothesis $2g_4$ The mean student grade point average in over-all school achievement scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to mother's occupation.

Hypothesis $2a_5$ The mean student involvement scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to high school grade point average.

Hypothesis $2b_5$ The mean student interaction scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to high school grade point average.

Hypothesis $2c_5$ The mean student satisfaction with instructors score for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to high school grade point average.

Hypothesis $2d_5$ The mean student satisfaction with training scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to high school grade point average.

Hypothesis $2e_5$ The mean student confidence in ability to achieve scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to high school grade point average.

Hypothesis $2f_5$ The mean student grade point average in instructional program scores for students taught using audio-visual-tutorial, simulated and traditional methods will differ according to high school grade point average.

Hypothesis $2g_5$ The mean student grade point average in over-all school achievement scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to high school grade point average.

Hypothesis $3a_1$* The mean student involvement scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to motivation for school achievement.

Hypothesis $3b_1$ The mean student interaction scores for students taught using audio-visual-tutorial, simulated and traditional methods will differ according to motivation for school achievement.

Hypothesis $3c_1$ The mean student satisfaction with instructors score for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to motivation for school achievement.

Hypothesis $3d_1$ The mean student satisfaction with training scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to motivation for school achievement.

Hypothesis $3e_1$ The mean student confidence in ability to achieve scores for students taught using audio-visual-tutorial, simulated and traditional methods will differ according to motivation for school achievement.

Hypothesis $3f_1$ The mean student grade point average in instructional program scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to motivation for school achievement.

---

*$3a_1$ = Theoretical Hypothesis, dependent variable, independent variable.

Hypothesis $3g_1$ The mean student grade point average in over-all school achievement scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to motivation for school achievement.

Hypothesis $3a_2$ The mean student involvement scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to self-concept of ability.

Hypothesis $3b_2$ The mean student interaction scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to self-concept of ability.

Hypothesis $3c_2$ The mean student satisfaction with instructors score for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to self-concept of ability.

Hypothesis $3d_2$ The mean student satisfaction with training scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to self-concept of ability.

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Hypothesis $3a_3$ The mean student involvement scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to occupational values.

Hypothesis $3b_3$ The mean student interaction scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to occupational values.

Hypothesis $3c_3$ The mean student satisfaction with instructors score for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to occupational values.

Hypothesis $3d_3$ The mean student satisfaction with training scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to occupational values.

Hypothesis $3e_3$ The mean student confidence in ability to achieve scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to occupational values.

Hypothesis $3f_3$ The mean student grade point average in instructional program scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to occupational values.

Hypothesis $3g_3$ The mean student grade point average in over-all school achievement scores for students taught using audio-visual-tutorial, simulated, and traditional methods will differ according to occupational values.

Assumptions

For this study, the following assumptions were made:

1. That community college students have fairly stable and consistent personal characteristics even though college experiences may effect considerable change in behavior and attitudes about one's self and others.

2. That the research instruments used in this study are appropriate measures of the characteristics of the students who participate.

3. That research subjects responded to the items in the research instruments frankly and honestly so that each individual's responses represent a sound and useful self-description.

4. That the performance of community college students averaged for high school courses; college courses; and class grade average is generally in line with their potential unless there have been some unusual circumstances in their college and non-college situations.

5. That variables used as measures in this study are significant environmental forces which influence students, and are factors associated with a student's motivation to learn.

Limitations

This study is limited in terms of its scope, the size of the sample populations, the sampling technique used, the

appropriateness of the instruments used, and the applicability of the findings.

1. The sample populations (three) were drawn from only three open-door community colleges. One community college uses the audio-visual-tutorial instructional method in its business and office education programs; one community college uses the simulated instructional method in its business and office education programs; one community college uses the traditional instructional method in its business and office education programs.

2. This study does not make comparisons over time. It attempts to describe three functionally different groups in terms of the same dependent variables. Data collected for this study were not compared with data collected previously and will not be compared with data to be collected at a later date.

3. This study is also limited because it utilizes the questionnaire method which has the following shortcomings: the respondent may not understand the question, may not wish to answer the question, or no two individuals may interpret a question in the same manner.

4. The findings of this study will permit generalizations or assumptions of applicability only in colleges that enroll a comparable student population or to students who are similar in terms of academic preparedness, general background and other characteristics.

CHAPTER II

REVIEW OF RELATED LITERATURE

This review of related literature will be concerned with the different characteristics of community college students who may represent a new breed of student that has entered into higher education. One implication in this review is the fact that community colleges bring many students into higher education who do not fit the traditional stereotype of the college student.

The review will also be concerned with different aspects of demographic factors and affective factors as they relate to achievement. This literature reprinted on in the chapter is not restricted to the community college student.

Other related literature is concerned with the three different instructional methods that have been utilized by institutions to attempt to cope with undesirable aspects of selective and non-selective placement. Aspects of undesirable selective and non-selective placement result from a college operating under an open-door policy of admissions.

General Characteristics of Community College Students

The early literature on the junior college was devoted almost entirely to statements of purposes, objectives, aims, and functions of the college. The references to students are limited with practically no attempts to describe them in terms of types of personalities.

However, the two-year colleges were bringing a new type of student into higher education, and it is surprising that the literature of the time did not reflect more interest or concern about their characteristics and their needs. For example, Noffsinger (1935) did not mention the types of students served by the new two-year colleges when he wrote an article entitled "One-Third of a Century of Progress." And much the same could be said about an article by Zook written in 1950 which reviewed the past twenty years of the junior colleges and looked to the twenty years ahead. He pointed out that there was an increased youth population and much unemployment and that the two-year colleges had a key role in training youth for modern industrial employment. Many other writers discussed the idea that the two-year colleges should pioneer in bringing new types of students into higher education, but did not describe the new type of students they had in mind.

But from the end of World War II the literature began to reveal more and more interest in the students themselves.

This may have been due to the fact that the composition of student bodies enrolled in two-year colleges was changing. This point of view was emphasized by Sexson and Harbeson (1946) who claimed that junior college administrators had suddenly found themselves faced with the baffling fact of a tremendous change in the character of the student population.

> One morning we came to school and found the halls full of a different type of individual. We had seen them before. They were the old crowd who had flunked out in high school. . . and went out and got jobs. But they lost those jobs. Having nothing else to do and nowhere else to go, they came back to school and we had to enroll them. The good old days of easy academic conformity in the junior colleges were over. . . . Students flocked to the junior colleges who were ill-adapted to university preparatory work. This situation forced a rapid development of terminal curricula (p. 273).

Ward (1947) in writing about terminal education in the junior college said that emotional maladjustment, lack of occupational information, inability to deal with others, and failure to understand themselves were common experiences among junior college students in general and particularly true of terminal students. Further, she stated that the terminal students could not be left to the wiles of their own trial-and-error expedients but, rather, needed constant aid in learning to understand and manage themselves, to get along with others, and to acquire occupational literacy.

The literature of the post-war years is filled with concern for the need to broaden educational opportunities at the post-secondary level and to widen curricular offerings in order to better serve youth and adults and the wider society. For example, Bogue (1950) said that for the interests of society higher education must be made more democratic, more popular and more accessible.

An article by Reynolds (1955) gave promise of such when he claimed that one of the most significant developments in the junior college field in the preceding 25 years had been "discovering extraordinary possibilities in ordinary people." He did not give any details of these possibilities even though by writing in this vein he was implying that junior colleges were serving a new constituency in a new way.

The 1956 yearbook of the National Society for the Study of Education, Part I, was devoted to the public junior college but despite references to making the curricula relevant to student needs and to the types of problems that junior college students have, there was no attempt to describe the students.

In the same year (1956), James F. Adams analyzed the content of the Junior College Journal for the period 1930 to 1956 and pointed out the need for much greater research activity in such areas as the characteristics of students who attend two-year colleges, and the achievement of these students.

Adams' review came at a time when there was beginning to be considerable interest in knowing and describing these students. Hillway (1958) in his book on the two-year college has a chapter on students. He did not claim to be describing the students who actually attend two-year colleges; rather, he was pointing out the usefulness of such colleges to individuals who were not clearly able and/or ready to undertake four-year degree programs.

1960 was a landmark year in terms of the literature about junior colleges. Three major books appeared that year that quickly became regarded as "classics." Each dealt at length with the functions, purposes, organization, and programs of two-year colleges and two of the three described the contemporary two-year students in some detail in terms of ability, age range, family background and other characteristics. These texts were authored, separately, by Medsker (1960), Clark (1960) and Thornton (1960). The student profile that emerges from the data reported in these books is as follows:

Academic ability: The average test scores of junior college students are somewhat lower than the average scores of liberal arts college students but the range of scores in the two types of colleges is wide and apparently equivalent.

Socio-economic background: The students are largely from the lower half of the socio-economic distribution.

Age range: Students range from sixteen years to seventy and older.

Sex ratio: The ratio of males to females in two-year colleges is three to one. There is, of course, a different sex ratio in different types of programs. Many of the technical programs enroll a low percentage of women while other programs, such as secretarial training or nursing, enroll a high percentage.

Marital status: At the time these studies were published (1960), the reported percentages of married students on two-year college campuses ranged from nineteen per cent to twenty-five per cent.

Employment: About sixty per cent of two-year college students work part- or full-time.

Dropout and withdrawal: About fifty per cent of two-year college students drop out between their freshman and sophomore years. About one-third continue in their studies to graduation.

Educational plans: Medsker (1960) reports that between two-thirds and three-fourths of two-year college students expect to transfer to another college at the time they enroll at the two-year college. About one-third of these students actually transfer to senior institutions.

The Medsker, Thornton, and Clark books were followed in two years by a fairly comprehensive study of the community college movement by Fields (1962). He stressed the academic heterogeneity found in the student bodies of community colleges. He also noted that the two-year colleges attract a more representative group of students with respect to the socio-economic structure of an area.

In 1967 Cross published the finding of a survey of published and unpublished research on junior college students. According to the Cross survey (1967), two-year college students as a group fit in between high school and four-year college students on measures of such qualities as academic ability, intellectual orientation, feeling of confidence in their own preparation and ability for college, level of occupational aspirations, and practicality of outlook. They also fall in the in-between group on measures of autonomy or independence and are more likely to be cautious and controlled than four-year college students.

Astin (1969) published a monograph about the two-year college and its students, using college information obtained from 581 two-year colleges and data from a comprehensive follow-up survey administered to second-year students at 29 two-year colleges. Despite the scope of this study (or perhaps because of it), the profile of the typical two-year college

student that emerged was little different from those reported from earlier research. The typical student had the following characteristics:

1. He had attended high school just before entering college.
2. He had been preparing at the community college for transfer to a four-year institution and aspired to a bachelor's degree.
3. He generally responded favorably to his college teachers.
4. He was not active in campus extra-curricular activities and reported few non-academic achievements.
5. He financed his education by working and by receiving help from his parents.
6. He was a commuter, studied at home, and spent little leisure time on campus.
7. He was less able in terms of academic potential than his peers in four-year colleges.
8. He chose the college he attended for practical reasons such as proximity and cost.

The underlying theme of this review of literature revolves around the "open-door" policy of admissions which admits a variety of students. Wiener (1972) writes that by widening the base for entry to technical junior colleges for all, a major step toward the ideal of providing open-entry and open-ended education for all is made. Gleazer (1972) agrees that more students, a greater variety of students are the prospects for the community college. The impressive and

sometimes confusing picture of persons now served by community colleges likely will diversify even more. No post-secondary educational institution will be faced with a broader range of human talent.

There is still much that needs to be known about two-year colleges and the students they enroll despite the amount of research that has been done in the last ten years. All too often the flavor of the individual colleges or the variant characteristics of the students have been lost in attempts to describe the average or typical.

However, in the last three or four years there has been increased interest in studies which investigate specific problems with which two-year colleges have to deal.

Selected Factors Related to Achievement--Affective and Demographic

The idea that the family background and personal experiences of students may be related to their academic achievement has intrigued educational researchers for many years. However, it is only in the last two decades that research attempts have been made to ascertain what background factors are significantly related to college success. Factors that have been investigated have included the socio-economic status of the parents, parents' income and education, stability of family of origin, number of siblings, ordinal position in family, national or

racial background, size of community in which student spent his formative years, size of schools attended, educational and vocational goals, work experiences, leisure-time activities, and so on. Several researchers have reported an apparent relationship between academic success and socio-economic status. For example middle socio-economic students tend to experience greater academic success in their first semester of junior college work than lower socio-economic students. However, others report different findings. A sampling of such studies follows:

Burack (1951) studied the relationship of social status to academic progress at the junior college level and found that there did not appear to be a strong relationship. He suggested that this was so because even at the junior college level there is a certain selectivity of the college population on the basis of motivation.

Hollinshead (1952) in studying the matter of who should go to college, stated that there was no evidence that students capable of good academic work must come from parents of high ability. He found evidence of excellent academic ability in all strata of society. Ability is found everywhere, he said, but "there is no blinking the fact that those in the lower socio-economic and socio-cultural groups find it harder to get it developed." He also stressed the importance of motivation

and the fact that "set of mind" against education may often preclude interest in education past high school.

A study published by Weitz and Wilkinson (1957) also found that low achievers tended to be only children from low socio-economic backgrounds. He compared academic achievement scores of children from different backgrounds to probe the effectiveness of parental occupation and social status on achievement and motivation. In occupations other than those of laborers, potential ability in children decreased with lower social status.

In a project that ran from 1956 to 1960 Anastasi and her staff developed and validated a biographical inventory to be used as a predictor of college success. It was found that the biographical inventory was a more effective predictor than tests of aptitude, achievement, personality, or interest. The student who was most likely to fall in the high-achieving group had a record of awards won for scholarship in high school and/or participation in extra-curricular activities. Students in the low achieving group tended not to show these characteristics.

An interesting finding of this study is that low-achieving students may have more promise, initiative, and spark than middle-achieving or average students. This suggests that students for whom academic success is not predicted should not necessarily be screened out in the selection of students for

admission to an institution of higher education. Some not easily ascertainable factors of motivation or attitude may come into operation when these students are in a college milieu.

The results of a comprehensive study of background as related to level of attainment of students enrolled in two-year junior college occupation-centered courses were published by Hakanson (1967). Using data collected by questionnaire, students were divided into high, middle, or low socio-economic status. A large portion of the middle-status population consisted of women taking secretarial and office training programs. A disproportionate number of lower-status men were enrolled in the technical and industrial courses. It was found that men in each socio-economic category were equally persistent in completing their programs, but in the case of the women students, the higher their socio-economic status the less likely they were to complete their programs.

Another study, and a very major one, that emphasized the persistence factor rather than grades earned is that done by Trent and Medsker (1968). The authors do not cite withdrawal or dropout figures for the two-year college students but do say that as a group two-year college students are less academically oriented than other college students and that it is possible the academic fatality of withdrawals from two-year

colleges is greater than that of withdrawals from four-year colleges and universities, i.e., they are failing at the time they leave.

Hay and Lindsay (1969) reported on a study of the relationship of employment to achievement. They studied college students who did not work and others who worked up to 15 or 16 hours or more a week. They found there was no significant difference in achievement of associate of arts degree students if employed or not.

There has also been research interest in the relationship of personality factors to achievement for many years, beginning with a flurry of research in the decade of the mid-nineteen-twenties to the mid-nineteen-thirties. Some of the articles published in this period reveal the direction of the research. For instance, Chambers (1925) studied character trait tests and the prognosis of college achievement. Young (1927) studied how emotional traits predispose students to college failure. Gilliland and Voas (1930) studied personality and scholastic achievement. Harris (1931) studied the relation of factors other than intelligence to college grades, and Stagner (1933) reported on a study of the relationship of personality to academic aptitude and achievement. He found that personality factors have a marked influence on the correlation of aptitude and achievement but that linear correlations of intelligence, achievement and personality were low.

He concluded that personality influences achievement in an indirect way, by affecting the degree to which use is made of individual potentialities. He found, also, that high emotionality and high self-sufficiency led to lower achievement than would be predicted from intelligence scores.

Stagner maintained his interest in personality and achievement and in a later publication, citing research from the 1940's and 1950's, he said that students high on ego strength got grades pretty much in proportion to their ability. Further, he pointed out that some poor-achievers seem to suffer from a kind of motivational inadequacy that he termed "activity delay" and hence fail regardless of their ability.

One of the first studies done on personality and achievement at a two-year college was that by Turrell in 1935, using a trait rating scale and a personality inventory. He did not find any significant relationship between the personality inventory factors and grades but did find a tendency for the trait of introversion to be positively related to achievement in academic subjects but to be negatively correlated for skill subjects.

The study of under- and over-achievement in relation to personality traits became a popular one in the nineteen-forties and fifties, and is still a popular area of study today. Various instruments were used that had been developed

in that period, such as the Minnesota Multiphasic Personality Inventory, the Edwards Personal Preference Schedule, and Cattell's 16 PF Scales. Typical studies which used these instruments follow:

Merrill and Murphy (1959) used the Edwards Personal Preference Schedule in an attempt to identify factors that might indicate which students among those for whom low achievement was predicted had a better chance for success. They found that students who got higher grades than would have been predicted were higher in their scores for deference, dominance and endurance. The low ability low-achievers were higher in exhibition, autonomy, affiliation and change scores.

Other studies published that were concerned with under- and over-achievement and which also used Edwards instrument were those by Krug (1959) and Diener (1960). Both studies indicated that endurance is apparently a key quality in achievement as it came up as a differentiating factor in all three studies.

Also in 1959, Middleton and Guthrie reported on their study of the personalities of high and low achievers. They found that high achievers were motivated by drives for power, feelings of resentment, dependency needs, desire for social acceptance, and aggression. The low achievers were found to be preoccupied with pleasures, extroverted in their social

relationships, and avoided threats to their self-esteem by denial of their shortcomings.

A very major study of personality and college achievement was published in 1962 by Goldstein, Crites and Heilbrun. On the basis of a thorough review of the research on the relationship of grades to intellective and non-intellective factors, they concluded that intellectual factors such as those measured by aptitude and achievement tests or indices of previous academic performance such as high school grades or class rank account for approximately twenty-five per cent to thirty-five per cent of the variance in college achievement. For non-intellective factors, such as personality or study skill variables, they concluded their contribution in college achievement to be between five per cent and fifteen per cent. At best this accounts for only fifty per cent of the components of college achievement. Goldstein, et al., concluded the other fifty per cent of variance was due to unknown factors in the amount of forty per cent and to an error factor of ten per cent. They hypothesized that non-intellective factors contribute more to college achievement than had been established by the methods of analysis used in previous studies. They concluded that personality factors make a significant contribution to the prediction of academic performance but that no consistent pattern of these factors is clearly associated with academic success.

In a study of grades and personal qualities published by Webb (1967), he commented on the low and variable correlations typically obtained between grades and personality measures. Webb concluded that cognitive variables are the best single predictors but that the addition of personal qualities to the prediction batteries can increase the variance of the criterion accounted for in significant proportion. In fact, he found personal qualities more important than cognitive qualities in predicting differences in student performance in different academic divisions or fields.

Hood (1968) studied the academic success of different college students in different types of colleges in an attempt to determine what types of colleges are best for what types of students. He found that, generally, socio-econimic variables were not significantly related to college achievement and that while some personality variables were related to academic achievement they added little to the prediction of freshman grades. What he did find of significance was that grading practices in different institutions were often capricious and arbitrary and that frequently there was no significant relationship between grades and academic aptitude. Academic achievement (i.e., grades earned) may be more related to grading practices than either cognitive or personality variables.

The idea that a student's self-concept may be related to this achievement is another personality dimension that has been studied in attempts to relate various personality dynamics to academic functioning. An individual's self-concept is a multi-dimensional idea he has of himself based on how he judges himself on various dimensions such as height, weight, physical attractiveness, intelligence or whatever is important to him.

The view which a student holds regarding himself influences every aspect of his life. A student who sees himself as unable to learn will view school and academic endeavors as undesirable, and a student with a positive self-concept toward learning will have higher intelligence, academic achievement and educational interest. This point of view is supported by the literature. Bledsoe (1967) in a study designed to determine the relationship between the self-concepts of students to their intelligence, academic achievement, interest and manifest anxiety, concluded that there is a positive relationship between self-concept and intelligence.

Brookover, Patterson and Thomas (1964) studied the relationship between self-concept of ability or the self-concept a pupil has of his ability to do certain school work and the grades received. It was found that self-concept of ability was significantly related to school achievement for both boys and girls.

Many measures have been devised that purport to measure how an individual feels about himself but as reported by Robinson and Shaver (1969) there are many problems yet to be overcome, particularly the selection of dimensions and differential weighting techniques. From these measures or from reports that individuals make about themselves, it appears that if an individual thinks well of himself he will function more effectively, including academically. An example of recent research that has investigated this possibility is that of Caplin (1968). He found that students who have more positive self-concepts and higher levels of aspiration (not necessarily found to be positively related) had higher academic-achievement than those with negative self-concepts and/or low levels of aspiration. In a similar study published the same year, Jones (1968) sought to determine the relationship between academic success and the three non-intellectual variables of self-expectation, self-concept, and identity development. He found that the variables were all related to academic success and also that they correlated with each other.

The studies on personality and academic achievement are going on at an accelerated rate and will undoubtedly not decline in the decade of the seventies, because of the increasing pressure on colleges to alter or waive admission policies and procedures to allow for admission of students who do not

meet the traditional criteria, based on cognitive variables. For example, most four-year colleges and universities have special status admissions for minority group students and two-year colleges frequently have open-door admissions.

At this point a conclusion reached by McConnell and Heist (1964) on the relationship of personality to achievement is still valid.

> All too little is known statistically or experimentally about the relationship between the personality characteristics students bring to college and their academic achievement, either in the conventional sense of grades and persistence or in the more subtle sense of independent critical, and creative intellectual competence (which are seldom reflected in academic marks), pp. 248-249.

Instructional Methods and the Student

In this section of review of the related literature, the major emphasis will be on research and other books and articles directly related to business and office education instructional methods instead of all fields and areas of study.

A review of literature in this area suggests that research in business and office education which deals specifically with the simulated instructional method and the audio-visual-tutorial instructional method seems almost non-existent except for an occasional local survey in a specific school

system. It appears that not enough experiments have been conducted to test the assumption that one instructional method is more effective with students than another instructional method.

Lanham and Trytten (1966) in a review and synthesis of research in business and office education reports that "in the area of innovations in the classroom, especially educational technology, the literature is almost devoid of any substantial evidence and comparative data. Team teaching, educational television, ungraded school, closed circuit television, or other audio-visual resources and the like in which some schools are innovating in their business and office education areas have not resulted in "hard" data.

This search included usual library sources. However, within the foregoing limitations reports were arbitrarily chosen for inclusion in this study.

It is clear that the organization of educational programs in American school systems has been geared toward students grouped in the traditional self-contained classroom.

Claxton (1969) reported that in a traditional classroom situation, all students start at the same place and are expected to complete every assignment at the same time. As a result, the teacher is evaluating the students on the basis that they are all of equal intelligence and ability. Here, of course, is one great injustice. The teacher cannot expect

each student to produce the same quantity and quality of work as every other. Therefore, Claxton states, we are punishing students who are above or below the "average" by forcing them into the same classroom situation with too little or too much repetition. The one result is frustration for some and boredom for others.

This picture is aptly reported by Vidyanagar (1969) when in quoting Jackson (1969) he writes:

> School is a place where tests are failed and passed. Where amusing things happen. Where new insights are stumbled upon, and skills acquired. But it is also a place in which people sit and listen, and wait, and raise their hands and pass out paper, and stand in line, and sharpen pencils. School is where we encounter both friends and foes, where imagination is unleashed and misunderstanding brought to ground. But it is also a place in which fawns are stifled. Both aspects of school life, the celebrated and unnoticed are familiar to all of us, but the latter, if only because of characteristic neglect, seems to deserve more attention than it has received to date from those who are interested in education, p. 4.

Vidyanagar (1969) indicated that what is true of the schools is equally true about the institutions of higher learning. As a result of it, our classes are more or less the same as they were before the period of American Independence.

West (1971) writes that it appears that very often the traditional rigidities of mass instruction have been a bar to

individualization. He sees the chief fault being the tendency to march all students along some pre-determined route, at a pre-determined fashion, convenient for or familiar to the teacher.

Invariably, writers on the subject of the traditional instructional method continue to stress that the first and greatest criticism of traditional education is simply that it wastes precious human resources. It yields high attrition rates at every level, gives value to high dependency on authority, devalues self-initiating ability, and discourages genuinely pleasurable learning and thus motivation to learn more. They argue that those students who excel in creative and enterprising ways do so despite this instructional method rather than because of it.

This point of view is supported by Wiley (1971) who states that whatever motivation we find today is not because of the classroom learning but rather, it is in spite of the classroom learning. Stifled initiative and imagination do not as a rule produce the best achievement in any field.

A study by Kilchenstein (1969) indicates that there are a number of things students learn from books; there are a great many things students learn from a teacher. But there are some things they learn only by working with others, by assuming responsibility for completeness and correctness of work and by meeting deadlines.

Eiken (1969) writes that many traditional concepts of instruction have been gradually eroding, producing new demands on business education instructional programs both in terms of contextual organization and instructional procedures used. She stated that there is a need for increased attention to instructional program design and basic instructional change and this is evidenced in areas including the following: (1) decentralized learning--the demise of the self-contained classroom with its confinement, rigidity, and groupism is perhaps the surest prediction that can be made about instructional programs; (2) individual differences--experience has shown that providing for student differences requires more than simple techniques. Provisions must be built into the basic system of instruction that allows for the time, materials, and organization necessary for teachers to deal with students as individuals; (3) educational technology--new instructional devices should be considered in relation to: (a) specific learning objectives; (b) specific content; (c) personnel competencies, and (d) a conceptual basis for categorizing and evaluating innovations.

With regard to the need for increased attention to basic instructional change, Bishop (1971) writes that one of the most pervasive themes dominating American education during the last decade has been the concept of individualization

of instruction. No other concept has had greater impact upon the development of modern educational programs and the implementation of instructional change. Individualized instruction frequently entails the use of programmed materials, job instruction sheets, and project plans. A student using these individualized materials can learn without verbal instruction from the teacher. Thus the student begins to take on responsibility for his own learning.

Business teachers have long advanced the premise that students should progress at their own speed, according to their individual abilities, and their own interests.

Symptomatic of individualized instructional programs or learner-centered approaches to training students are the simulated office approach and the audio-visual-tutorial approach used in business office education. These two approaches to instruction have been widely reported in the literature. However, the researcher was unable to locate reports based on scientific analysis. Opinionated reports based on experience with these two approaches in business office education are presented below.

Dannerberg (1968) writes that one of the most recent methods of instruction that is gaining in educational stature is the simulation exercise, more commonly referred to as the business game. Although the first game was developed in the

late 1950's by the American Management Association, the availability for business office education has been limited. However, new exercises are being developed continually. Basically, the business games are of two types. They may be designed for specific products or functions or they may be conceptual in nature. The second type attempts to relate principle and analytical methods to fabricated situations. Simulation must create realistic conditions.

After one year of experimenting with the simulated office, a summary was presented by McIsaac (1971). Simulated office operation sets the stage so that students, through application of knowledge and skills previously learned, can cultivate many desirable characteristics and attitudes toward work heretofore just discussed or read about. The many problem-solving situations presented through the office simulation scripts, as well as the performance of ordinary day-to-day office operation, challenge students to develop tact, in addition to accomplishing the task; be objective regarding their work and interpersonal relationships; accept failure and success gracefully; work effectively with fellow employees; work with a supervisor; organize detailed work and develop self-confidence. The results are students who are better prepared to seek office employment.

The discussion of simulation reported above is typical of the approach to instruction as reported in the literature.

One other report by Kilchenstein (1968) discusses simulation. She explains that simulation in the office classroom is a teaching process which uses the basic functions, equipment, and interaction which occur in a real office. It is a means by which the gap between the conventional classroom and a real business office can be bridged. Such a simulated office is not an imaginary construction in which imaginary or symbolic tasks are performed. It is a real organization which carries on integrated office functions and other duties at a level of intensity and in a facility which corresponds very closely to those of a typical business office. The simulation method emphasizes group learning. The primary relationships are between several people in the group. The purpose of establishing simulated offices in classrooms is to provide a means of anticipating and accelerating the real life process.

Henson (1969) in an article on simulation writes that "after having used simulation . . . it would take a near act of congress to . . . revert to the traditional method of teaching office practice."

It is concluded that simulated office operation sets the stage so that students through application of knowledges and skills previously learned can cultivate many desirable characteristics and activities toward work heretofore just discussed or read about.

Another educational method of instruction that is gaining in educational stature is the audio-visual-tutorial approach to instruction. However, Wadsworth (1972) reports that except for specialized rooms like language laboratories, stenographic training areas, behavioral labs, and other highly developed training spaces, the classroom itself has seen slow evolvement of the use of the audio-visual-tutorial instructional concept.

It is proposed by Edwards (1969) that one recently developed innovation, the audio-visual-tutorial instructional method, meets the test of relevance to today's world and appears to be worthy of extensive study and application in the community college.

Related studies were reviewed by Edwards (1968) in order to establish the basis for attempting an experiment in teaching; utilizing an audio-visual-tutorial laboratory approach with continuous sound loop films. He reported that the use of film-loop in educational research has not been as prolific as that of many other materials.

One of the most helpful studies reviewed by Edwards was completed by Stein (1958). It was concerned with the use of film loops for the teaching of the skill of typewriting; and it explained in some detail the production of the original films. In an analysis of the results, Stein made a comparison

of the gains in speed made by the experimental and control groups on the high school level from the first to the third five-minute writing and found that a significant difference between gains existed in favor of the experimental group who were taught using a series of 16 film loops produced on 16 millimeter film. The conclusions reached from the study were: (1) 16 millimeter film loops assisted the senior high school experimental groups typing skill to greater degree than control group methods; (2) film loops did not appreciably help in accuracy; and (3) pupil participation with films is practical. Stein made the recommendation in 1958 that more research be done on the use of film loops in teaching.

Many other studies have been done using the continuous-loop films and single concept film clips. Research done separately by Trinklein (1966) and Stepp (1966) was conducted under Federal Office of Education grants. The purpose was to study the feasibility of making single concept clips from full length films that were already produced. The authors concluded that the combination of a full-length film and excerpts from that film is more effective for teaching factual information than either the film or the excerpts alone. The results of a questionnaire given to students indicated that the students were also most satisfied with the combination treatment.

A study to explore the use of an audio-visual-tutorial laboratory in the secretarial skills area as a means of updating

and improving curriculum offerings at the community college level was conducted by Edwards (1968). This study dealt with skills courses which are included in almost every Office Education curriculum. A control group received instruction in the traditional method of attending regular classes. The experimental groups were allowed to attend an open laboratory at any time convenient to them and receive their instruction through the audio-visual media. The groups were compared on the basis of identical performance tests. A statistical analysis of the results of the final performance tests indicated learning by the experimental group was greater than that of the control group.

On reviewing the literature about instructional methods and implications for meeting the needs of the individual student, it appears that while many approaches in classroom teaching procedures will produce equally good results, business and office educators should experiment to find out which instructional methods are especially suitable to the individual student.

CHAPTER III

RESEARCH DESIGN

Location of the Study

The location of this study was in three community colleges with three different approaches to teaching office education subjects designed to prepare students for secretarial and clerical positions. The three different instructional approaches are: (1) the audio-visual-tutorial teaching method; (2) the simulated environment teaching method; and (3) the traditional teaching method.

In the audio-visual-tutorial approach to teaching a course is divided into individual single-concept units. The instructor outlines a course of study based on the student's individual needs as determined by a series of short objective-type tests. The units the student will need are indicated on a prescription sheet, and the student then goes to the audio-visual-tutorial laboratory and receives the exact instruction and practice necessary for his purposes. This audio-visual-tutorial system has the many advantages of the classroom teaching situation and yet it has none of its restrictions. For

example, the student is given the opportunity to repeat certain segments of courses as needed or the student can skip unnecessary parts without penalty thus allowing him to move at his own pace. Also a student can establish his own schedule of training. The audio-visual approach permits instruction and demonstrations on an individual basis. This is carried out through the use of single-concept 8mm film in cartridges with sound; an individual study carrel equipped with a unit housing the cartridge-loading 8mm sound projector, a slide projector, and a cartridge tape recorder. The audio-visual-tutorial approach might best be described as putting programmed instructional units on automated audio-visual media for individual use, with qualified tutorial assistance whenever necessary.

In the simulated office approach, the student's program of instruction incorporates three major kinds of learning experiences, and related instruction: laboratory experiences, field experiences, and related instruction. The laboratory experiences are of two kinds, "live" office work and simulated office work. "Live" work falls into two major categories: (1) provision of office services to the school through the production of actual work for the school and for school-related organizations; and (2) the performance of the actual office work that is needed to cause the classroom to function as a

business office. The latter of these two is accomplished through the establishment of functional work stations designed to simulate the real office work station. In the simulated office approach, each learner has the opportunity to pursue investigations and study according to his own particular interests; to try out previous learnings on his own; to derive conclusions based on his own particular style of an office problem. The simulated office can be described as an organization for instruction whereby each student in the class receives final opportunity within the school to participate in those integrated and interrelated work experiences and related learning activities which are necessary for him to develop vocational competence for his chosen career.

In the usual traditional classroom approach to teaching, the focus is on group instruction. The objectives for the class are basically the same for all members of the group. The arrangements or organization of the traditional classroom may vary from self-contained where the responsibility, competence, and versatility of the teacher are essential attributes as well as serving as a base for individual development within a sustaining group, to one which seeks to loosen inflexible arrangements through the use of such methods as team teaching and so on. This traditional method is often dominated by the textbook. However, the shortcomings of the textbook

are often compensated for by the teacher through the use of technological advances such as films, tapes, programmed learning, television and teaching machines. A variety of instructional aids are used but none are used exclusively. The course itself may focus on the traditional lockstep which does not allow the individual to work at educational tasks that are on the level with his abilities and to proceed at the rate at which he is capable of proceeding. In the traditional classroom approach to preparing students, limited attention may or may not be given to individual instruction for a student so that he will be able to participate more effectively in the group instruction.

The three community colleges selected for this study which utilize the three different instructional methods described above operate under an open-door community college admissions policy. They admit as students all applicants who have completed high school or its equivalent or those applicants eighteen years of age or older who are deemed able to profit from instructional programs offered by the colleges. As there is little or no emphasis in the admissions process on the quality of previous academic achievement, and as the colleges actively recruit students among the educationally and economically disadvantaged, in effect all individuals are admitted who complete the application procedures.

At each of the three community colleges over fifty per cent of the total student body is enrolled in occupational programs, which include technical and industrial courses, trade-related courses, business courses, and courses in health occupations and community services. The remainder of the students are enrolled in general academic studies or specific college transfer programs. All of the occupational programs include some academic courses; occupational non-transfer students and college transfer students are frequently enrolled in the same academic classes.

While over fifty per cent of the students enrolled in the three community colleges enter directly after completing their high school education, many others have been away from school for a few to many years. They may or may not have completed high school. Many have been occupied in the interim in employment, or in the specific case of women, in marriage and child-rearing. Some of the students may have spent time in mental or penal institutions. The colleges also enroll a number of transfer students made up of transfers from other community colleges, from four-year colleges or universities who have been dismissed or put on probation because of low achievement.

The proportion of males to females at the three colleges is approximately four to one. The proportion of black students

to white students is estimated by the administrators of the three schools to be less than ten per cent.

The students from the three community colleges in this study are no exception to the fact that students seek admission to community colleges for a variety of reasons, ranging from the most practical to the most frivolous.

Description of the Sample and Data Collection Procedures

The sample was drawn from students enrolled in business and office education instructional programs using one of the following three methods: (1) the audio-visual-tutorial method; (2) the simulated method; and (3) the traditional method. The total sample from each school was made up of all available female students who had been enrolled for two full semesters or the equivalent of two full semesters. Therefore, all students who had not completed at least twenty-four credit hours of course work were eliminated. This procedure yielded 317 subjects distributed as follows:

Audio-Visual-Tutorial--120
Simulated -- 98
Traditional -- 99

Students in each of the three samples selected by the above procedure were invited to participate in this study and were asked to complete the instruments which are described later in this chapter.

Demographic data selected for inclusion in this study are age, marital status, and reason for being a student. Of the 317 subjects included in this study, one hundred per cent were females. This is not an unusual finding as very few males enroll in secretarial and clerical courses.

Both black and white students were included in the study. However, there were no more than five black students in each of the three groups. As a result of the small number of blacks, racial composition is not given any special consideration in this study.

Data in Table 1 below indicate that the age range of the 317 subjects in this study is from eighteen to fifty-two. The average mean age of the three groups is twenty-three and the average median age of the three groups is twenty-one.

TABLE 1

COMPARISON OF AGES FOR THE THREE GROUPS

	Audio-Visual-Tutorial		Simulated		Traditional	
	Age	N	Age	N	Age	N
Age Range	19-45	120	19-45	98	18-50	99
Mean Age	21		22		24	
Median Age	20		20		22	

Table 2 shows data which indicate reasons given by students for being enrolled in the three community colleges. The students enrolled in non-transfer, or terminal programs have

TABLE 2

REASON FOR BEING A STUDENT FOR THE THREE GROUPS

	Audio-Visual-Tutorial		Simulated		Traditional	
	N	%	N	%	N	%
To prepare for a four-year program	3	2	1	1	2	2
To obtain a marketable skill	107	89	94	95	90	90
To stay out of the army	-	-	-	-	-	-
The only one I could afford	2	2	1	2	6	7
No other institution would accept me	8	7	2	2	1	1
Total	120	100	98	100	99	100

indicated that the major reason for being enrolled is to obtain a marketable skill. In the audio-visual-tutorial group, eighty-nine per cent of the students indicated to obtain a marketable skill; in the simulated and traditional groups over ninety per cent of the students indicated to obtain a marketable skill. The business and office education courses,

secretarial and clerical, are designed to help students obtain a marketable skill.

Table 3 shows the marital status of students enrolled in the three community colleges. Forty-three per cent of the students in the audio-visual-tutorial program are married as

TABLE 3

MARITAL STATUS FOR THE THREE GROUPS

	Audio-Visual-Tutorial		Simulated		Traditional	
	N	%	N	%	N	%
Single	50	42	35	36	30	30
Married	52	43	57	58	44	45
Divorced	10	8	5	5	15	15
Separated	8	7	1	1	10	10
Total	120	100	98	100	99	100

compared to fifty-eight per cent in the simulated group and forty-five per cent in the traditional group. Single students in the audio-visual-tutorial group are only one per cent less than the married students in that group at forty-two per cent. Thirty-six per cent of the students are single in the simulated group and thirty per cent of the students are single in the traditional group.

All the students enrolled in the audio-visual-tutorial group and the simulated office group commute to and from college. It is not unusual for a student to commute in one direction from home to college and in another direction to a job. The time spent each day driving to college and to work and home is often quite time-consuming, which is a factor that has to be kept in mind when considering student achievement, hours of study and attendance patterns. Some of the students enrolled in the traditional group possibly live in dormitories as the college provides dormitory space for its student body. The exact data for this factor was not included in this study.

Data Collection

The data used in this study originated from three different community colleges with three different instructional approaches to training students: (1) the audio-visual-tutorial approach; (2) the simulated office approach; and (3) the traditional approach.

Questionnaires containing scales described under the section sources of the data were administered to the three groups; one group at each school. All of the questionnaires were administered by professional educators and under the supervision of the investigator. The students were allowed one sixty-minute class period and each student was able to complete the questionnaire within the allotted time. Questionnaires

were left at the schools for students who were absent and were mailed to the writer by the professional educators from the three schools. The data collected from student records were collected by student assistants and the investigator, under the direction of the investigator.

Sources of the Data

The data for this study came from two sources. These sources and the data they supplied are listed below:

I. Community College Official Records

A. Grade Point Averages

1. High school
2. College
3. Class

II. Information from Students

A. Information About Student's Questionnaire

1. Age
2. Sex
3. Marital status
4. Reason for being a student
5. Ethnic origin

B. Family Background Questionnaire

1. Father's education
2. Mother's education
3. Father's occupation
4. Mother's occupation

C. Motivation for School Achievement Instrument

D. Self-Concept of Ability Scale

E. Occupational Values Scale

F. Life in the Classroom Questionnaire

G. Student Attitude Toward Instructor Questionnaire

H. Student Attitude Toward Training Program Questionnaire

I. Student Confidence in Ability to Achieve Questionnaire

Instruments

Copies of the instruments are in Appendix A. Following are descriptions of each of the instruments.

Information About Students Questionniare

This instrument is a collection of items designed to secure the following information about the sample: age distribution of the groups; marital status of the groups; ethnic origin of the groups; and an indication of why the student is enrolled in school (see Appendix A).

Family Background Questionnaire

This instrument utilizes items from several sources to obtain information about father's educational history, mother's educational history, father's occupational history, and mother's occupational history. The questionnaire to obtain information about educational history for father and mother is a seven-item checklist which reflects seven categories. These categories are designed to obtain the highest educational level

attained by the parents. Categories are: (1) graduate school, (2) graduated from college, (3) some college training, (4) completed high school, (5) some high school training, (6) completed grade school (6th), and (7) some grade school (see Appendix A).

Categories to obtain the highest occupational level of parents are: (1) owner of a business (large or small), (2) professional, (3) manager or executive, (4) white-collar worker, (5) skilled trades, (6) farm work, (7) semi-skilled worker, (8) domestic worker, (9) unemployed (see Appendix A).

Motivation for School Achievement Instrument

This instrument is a 30-item checklist developed by Russell (1969) to assess motivation for school learning. This instrument consists of items drawn largely from the context of school life (see Appendix A).

Self-Concept of Ability Scale

The items in this questionnaire were devised by Herridge (1971) to elicit information about students which has been found in a number of research studies of college students to be significantly related to college achievement. Students rate themselves on nine ability categories as compared with other students. Items include using library, study skills and habits, taking notes in class, preparing for exams, academic

ability, athletic ability, artistic ability, and writing essays (see Appendix A).

Occupational Values Scale

This instrument consists of a list of ten occupational values with accompanying directions for the respondent to consider to what extent a job or career would have to satisfy each of the specified requirements before he could consider it ideal. Values are ranked high, medium or low in importance, with the top two values ranked as most important. This instrument attempts to categorize people into occupational value complexes, described as "self-expression-oriented," "people-oriented," and "extrinsic-reward-oriented." (See Appendix A.)

Life in the Classroom Questionnaire

Fox, Luszki, Schmuch (1966) developed several tools to diagnosing classroom life. The instrument used in this study consists of seven items selected from the Fox, et al., tools. Two categories are reflected--involvement in the classroom and interaction in the classroom. Items were selected to obtain a general view of the classroom learning climate: How do the students feel about the Class? How interested and diligent do they see themselves as students? How attracted are they to schoolwork, teachers, and one another? (See Appendix A.)

Student Attitude Toward Instructor, Attitude Toward Training Program, and Student Confidence in Ability to Achieve in Program Questionnaire

This instrument consists of seven items selected from several questionnaires used by Gurin (1970) designed to identify attitudes that influence participants in institutional programs in making decisions about whether or not to drop out of the program. Categories include student attitudes toward Instructor, Program, and Confidence in Ability to Achieve in Training Program (see Appendix A).

Analysis of the Data

The three instructional groups were stratified into low, middle, and high levels on each of the independent variables and each of the dependent variables based on the scores received on the instruments used in this study. The procedure used to stratify the groups is explained in Appendix B.

For the purpose of hypothesis testing, father's education, mother's education, father's occupation, mother's occupation, motivation for school achievement, self-concept of ability, occupational values, and high school grade point average are treated as independent variables and student's life in the classroom, student's attitude toward instructor, student's attitude toward training program, confidence in ability to achieve, college grade point average and class

grade point average will be treated as dependent variables.

The following is a restatement of the hypotheses in theoretical terms:

Hypothesis 1	Instructional methods will differ in their effectiveness with students.
Hypothesis 2	Demographic characteristics of the students will be related to the effectiveness of instructional methods.
Hypothesis 3	Affective characteristics of the students will be related to the effectiveness of instructional methods.

A one-way analysis of variance will be utilized to compare the means of the three groups and t-tests will be used to make the appropriate contrasts for each of the seven dependent variables. Also a pairwise comparison of means will be performed using the estimate of error from the one-way analysis of variance. Significance will be tested at the .05 and .01 levels.

A three-by-three analysis of variance will be utilized to test the interaction effect between the eight independent variables and method when the seven dependent variables are being considered.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

This chapter presents the evidence which supports, or fails to support, the theoretical hypotheses. The format for presentation of the research findings is to set out in three sections each of the theoretical hypotheses for which information was sought and to present the research data relevant to each hypothesis. In each case, the discussion begins with the question under consideration. This discussion is followed by a statement of the null hypothesis and a test to indicate whether the differences investigated could be expected to occur by chance. The most appropriate inference is then indicated.

A resume and interpretation of results concludes the chapter.

Hypothesis One

Hypothesis One is concerned with the question of whether instructional methods will differ in their effectiveness with students when the seven dependent variables are considered. These dependent variables are (1) involvement, (2)

interaction, (3) satisfaction with instructors, (4) satisfaction with program, (5) confidence in ability to achieve, (6) college grade point average, and (7) class grade point average. In considering the statement of the null hypotheses related to Hypothesis One, seven one-way analysis of variance were performed.

In determining whether differences between the above variables could be significant, t-tests are shown for differences between the audio-visual-tutorial, simulated and traditional instructional methods.

Seven one-way analysis of variance were performed to test the following null hypotheses.

Hypothesis 1a*	The mean student involvement scores for students taught using the audio-visual-tutorial, simulated, and traditional instructional methods will not differ.
Hypothesis 1b	The mean student interaction scores for students taught using the audio-visual-tutorial, simulated, and traditional instructional methods will not differ.
Hypothesis 1c	The mean student satisfaction with instructors scores for students taught using the audio-visual-tutorial, simulated, and traditional instructional methods will not differ.
Hypothesis 1d	The mean student satisfaction with training scores for students taught using the audio-visual-tutorial, simulated, and traditional instructional methods will not differ.

*1a = Theoretical Hypothesis, dependent variable.

Hypothesis 1e — The mean student confidence in ability to achieve scores for students taught using the audio-visual-tutorial, simulated, and traditional instructional methods will not differ.

Hypothesis 1f — The mean student college grade point average scores for students taught using the audio-visual-tutorial, simulated, and traditional instructional methods will not differ.

Hypothesis 1g — The mean student class grade point average scores for students taught using the audio-visual-tutorial, simulated, and traditional instructional methods will not differ.

Table 4 presents the sample sizes and means for audio-visual-tutorial, simulated, and traditional methods.

Table 5 presents the summary data for the one-way analysis of variance.

Hypotheses 1a, 1b, 1c, 1d, 1e, 1f, and 1g were all concerned with the difference in instructional methods in their effectiveness with students on the seven dependent variables. Hypotheses 1a, 1c, 1d, 1f, and 1g were retained; however, Hypotheses 1b and 1e were rejected. There seems to be a significant difference between methods when "interaction" is being considered; there also seems to be a significant difference between methods when confidence in ability is being considered.

A pairwise comparison of means was performed using the estimate of error from analysis of variance. These data are reported in Table 6 for Hypothesis 1b.

TABLE 4

MEANS AND SAMPLE SIZES FOR THE THREE INSTRUCTIONAL METHODS FOR EACH OF THE SEVEN DEPENDENT VARIABLES

Dependent Variables	Teaching Methods					
	Audio-Visual-Tutorial		Simulated		Traditional	
	Mean	N	Mean	N	Mean	N
Involvement	9.5957	94	9.5417	96	9.4655	116
Interaction	10.6491	94	13.0422	96	10.6383	116
Satisfaction With Instructors	10.0331	94	10.4172	96	10.2411	116
Satisfaction With Program	6.2128	94	6.3125	96	6.5172	116
Confidence in Ability to Achieve	6.0426	94	5.7083	96	5.5000	116
College Grade Point Average	27.9264	94	28.8752	96	27.3622	116
Class Grade Point Average	29.7451	94	29.4582	96	28.7763	116

TABLE 5

SUMMARY TABLE OF ANALYSIS OF VARIANCE COMPARING THREE INSTRUCTIONAL METHODS ON THE SEVEN DEPENDENT VARIABLES

Source	S.S.	df	M.S.	F	Sig.	Decision
			Involvement			
Between	.9016	2	.4508	.2065	.8135	Retain
Within	661.33	303	2.1826			
Total	662.24	305				
			Interaction			
Between	379.11	2	189.56	71.0800	.0001**	Reject
Within	808.04	303	2.66			
Total	1187.20	305				
			Satisfaction with Instructors			
Between	7.05	2	3.5236	1.3255	.2672	Retain
Within	805.48	303	2.6583			
Total	812.53	305				
			Satisfaction with Program			
Between	5.12	2	2.5612	1.5794	.2078	Retain
Within	491.34	303	1.6216			
Total	496.46	305				

** $F_{.01}$ (2,300) = 4.69.

TABLE 5 (Continued)

Source	S.S.	df	M.S.	F	Sig.	Decision
			Confidence in Ability			
Between	15.36	2	7.6815	6.1143	.0025**	Reject
Within	380.66	303	1.2563			
Total	396.03	305				
			College Grade Point Average			
Between	121.20	2	60.5990	1.2235	.2957	Retain
Within	15008.20	303	49.5310			
Total	15129.00	305				
			Class Grade Point Average			
Between	52.82	2	26.4070	.4134	.6617	Retain
Within	19352.00	303	63.8680			
Total	19405.00	305				

$^{**}F_{.01}\ (2,300) = 4.69$

TABLE 6

PAIRWISE COMPARISON OF MEANS FOR THE VARIABLE INTERACTION BETWEEN THE METHODS FOR STUDENT "INTERACTION"

Pairwise	N	Mean	Diff.	t Stat	Sig.	Decision
1 & 2	94	10.649	2.3927	10.098	.0001**	Reject
1 & 3	96	13.042	.1101	.485	.9613	Retain
2 & 3	116	10.638	2.4037	10.668	.0001**	Reject

The mean for the simulated method is 13.042 which is significantly different from the mean of 10.649 for the audio-visual-tutorial method and the mean of 10.638 for the traditional method. Thus it appears that more students perceive greater "interaction" when the simulated method is used than when either the audio-visual-tutorial or the traditional methods are used; but there is no difference between the other two methods.

A pairwise comparison of means was performed using the estimate of error from analysis of variance. These data are reported in Table 7 for Hypothesis 1e.

The mean for the audio-visual-tutorial method is 6.0426 which is significantly different from the mean of 5.7083 for the simulated method and the mean of 5.5000 for the traditional method.

TABLE 7

PAIRWISE COMPARISON OF MEANS FOR THE VARIABLE CONFIDENCE IN ABILITY TO ACHIEVE BETWEEN THE METHODS FOR STUDENT CONFIDENCE IN ABILITY

Pairwise	N	Mean	Diff.	t-Stat	Sig.	Decision
1 & 2	94	6.0426	.3342	2.0550	.0407*	Reject
1 & 3	96	5.7083	.5426	3.4880	.0006**	Reject
2 & 3	116	5.5000	.2083	1.3471	.1789	Retain

The mean for the simulated method is 5.7083 which is significantly different from the mean of 5.5000 for the traditional method. Although the mean of the simulated method is significantly lower than the audio-visual-tutorial method, it is significantly higher than the traditional method.

It appears that more students perceive greater confidence in ability to achieve when the audio-visual-tutorial method is used than when the simulated and the traditional methods are used. It also appears that more students perceive greater confidence in ability to achieve when the simulated method is used than when the traditional method is used.

Hypothesis Two

Hypothesis Two is concerned with the question of whether the demographic characteristics of the students will be related to the effectiveness of the instructional methods when the seven dependent variables are considered. The dependent variables are (1) involvement, (2) interaction, (3) satisfaction with instructors, (4) satisfaction with program, (5) confidence in ability, (6) college grade point average, and (7) class grade point average. Each will be considered in turn. In considering the statement of the null hypotheses related to Hypothesis 2, the most important analysis will be that of the interaction effects in the analysis of variance.

In determining whether differences between the above variables could be significant, F ratios are shown first for the differences in methods between the audio-visual-tutorial, simulated and traditional instructional methods; second for the differences in methods between the independent variables; and third the interaction effect.

However, the major interest is in the significance of the interaction effect as stated in the following null hypotheses.

Hypothesis $2a_1$* The mean student involvement scores for students taught using audio-visual-tutorial, simulated and traditional methods will not differ according to father's education.

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*$2a_1$ = Theoretical Hypothesis, dependent variable, independent variable.

Hypothesis $2b_1$ The mean student interaction scores for students taught using audio-visual-tutorial, simulated and traditional methods will not differ according to father's education.

Hypothesis $2c_1$ The mean student satisfaction with instructors scores for students taught using audio-visual-tutorial, simulated and traditional methods will not differ according to father's education.

Hypothesis $2d_1$ The mean student satisfaction with program scores for students taught using audio-visual-tutorial, simulated and traditional methods will not differ according to father's education.

Hypothesis $2e_1$ The mean student confidence in ability score for students taught using audio-visual-tutorial, simulated and traditional methods will not differ according to father's education.

Hypothesis $2f_1$ The mean student college grade point average for students taught using audio-visual-tutorial, simulated and traditional methods will not differ according to father's education.

Hypothesis $2g_1$ The mean student class grade point average for students taught using audio-visual-tutorial, simulated and traditional methods will not differ according to father's education.

Table 8 presents the means and sample sizes for the seven dependent variables when students are stratified by father's education and methods.

Table 9 presents the summary data for the 3 x 3 analysis of variance.

Hypotheses $2a_1$, $2b_1$, $2c_1$, $2d_1$, $2e_1$, $2f_1$, and $2g_1$ were all concerned with the interaction effect between father's

TABLE 8

MEANS AND SAMPLE SIZES FOR THE THREE INSTRUCTIONAL METHODS FOR EACH OF THE SEVEN DEPENDENT VARIABLES WHEN FATHER'S EDUCATION IS BEING CONSIDERED

		Teaching Method						
		Audio-Visual-Tutorial		Simulated		Traditional		
	Level	Mean	N	Mean	N	Mean	N	Total
				Involvement				
Father's Education	Low	9.2963	26	9.4736	38	9.2000	32	9.3233
	Middle	9.7708	48	9.7727	44	9.4705	70	9.6713
	High	9.7142	22	9.0000	16	9.8888	18	9.5343
	Total	9.5937	96	9.4154	98	9.5197	120	9.5096
				Interaction				
Father's Education	Low	10.7037	26	13.2105	38	10.6000	32	11.5047
	Middle	10.5319	48	12.9090	44	10.8235	70	11.4214
	High	10.8181	22	13.0000	16	10.0000	18	11.2727
	Total	10.6845	96	13.0398	98	10.4745	120	11.3996
				Satisfaction with Instructors				
Father's Education	Low	10.1481	26	10.1578	38	10.5333	32	10.2797
	Middle	10.1458	48	10.5000	44	10.1764	70	10.2740
	High	9.7142	22	10.8571	16	10.0000	18	10.1094
	Total	10.0027	96	10.5049	98	10.2365	120	10.2480

TABLE 8 (Continued)

		Teaching Method						
		Audio-Visual-Tutorial		Simulated		Traditional		
	Level	Mean	N	Mean	N	Mean	N	Total
		Satisfaction with Program						
Father's Education	Low	6.2692	26	6.3076	38	6.2666	32	6.2811
	Middle	6.2541	48	6.3636	44	6.5000	70	6.4095
	High	5.8095	22	6.2857	16	7.0000	18	6.3650
	Total	6.1442	96	6.3189	98	6.5888	120	6.3506
		Confidence in Ability						
Father's Education	Low	5.8076	26	5.5128	38	5.4666	32	5.5956
	Middle	6.1276	48	5.9111	44	5.5000	70	5.8462
	High	6.1428	22	5.5714	16	5.5555	18	5.7565
	Total	6.0260	96	5.6651	98	5.5073	120	5.7328
		College Grade Point Average						
Father's Education	Low	25.2692	26	29.9500	38	26.0666	32	27.0952
	Middle	28.8510	48	28.0809	44	27.9117	70	28.2845
	High	29.1428	22	27.7142	16	27.4444	18	28.1004
	Total	27.7543	96	28.5850	98	27.1409	120	27.8267
		Class Grade Point Average						
Father's Education	Low	24.5555	26	29.7368	38	25.3333	32	26.5418
	Middle	31.0425	48	29.5000	44	30.3235	70	30.2886
	High	33.2273	22	28.5714	16	28.6666	18	30.1551
	Total	29.6084	96	29.2694	98	28.1078	120	28.9952

TABLE 9

SUMMARY TABLE OF ANALYSIS OF VARIANCE FOR FATHER'S EDUCATION AND METHODS USING THE SEVEN DEPENDENT VARIABLES

Source	S.S.	df	M.S.	F	Decision
Involvement					
Methods	1.2715	2	016357	-	Retain
Father's Educ.	7.0378	2	3.5189	1.6159	Retain
Interaction	10.0242	4	2.5060	1.1508	Retain
error	651.1144	299	2.1776		
Interaction					
Methods	128.0993	2	159.0496	59.7706**	Reject
Father's Educ.	1.8002	2	0.9001	-	Retain
Interaction	11.1513	4	2.7878	1.0476	Retain
error	795.6389	299	2.6609		
Satisfaction with Instructors					
Methods	10.0475	2	5.0237	1.8899	Retain
Father's Educ.	0.3156	2	0.1578	-	Retain
Interaction	11.8850	4	2.9712	1.1177	Retain
error	794.7882	299	2.6581		
Satisfaction with Program					
Methods	8.5866	2	4.2933	2.6547	Retain
Father's Educ.	0.9008	2	0.4504	-	Retain
Interaction	0.8159	4	2.4539	1.5174	Retain
error	483.5459	299	1.6172		
Confidence in Ability					
Methods	11.9692	2	5.9846	4.7644**	Reject
Father's Educ.	3.6301	2	1.8150	1.4450	Retain
Interaction	2.2466	4	0.5616	-	Retain
error	375.5716	299	1.2560		
College Grade Point Average					
Methods	84.4472	2	42.2236	-	Retain
Father's Educ.	84.8514	2	42.4257	-	Retain
Interaction	358.1169	4	89.5292	1.8247	Retain
error	14669.8195	299	49.0629		
Class Grade Point Average					
Methods	106.5967	2	53.2983	-	Retain
Father's Educ.	883.8394	2	441.9197	7.4342**	Reject
Interaction	771.4100	4	192.8525	3.2442*	Reject
error	17773.9712	299	59.4441		

*$F_{.05}$ (2,300) = 3.03 *$F_{.05}$ (4,300) = 2.40

**$F_{.01}$ (2,300) = 4.69 **$F_{.01}$ (4,300) = 3.40

education and method. Hypotheses $2a_1$ through $2f_1$ were retained; however, Hypothesis $2g_1$ was rejected. There seems to be a significant interaction between father's education and method when class grade point average is being considered.

An F value of 2.40 is required to reject the null hypothesis at the five per cent level. The obtained value of F in Table 9 for father's education and class grade point average is 3.2442. Therefore, Hypothesis $2g_1$ is significant at the five per cent level.

This effect is illustrated in Figure 4.1. The data indicate that when the audio-visual-tutorial or traditional

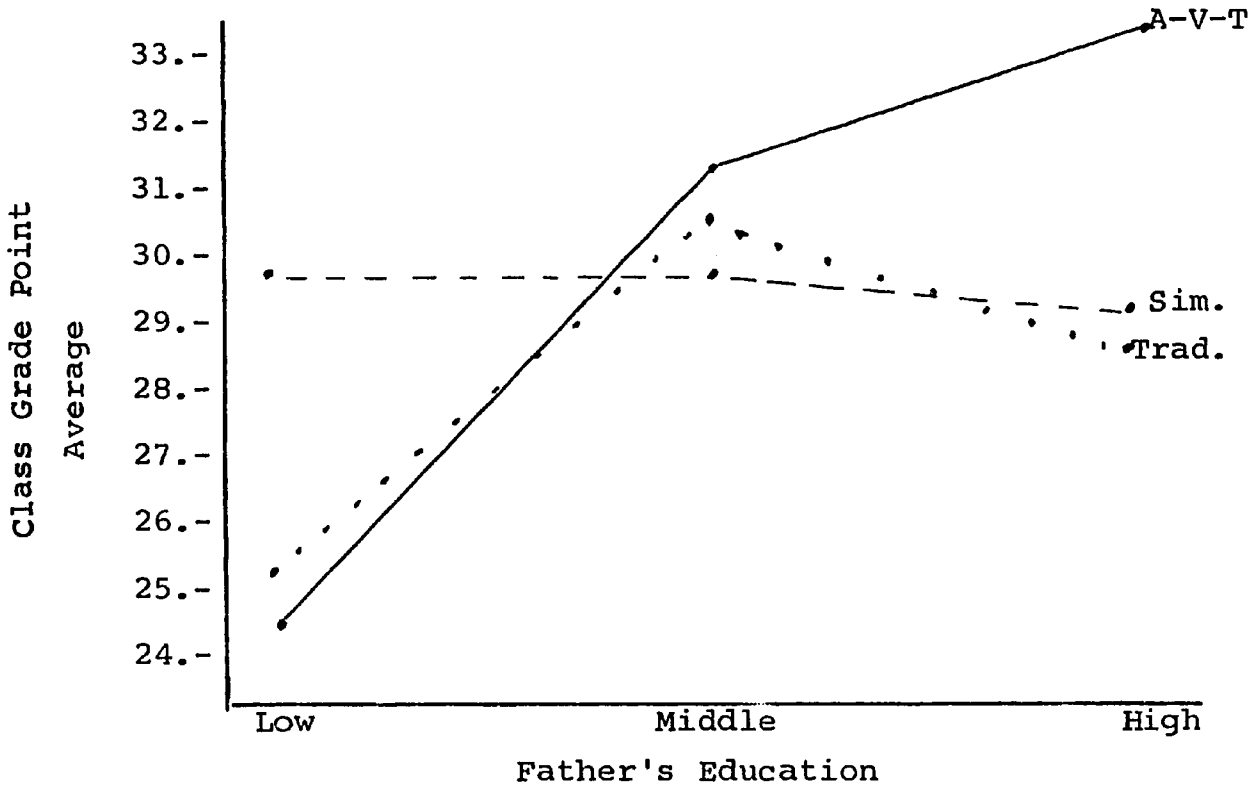


Fig. 4.1.--Profiles of Means for Methods When Class Grade Point Average is Being Considered

method is used those students whose father's education were low did not achieve as high a class grade point average as those students whose father's education were middle and high; whereas for the simulated method father's education does not seem to have an effect.

Although it was not hypothesized, there was a significant difference between the mean class grade point averages for students whose father's education were low, middle and high.

Mother's Education

Students were stratified by mother's education and by method and seven 3 x 3 analysis of variance were performed to test the following null hypotheses.

Hypothesis $2a_2$* The mean student involvement score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to mother's education.

Hypothesis $2b_2$ The mean student interaction score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to mother's education.

Hypothesis $2c_2$ The mean student satisfaction with instructors score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to mother's education.

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*$2a_2$ = Theoretical Hypothesis, dependent variable, independent variable.

Hypothesis $2d_2$ The mean student satisfaction with program score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to mother's education.

Hypothesis $2e_2$ The mean student confidence in ability score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to mother's education.

Hypothesis $2f_2$ The mean student college grade point average for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to mother's education.

Hypothesis $2g_2$ The mean student class grade point average for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to mother's education.

Table 10 presents the means and sample sizes for the seven dependent variables when students are stratified by mother's education and method.

Table 11 presents the summary data for the 3 x 3 analysis of variance.

Hypotheses $2a_2$, $2b_2$, $2c_2$, $2d_2$, $2e_2$, $2f_2$, and $2g_2$ were all concerned with the interaction effect between mother's education and method. Hypotheses $2a_2$, $2b_2$, $2d_2$, $2e_2$, and $2f_2$ were retained; however hypotheses $2c_2$ and $2g_2$ were rejected. There seems to be a significant interaction between (1) mother's education and method when satisfaction with instructors is being considered; and (2) there is also a significant interaction between mother's education and method when class grade point average is being considered.

TABLE 10

MEANS AND SAMPLE SIZES FOR THE THREE INSTRUCTIONAL METHODS FOR EACH OF THE SEVEN DEPENDENT VARIABLES WHEN MOTHER'S EDUCATION IS BEING CONSIDERED

		Teaching Method						
		Audio-Visual-Tutorial		Simulated		Traditional		
	Level	Mean	N	Mean	N	Mean	N	Total
				Involvement				
Mother's Education	Low	9.4482	29	9.1333	32	9.3529	36	9.3114
	Middle	9.6603	53	9.7407	54	9.5454	66	9.6488
	High	9.8571	15	9.6666	12	9.3750	18	9.6329
	Total	9.6552	97	9.5135	98	9.4244	120	9.5310
				Interaction				
Mother's Education	Low	10.6071	29	13.0666	32	11.1176	36	11.5871
	Middle	10.6981	53	13.0000	54	10.5757	66	11.4246
	High	10.5333	15	13.1666	12	9.8750	18	11.1916
	Total	10.6128	97	13.0777	98	10.5227	120	11.4044
				Satisfaction with Instructors				
Mother's Education	Low	10.3214	29	9.8000	32	10.5294	36	10.2169
	Middle	10.0555	53	10.5925	54	10.3030	66	10.3170
	High	9.5000	15	11.1666	12	9.3750	18	10.0138
	Total	9.9589	97	10.5197	98	10.0691	120	10.1825

TABLE 10 (Continued)

		Teaching Method						
		Audio-Visual-Tutorial		Simulated		Traditional		
	Level	Mean	N	Mean	N	Mean	N	Total
		Satisfaction with Program						
Mother's Education	Low	6.4642	29	6.0666	32	6.1764	36	6.2357
	Middle	6.0566	53	6.3636	54	6.6060	66	6.3420
	High	6.2857	15	6.8333	12	6.8750	18	6.6646
	Total	6.2688	97	6.4211	98	6.5524	120	6.4141
		Confidence in Ability						
Mother's Education	Low	5.9285	29	5.5161	32	5.7647	36	5.7364
	Middle	6.0769	53	5.8909	54	5.4242	66	5.7973
	High	6.1428	15	5.3333	12	5.2500	18	5.5753
	Total	6.0494	97	5.5801	98	5.4796	120	5.7030
		College Grade Point Average						
Mother's Education	Low	28.1785	29	29.0322	32	27.1764	36	28.1290
	Middle	27.8076	53	29.3818	54	26.9697	66	28.0530
	High	27.8076	53	29.3818	54	26.9697	66	28.0530
	Total	27.9477	97	27.9713	98	27.8403	120	27.9197
		Class Grade Point Average						
Mother's Education	Low	26.0000	29	29.4666	32	28.4000	36	27.9555
	Middle	30.9423	53	30.4363	54	28.8181	66	30.0655
	High	32.7857	15	25.0000	12	30.0000	18	29.2619
	Total	29.9093	97	28.3009	98	29.0727	120	29.0943

TABLE 11

SUMMARY TABLE OF ANALYSIS OF VARIANCE FOR MOTHER'S EDUCATION AND METHODS USING THE SEVEN DEPENDENT VARIABLES

Source	S.S.	df	M.S.	F	Decision
Involvement					
Methods	2.0821	2	1.0410	-	Accept
Mother's Educ.	7.2151	2	3.6070	1.6411	Accept
Interaction	3.0922	4	0.7730	-	Accept
error	657.1555	299	2.1978		
Interaction					
Methods	296.2167	2	148.1083	56.0196**	Reject
Mother's Educ.	4.9050	2	2.4525	-	Accept
Interaction	11.6402	4	2.9100	1.1006	Accept
error	790.5156	299	2.6438		
Satisfaction with Instructors					
Methods	12.1873	2	6.0936	2.3782	Accept
Mother's Educ.	3.1797	2	1.5898	-	Accept
Interaction	36.3313	4	9.0828	3.5449**	Reject
error	766.1041	299	2.5622		
Satisfaction with Program					
Methods	3.1066	2	1.5533	-	Accept
Mother's Educ.	5.2997	2	2.6498	1.6528	Accept
Interaction	9.2545	4	2.3136	-	Accept
error	479.3609	299	1.6032		
Confidence in Ability					
Methods	13.7321	2	6.8661	5.5148**	Reject
Mother's Educ.	1.6633	2	0.8316	-	Accept
Interaction	7.5204	4	1.8801	1.5101	Accept
error	372.2566	299	1.2450		
College Grade Point Average					
Methods	0.7581	2	0.3790	-	Accept
Mother's Educ.	9.3808	2	4.6904	-	Accept
Interaction	227.3624	4	56.8406	1.1438	Accept
error	14857.4784	299	49.6905		
Class Grade Point Average					
Methods	89.3015	2	44.6507	-	Accept
Mother's Educ.	266.9680	2	133.4840	2.1550	Accept
Interaction	683.9645	4	170.9911	2.7605*	Reject
error	18520.3961	299	61.9411		

*$F_{.05}$ (2,300) = 3.03 *$F_{.05}$ (4,300) = 2.40

**$F_{.01}$ (2,300) = 4.69 **$F_{.01}$ (4,300) = 3.40

An F value of 2.40 is required to reject the null hypothesis at the five per cent level. The obtained values of F in Table 11 for mother's education and satisfaction with instructors; and mother's education and class grade point average are 3.5449 and 2.7605, respectively. Therefore, Hypothesis $2g_2$ is significant at the five per cent level, and Hypothesis $2c_2$ is significant at the one per cent level which requires an F value of 3.40.

These two effects are illustrated in Figure 4.2 and Figure 4.3. The data in Figure 4.2 indicate that when the audio-visual-tutorial or the traditional methods are used those students whose mother's education was high perceived lower satisfaction with instructors than those students whose mother's education was low and middle. Whereas for the simulated group those students whose mother's education was low indicated lower satisfaction with instructors than those whose mother's education was middle and high.

The data in Figure 4.3 indicate that when the audio-visual-tutorial method is used those students whose mother's education was low did not achieve as high a class grade point average as those students whose mother's education was middle and high. When the simulated method is used those students whose mother's education is low and high did not achieve as high a class grade point average as those students whose

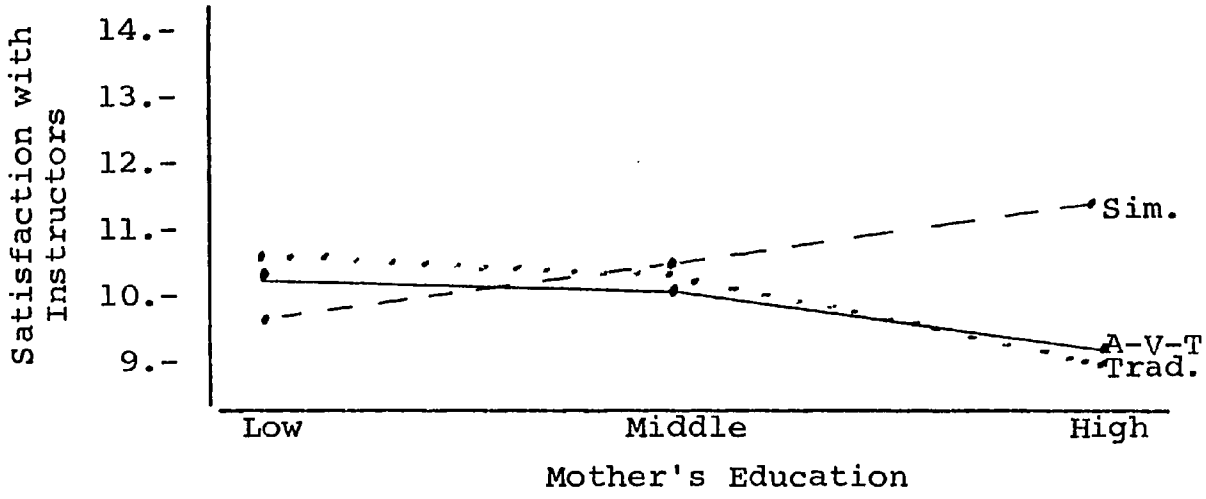


Fig. 4.2.--Profiles of Means for Methods when Satisfaction With Instructors is Being Considered

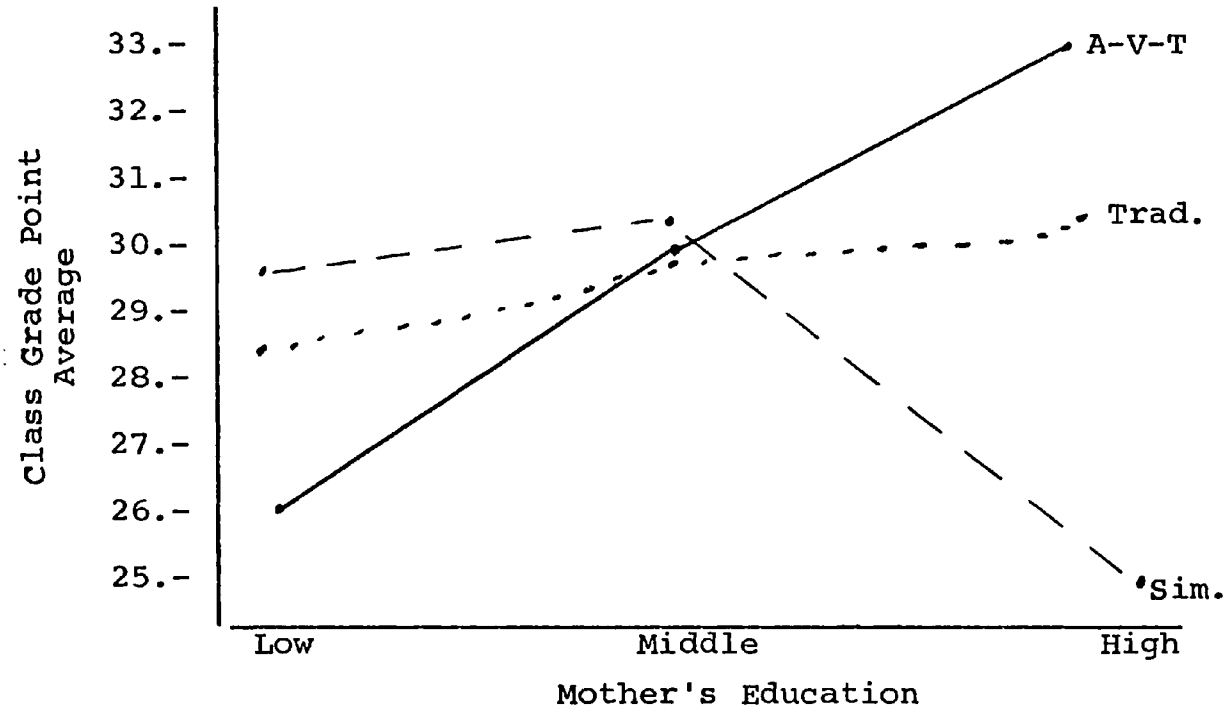


Fig. 4.3.--Profiles of Means for Methods when Class Grade Point Average is Being Considered

mother's education was middle. When the traditional method is used, mother's education does not seem to have an effect.

Father's Occupation

Students were stratified by father's occupation and by method and seven 3 x 3 analysis of variance were performed to test the following null hypotheses.

Hypothesis $2a_3$* The mean student involvement score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to father's occupation.

Hypothesis $2b_3$ The mean student interaction score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to father's occupation.

Hypothesis $2c_3$ The mean student satisfaction with instructors score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to father's occupation.

Hypothesis $2d_3$ The mean student satisfaction with program score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to father's occupation.

Hypothesis $2e_3$ The mean student confidence in ability score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to father's occupation.

Hypothesis $2e_3$ The mean student confidence in ability score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to father's occupation.

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*$2a_3$ = Theoretical Hypothesis, dependent variable, independent variable.

Hypothesis $2f_3$ The mean student college grade point average for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to father's occupation.

Hypothesis $2g_3$ The mean student class grade point average for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to father's occupation.

Table 12 presents the means and sample sizes for the seven dependent variables when students are stratified by father's occupation and method.

Table 13 presents the summary data for the 3 x 3 analysis of variance.

Hypothesis $2a_3$, $2b_3$, $2c_3$, $2d_3$, $2e_3$, $2f_3$, and $2g_3$ were all concerned with the interaction effect between father's occupation and method. Hypotheses $2a_3$, $2b_3$, $2d_3$, and $2e_3$ were retained; however hypotheses $2c_3$, $2f_3$, and $2g_3$ were rejected. There seems to be a significant interaction between (1) father's occupation and method when satisfaction with instructors is being considered; (2) father's occupation and method when college grade point average is being considered; and (3) father's occupation and method when class grade point average is being considered.

An F value of 2.40 is required to reject the null hypothesis at the five per cent level, and an F of 3.40 is required to reject the null hypothesis at the one per cent level. The

TABLE 12

MEANS AND SAMPLE SIZES FOR THE THREE INSTRUCTIONAL METHODS FOR EACH OF THE SEVEN DEPENDENT VARIABLES WHEN FATHER'S OCCUPATION IS BEING CONSIDERED

		Teaching Method						
		Audio-Visual-Tutorial		Simulated		Traditional		
	Level	Mean	N	Mean	N	Mean	N	Total
				Involvement				
Father's Occupation	Low	9.5263	21	9.6666	26	9.0000	32	9.3976
	Middle	9.6041	47	9.3846	52	9.6000	62	9.5296
	High	9.7857	28	9.8000	20	9.6428	28	9.7428
	Total	9.6387	96	9.6170	98	9.4143	120	9.5567
				Interaction				
Father's Occupation	Low	10.9000	21	12.9166	26	10.0000	32	11.2722
	Middle	10.6170	47	13.3461	52	11.0666	60	11.6765
	High	10.5714	28	12.4000	20	10.3571	28	11.1095
	Total	10.6962	96	12.8875	98	10.4746	120	11.3528
				Satisfaction with Instructors				
Father's Occupation	Low	6.4500	21	6.0000	26	6.1429	32	6.1976
	Middle	6.1458	47	6.5384	52	6.5333	60	6.4058
	High	6.1851	28	6.1000	20	6.8571	28	6.3807
	Total	6.2603	96	6.2128	98	6.5111	120	6.5281

TABLE 12 (Continued)

		Teaching Method						
		Audio-Visual Tutorial		Simulated		Traditional		
	Level	Mean	N	Mean	N	Mean	N	Total
		Satisfaction with Program						
Father's Occupation	Low	9.8421	21	9.2000	26	9.8571	32	9.6331
	Middle	10.2553	47	10.6226	52	10.5000	60	10.4593
	High	9.7407	28	11.2000	20	10.0714	28	10.3374
	Total	9.9460	96	10.3409	98	10.1428	120	10.1433
		Confidence in Ability						
Father's Occupation	Low	5.7948	21	5.5833	26	5.5000	32	5.6242
	Middle	6.1276	47	5.6851	62	5.4666	60	5.7985
	High	6.1111	28	5.9000	20	5.5714	28	5.8608
	Total	6.0093	96	5.7228	98	5.5127	120	5.7483
		College Grade Point Average						
Father's Occupation	Low	27.8947	21	29.2000	26	32.3571	32	29.8172
	Middle	28.7446	47	29.0188	52	25.7333	60	27.8323
	High	26.7777	28	28.2000	20	25.8571	28	26.9449
	Total	27.8056	96	28.8063	98	27.9825	120	28.1982
		Class Grade Point Average						
Father's Occupation	Low	28.8421	21	28.7500	26	33.1034	32	30.2319
	Middle	30.1276	47	39.9615	52	26.6229	60	28.9040
	High	29.8888	28	29.0000	20	29.7143	28	29.5343
	Total	29.6195	96	29.2371	98	29.8136	120	29.5567

TABLE 13

SUMMARY TABLE OF ANALYSIS OF VARIANCE FOR FATHER'S OCCUPATION AND METHODS USING THE SEVEN DEPENDENT VARIABLES

Source	S.S.	df	M.S.	F	Decision
Involvement					
Methods	2.8914	2	1.4457	-	Accept
Father's Occup.	4.4284	2	2.2142	1.0110	Accept
Interaction	7.1282	4	1.7820	-	Accept
error	652.5998	299			
Interaction					
Methods	304.6801	2	152.3401	59.2401**	Reject
Father's Occup.	18.8939	2	9.4469	3.6736*	Reject
Interaction	18.9880	4	4.7470	1.8459	Accept
error	766.3279	299	2.5715		
Satisfaction with Instructors					
Methods	6.3830	2	3.1915	1.2537	Accept
Father's Occup.	34.1438	2	17.0719	6.7064**	Reject
Interaction	29.2188	4	7.3046	2.8695*	Reject
error	758.5862	299	2.5455		
Satisfaction with Program					
Methods	4.8323	2	2.4161	1.5141	Accept
Father's Occup.	2.2049	2	1.1025	-	Accept
Interaction	11.1668	4	2.7917	1.7495	Accept
error	475.5167	299	1.5957		
Confidence in Ability					
Methods	11.1615	2	5.5807	4.4098*	Reject
Father's Occup.	2.0073	2	1.0036	-	Accept
Interaction	1.3825	4	0.3456	-	Accept
error	377.1305	299	1.2655		
College Grade Point Average					
Methods	47.7666	2	23.8833	-	Accept
Father's Occup.	315.8191	2	157.9095	3.3705*	Reject
Interaction	144.8538	4	144.8538	3.0918*	Reject
error	13961.1639	299	46.8495		
Class Grade Point Average					
Methods	15.3343	2	7.6672	-	Accept
Father's Occup.	88.2255	2	44.1127	-	Accept
Interaction	732.2504	4	183.0626	2.9270*	Reject
error	12872.1437	299	41.2344		

$^{*}F_{.05}$ (2,300) = 3.03 $^{*}F_{.05}$ (4,300) = 2.40

$^{**}F_{.01}$ (2,300) = 4.69 $^{**}F_{.01}$ (4,300) = 3.40

obtained values of F in Table 13 for father's occupation and satisfaction with instructors; father's occupation and college grade point average; and father's occupation and class grade point average are 2.8695, 3.0918, and 2.9270, respectively. Therefore, all three hypotheses are significant at the five per cent level.

These three effects are illustrated in Figure 4.4, Figure 4.5, and Figure 4.6.

The data in Figure 4.4 indicate that when the simulated method is used those students whose father's occupations are low and high did not show as much satisfaction with instructors as those students whose father's occupations are middle. When the audio-visual-tutorial method is used those students whose father's occupations are high perceive less satisfaction with instructors than those students whose father's occupations are low and middle; whereas for the traditional method those students whose father's occupations were low did not perceive as much satisfaction with instructors as those students whose father's occupations were middle and high.

The data in Figure 4.5 indicate that when the traditional method is used those students whose father's occupations were middle and high did not achieve as high a college grade point average as those students whose father's occupations were low; whereas for the simulated method father's

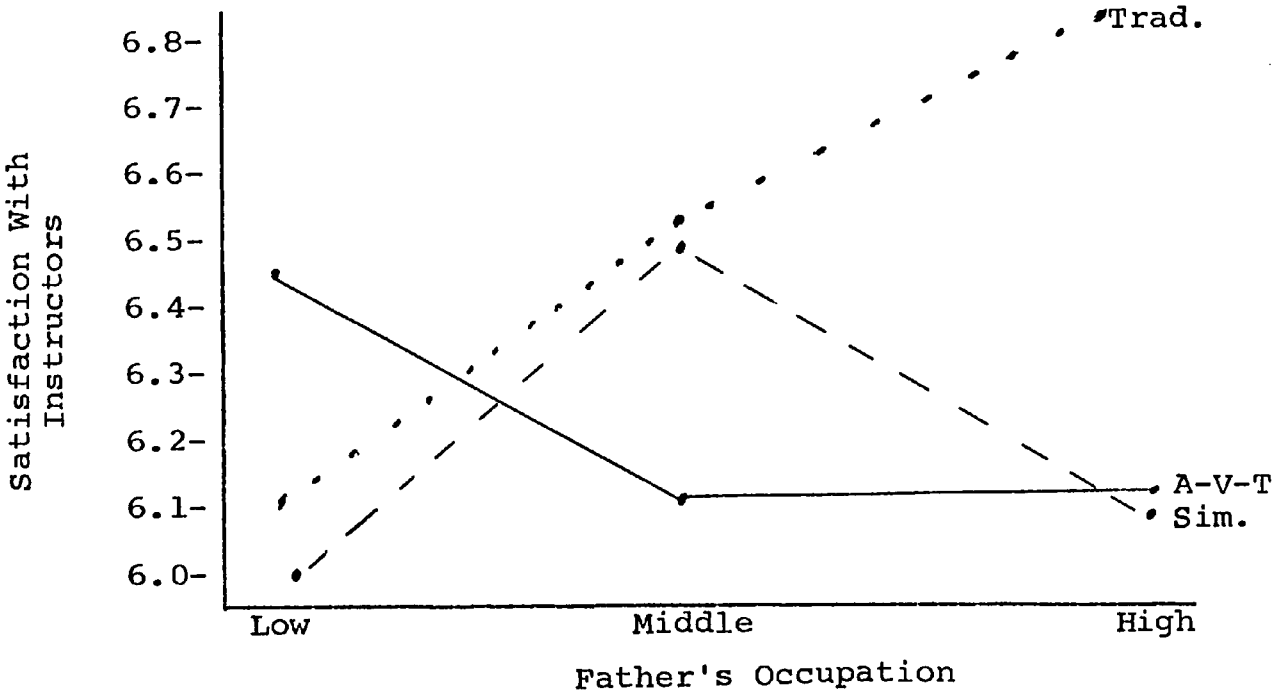


Fig. 4.4.--Profiles of Means for Methods When Satisfaction with Instructors is Being Considered

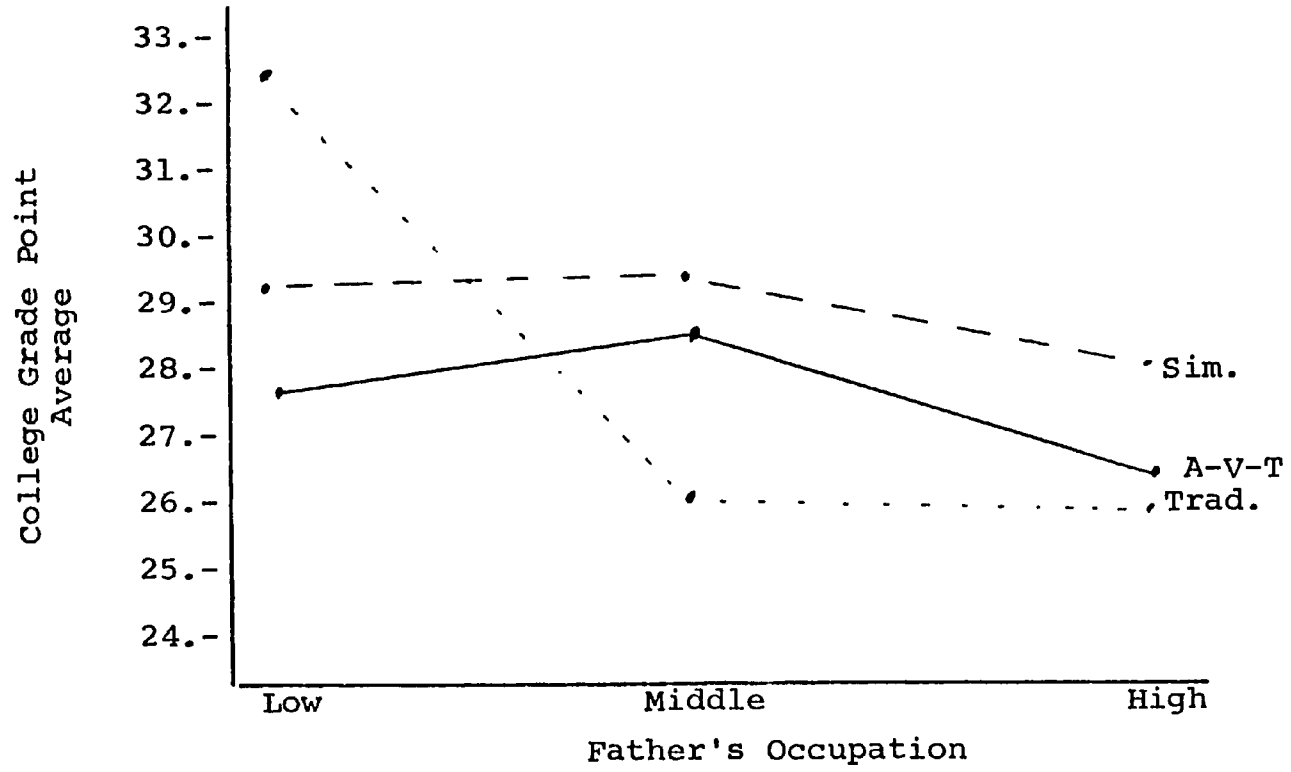


Fig. 4.5.--Profiles of Means for Methods When College Grade Point Average is Being Considered

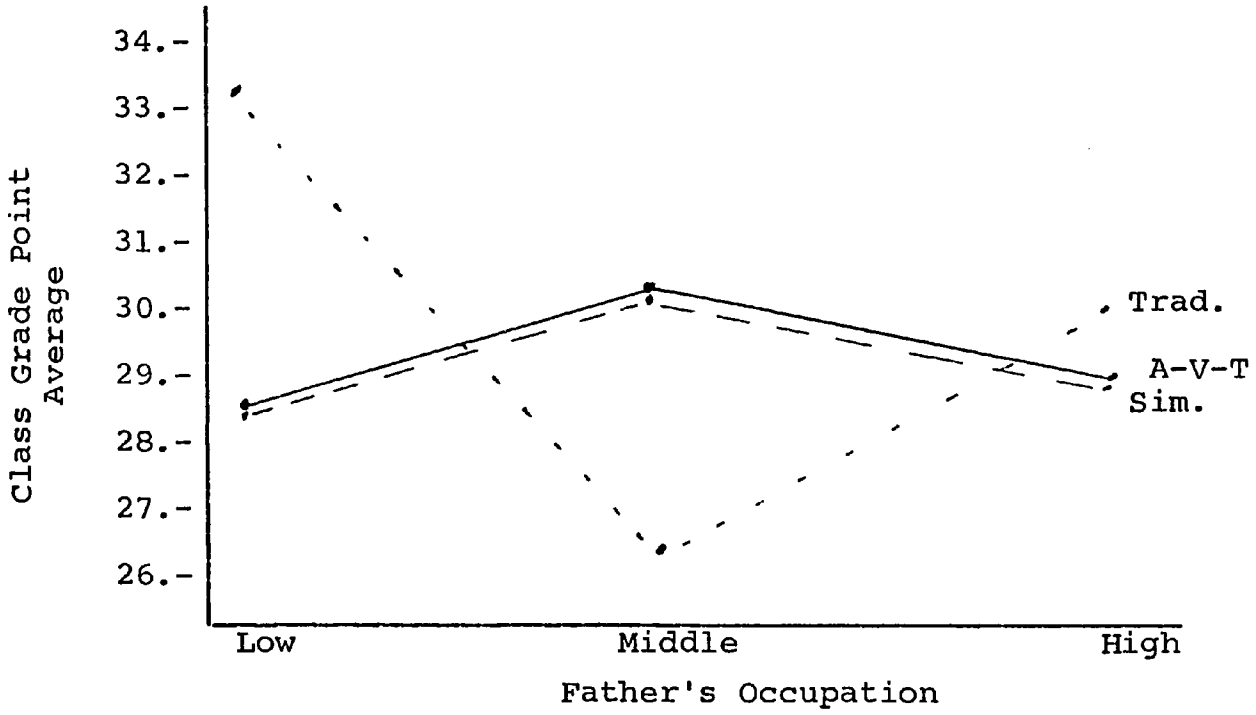


Fig. 4.6.--Profiles of Means for Methods When Class Grade Point Average is Being Considered

occupations do not seem to have an effect. When the audio-visual-tutorial method is used, those students whose father's occupations were middle achieved higher college grade point averages than those whose father's occupations were low and high.

The data in Figure 4.6 indicate that when the traditional method is used those students whose father's occupations were middle did not achieve as high a class grade point average as those students whose father's occupations were low and high; whereas for the audio-visual-tutorial and the simulated methods father's occupations does not seem to have an effect.

Although it was not hypothesized, there were significant differences between (1) the mean "interaction" scores for those students whose father's occupations were high, middle and low; (2) the mean satisfaction with instructors scores for those students whose father's occupations were high, middle and low; and (3) the mean college grade point averages for those students whose father's occupations were low, middle and high.

Mother's Occupation

Students were stratified by mother's occupation and by method and seven 3 x 3 analysis of variance were performed to test the following null hypotheses.

Hypothesis $2a_4$* The mean student involvement score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to mother's occupation.

Hypothesis $2b_4$ The mean student interaction score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to mother's occupation.

Hypothesis $2c_4$ The mean student satisfaction with instructors score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to mother's occupation.

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*$2a_4$ = Theoretical Hypothesis, dependent variable, independent variable.

Hypothesis $2d_4$ The mean student satisfaction with program score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to mother's occupation.

Hypothesis $2e_4$ The mean student confidence in ability score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to mother's occupation.

Hypothesis $2f_4$ The mean student college grade point average for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to mother's occupation.

Hypothesis $2g_4$ The mean student class grade point average for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to mother's occupation.

Table 14 presents the means and sample sizes for the seven dependent variables when students are stratified by mother's occupation.

Table 15 presents the summary data for the 3 x 3 analysis of variance.

Hypotheses $2a_4$, $2b_4$, $2c_4$, $2d_4$, $2e_4$, $2f_4$, and $2g_4$ were all concerned with the interaction effect between mother's occupation and method. Hypotheses $2a_4$, $2c_4$, $2d_4$, $2e_4$, $2f_4$, and $2g_4$ were retained; however hypothesis $2b_4$ was rejected. There seems to be a significant interaction between mother's occupation and method when "interaction" is being considered.

An F value of 2.40 is required to reject the null hypothesis at the five per cent level. The obtained value of F in

TABLE 14

MEANS AND SAMPLE SIZES FOR THE THREE INSTRUCTIONAL METHODS FOR EACH OF THE SEVEN DEPENDENT VARIABLES WHEN MOTHER'S OCCUPATION IS BEING CONSIDERED

		Teaching Method						
		Audio-Visual-Tutorial		Simulated		Traditional		
	Level	Mean	N	Mean	N	Mean	N	Total
				Involvement				
Mother's Occupation	Low	10.0000	32	9.7857	30	9.5000	44	9.7619
	Middle	9.4181	55	9.3333	60	9.4000	62	9.3838
	High	9.5000	8	10.2500	8	9.6666	12	9.8055
	Total	9.6393	95	9.7896	98	9.5222	118	9.6504
				Interaction				
Mother's Occupation	Low	10.8750	32	13.0000	30	11.4444	12	11.2970
	Middle	10.4909	55	13.2333	60	10.5666	62	11.4302
	High	10.7777	8	11.7500	8	11.3333	12	11.2970
	Total	10.7145	95	12.6611	98	10.8151	118	11.3969
				Satisfaction with Instructors				
Mother's Occupation	Low	10.0606	32	10.0000	30	10.4545	44	10.1717
	Middle	10.0545	55	10.5333	60	9.8666	62	10.1514
	High	10.0000	8	11.0000	8	11.3333	12	10.7777
	Total	10.0383	95	10.5111	98	10.5514	118	10.3669

TABLE 14 (Continued)

		Teaching Method						
		Audio-Visual-Tutorial		Simulated		Traditional		
	Level	Mean	N	Mean	N	Mean	N	Total
		Satisfaction with Program						
Mother's Occupation	Low	6.3636	32	6.2142	30	6.5909	44	6.3895
	Middle	6.1296	55	6.3606	60	6.4333	62	6.3078
	High	6.1250	8	6.5000	8	6.6666	12	6.4305
	Total	6.2060	95	6.3582	98	6.5636	118	6.3759
		Confidence in Ability						
Mother's Occupation	Low	5.8788	32	5.5714	30	5.5455	44	5.6652
	Middle	6,0722	55	5.7333	60	5.5333	62	5.7797
	High	6.0000	8	6.0000	8	5.1666	12	5.7222
	Total	5.9838	95	5.7682	98	5.4151	118	5.7223
		College Grade Point Average						
Mother's Occupation	Low	27.3125	32	28.8571	30	29.2273	44	28.4656
	Middle	28.1636	55	29.0667	60	26.3000	62	27.8434
	High	26.8889	8	27.5000	8	25.8333	12	26.7407
	Total	27.4550	95	28.4746	98	27.1202	118	27.6832
		Class Grade Point Average						
Mother's Occupation	Low	28.0000	32	29.7857	30	29.9090	44	29.2315
	Middle	30.1454	55	29.3333	60	28.5333	62	29.3373
	High	33.0000	8	29.2500	8	25.8333	12	29.3611
	Total	30.3818	95	29.4563	98	28.0918	118	29.3099

TABLE 15

SUMMARY TABLE OF ANALYSIS OF VARIANCE FOR MOTHER'S OCCUPATION AND METHODS USING THE SEVEN DEPENDENT VARIABLES

Source	S.S.	df	M.S.	F	Decision
		Involvement			
Methods	2.1474	2	1.0737	-	Accept
Mother's Occup.	11.1394	2	5.5697	2.5581	Accept
Interaction	5.8164	4	1.4541	-	Accept
error	650.9961	299	2.1772		
		Interaction			
Methods	130.4491	2	65.2245	24.8960**	Reject
Mother's Occup.	0.7650	2	0.3825	-	Accept
Interaction	25.1670	4	6.2917	2.4015*	Reject
error	783.3434	299	2.6198		
		Satisfaction with Instructors			
Methods	9.0707	2	4.5353	1.7516	Accept
Mother's Occup.	9.4452	2	4.7226	1.8240	Accept
Interaction	20.9919	4	5.2479	2.0269	Accept
error	774.1575	299	2.5891		
		Satisfaction with Program			
Methods	3.9987	2	1.9993	1.2164	Accept
Mother's Occup.	0.6395	2	0.3197	-	Accept
Interaction	1.9865	4	0.4966	-	Accept
error	491.4201	299	1.6435		
		Confidence in Ability			
Methods	10.3246	2	5.1623	3.9851*	Reject
Mother's Occup.	0.8482	2	0.4241	-	Accept
Interaction	2.7587	4	0.6897	-	Accept
error	387.3238	299	1.2954		
		College Grade Point Average			
Methods	56.8653	2	28.4326	-	Accept
Mother's Occup.	69.8597	2	34.9299	-	Accept
Interaction	191.8893	4	47.9723	-	Accept
error	14842.4470	299	49.6403		
		Class Grade Point Average			
Methods	165.5595	2	82.7797	1.3003	Accept
Mother's Occup.	0.8142	2	0.4071	-	Accept
Interaction	357.2851	4	89.3213	1.4031	Accept
error	19034.6204	299	63.6609		

*$F_{.05}$ (2,300) = 3.03 *$F_{.05}$ (4,300) = 2.40

**$F_{.01}$ (2,300) = 4.69 **$F_{.01}$ (4,300) = 3.40

Table 15 for mother's occupation and "interaction" is 2.4015. Therefore, Hypothesis $2b_4$ is significant at the five per cent level.

This effect is illustrated in Figure 4.7.

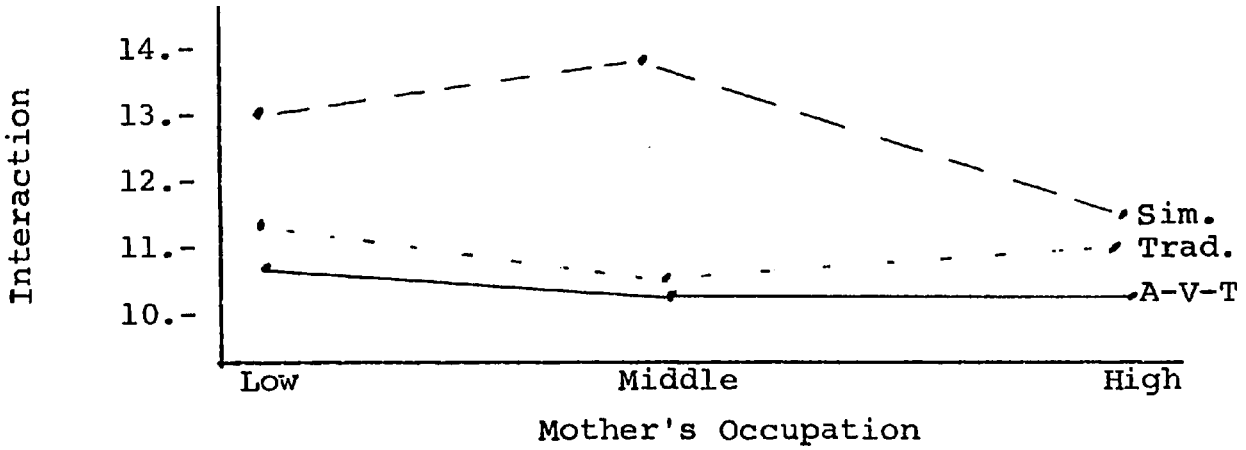


Fig. 4.7.--Profiles of Means for Methods when "Interaction" is Being Considered

The data in Figure 4.7 indicate that when the simulated method is used those students whose mother's occupations were high did not achieve as high a class grade point average as those students whose mother's occupations were low and middle; whereas for the audio-visual-tutorial and the simulated methods mother's occupation does not seem to have an effect.

High School Grade Point Average

Students were stratified by high school grade point average and by method and seven 3 x 3 analysis of variance were performed to test the following null hypotheses.

Hypothesis $2a_5$* The mean student involvement score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to high school grade point average.

Hypothesis $2b_5$ The mean student interaction score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to high school grade point average.

Hypothesis $2c_5$ The mean student satisfaction with instructors score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to high school grade point average.

Hypothesis $2d_5$ The mean student satisfaction with program score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to high school grade point average.

Hypothesis $2e_5$ The mean student confidence in ability to achieve score for students taught using audio-visual-tutorial, simulated and traditional methods will not differ according to high school grade point average.

Hypothesis $2f_5$ The mean college grade point average score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to high school grade point average.

Hypothesis $2g_5$ The mean class grade point average score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to high school grade point average.

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*$2a_5$ = Theoretical Hypothesis, dependent variable, independent variable.

Table 16 presents the means and sample sizes for the seven dependent variables when students are stratified by high school grade point average and method.

Table 17 presents the summary data for the 3 x 3 analysis of variance.

Hypotheses $2a_5$, $2b_5$, $2c_5$, $2d_5$, $2e_5$, $2f_5$, and $2g_5$ were all concerned with the interaction effect between high school grade point average and method. Hypotheses $2b_5$, $2d_5$, $2e_5$, and $2g_5$ were retained; however, hypotheses $2a_5$ and $2c_5$ were rejected. There seems to be a significant interaction between (1) high school grade point average and method when involvement is being considered; and (2) between high school grade point average and method when satisfaction with instructors is being considered.

An F value of 2.40 is required to reject the null hypothesis at the five per cent level. An F value of 3.40 is required to reject the null hypothesis at the one per cent level. The obtained values of F in Table 17 for high school grade point average and involvement; and high school grade point average and satisfaction with instructors are 3.0407 and 3.4452, respectively. Therefore, Hypothesis $2a_5$ is significant at the five per cent level, and Hypothesis $2c_5$ is significant at the one per cent level.

These two effects are illustrated in Figure 4.8 and Figure 4.9.

TABLE 16

MEANS AND SAMPLE SIZES FOR THE THREE INSTRUCTIONAL METHODS FOR EACH OF THE SEVEN DEPENDENT VARIABLES WHEN HIGH SCHOOL GRADE POINT AVERAGE IS BEING CONSIDERED

		Teaching Method						
		Audio-Visual-Tutorial		Simulated		Traditional		
	Level	Mean	N	Mean	N	Mean	N	Total
				Involvement				
High School Grade Point Average	Low	9.4583	24	10.1666	12	8.5833	24	9.4027
	Middle	9.6800	48	9.4285	56	8.5833	60	9.2306
	High	9.6818	22	9.5000	28	9.4375	32	9.5397
	Total	9.6067	94	9.6984	96	8.8680	116	9.3910
				Interaction				
High School Grade Point Average	Low	10.7600	24	12.1666	12	9.8333	24	10.9199
	Middle	10.6666	48	13.1971	56	11.0666	60	11.6134
	High	10.4782	22	13.2857	28	10.4375	32	11.4004
	Total	10.6348	94	12.8531	96	10.4458	116	11.3112
				Satisfaction with Instructors				
High School Grade Point Average	Low	9.8333	24	11.0000	12	9.5833	24	10.1388
	Middle	9.9375	48	10.2500	56	10.7000	60	10.2958
	High	10.5000	22	10.5000	28	9.8750	32	10.2916
	Total	10.0902	94	10.5833	96	10.0527	116	10.2420

TABLE 16 (Continued)

		Teaching Method						
		Audio-Visual-Tutorial		Simulated		Traditional		
	Level	Mean	N	Mean	N	Mean	N	Total
Satisfaction with Program								
High School Grade Point Average	Low	6.0833	24	6.0000	12	5.8333	24	5.9722
	Middle	5.9600	48	5.7142	56	5.6000	60	5.7580
	High	6.0000	22	5.5147	28	5.0625	32	5.5446
	Total	6.0144	94	5.7618	96	5.4986	116	5.7582
Confidence in Ability								
High School Grade Point Average	Low	6.1600	24	6.6666	12	6.2500	24	6.3588
	Middle	6.2083	48	6.3214	56	7.7333	60	6.3410
	High	6.2608	22	6.1428	28	6.3125	32	6.2387
	Total	6.2097	94	6.3769	96	6.4319	116	6.3395
College Grade Point Average								
High School Grade Point Average	Low	31.6666	24	35.1666	12	33.8333	24	33.5555
	Middle	27.9375	48	29.1785	56	26.0000	60	27.7053
	High	23.5416	22	25.5714	28	25.0625	32	24.7251
	Total	27.7152	94	29.9721	96	28.2986	116	28.6619
Class Grade Point Average								
High School Grade Point Average	Low	35.1250	24	35.3333	12	36.9166	24	35.7916
	Middle	28.7551	48	29.8245	56	26.7000	60	28.4265
	High	25.6363	22	26.2142	28	26.5625	32	26.1376
	Total	29.8388	94	30.4573	96	30.0597	116	30.1186

TABLE 17

SUMMARY TABLE OF ANALYSIS OF VARIANCE FOR HIGH SCHOOL GRADE POINT AVERAGE AND METHODS USING THE SEVEN DEPENDENT VARIABLES

Source	S.S.	df	M.S.	F	Decision
		Involvement			
Methods	8.2002	2	4.1001	1.9335	Accept
H.S.G.P.A.	2.5637	2	1.2818	-	Accept
Interaction	25.7920	4	6.4480	3.0407*	Reject
error	634.0336	299	2.1205		
		Interaction			
Methods	263.3568	2	131.6784	51.2223**	Reject
H.S.G.P.A.	19.7317	2	9.8658	3.8377*	Reject
Interaction	21.9825	4	5.4956	2.1377	Accept
error	768.6455	299	2.5707		
		Satisfaction with Instructors			
Methods	12.8742	2	6.4371	2.5074	Accept
H.S.G.P.A.	1.0717	2	0.5358	-	Accept
Interaction	35.3778	4	8.8444	3.4452*	Reject
error	767.5791	299	2.5671		
		Satisfaction with Program			
Methods	12.2133	2	6.1066	4.8094**	Reject
H.S.G.P.A.	6.0214	2	3.0107	2.3711	Accept
Interaction	4.0785	4	1.0196	0.8030	Accept
error	379.6473	299	1.2697		
		Confidence in Ability			
Methods	2.4025	2	1.2012	-	Accept
H.S.G.P.A.	1.8038	2	0.9019	-	Accept
Interaction	5.7707	4	1.4426	-	Accept
error	485.1293	299	1.6225		
		College Grade Point Average			
Methods	199.4611	2	99.7305	2.4342	Accept
H.S.G.P.A.	2568.0505	2	1284.0252	31.3405**	Reject
Interaction	206.3306	4	51.5826	1.2590	Accept
error	12250.0506	299	40.9701		
		Class Grade Point Average			
Methods	14.2662	2	7.1331	-	Accept
H.S.G.P.A.	3194.6970	2	1597.3485	30.5948**	Reject
Interaction	251.3163	4	62.8290	1.2033	Accept
error	15610.7120	299	52.2097		

*$F_{.05}$ (2,300) = 3.03 *$F_{.05}$ (4,300) = 2.40

**$F_{.01}$ (2,300) = 4.69 **$F_{.01}$ (4,300) = 3.40

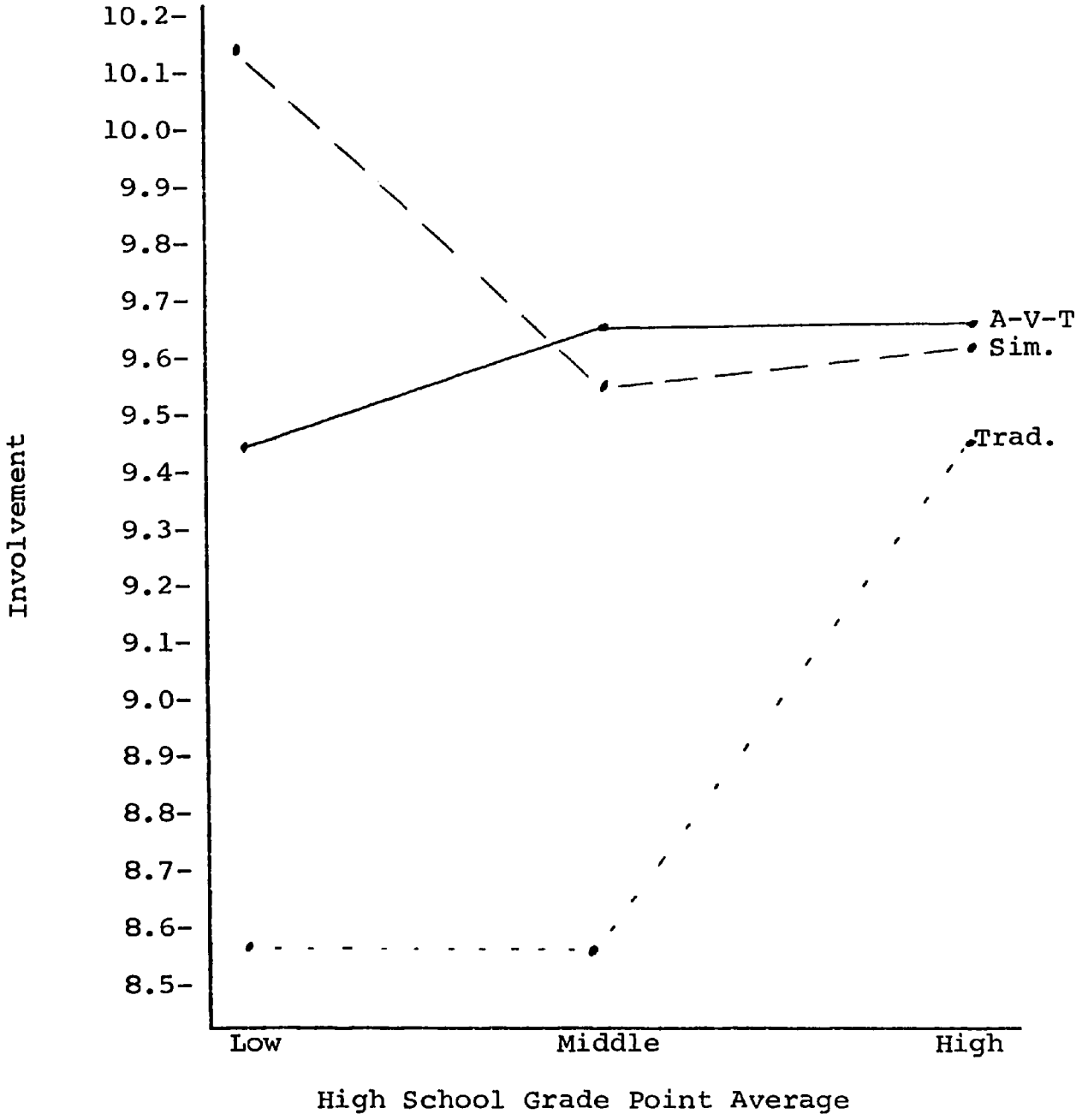


Fig. 4.8.--Profiles of Means for Methods When Involvement is Being Considered

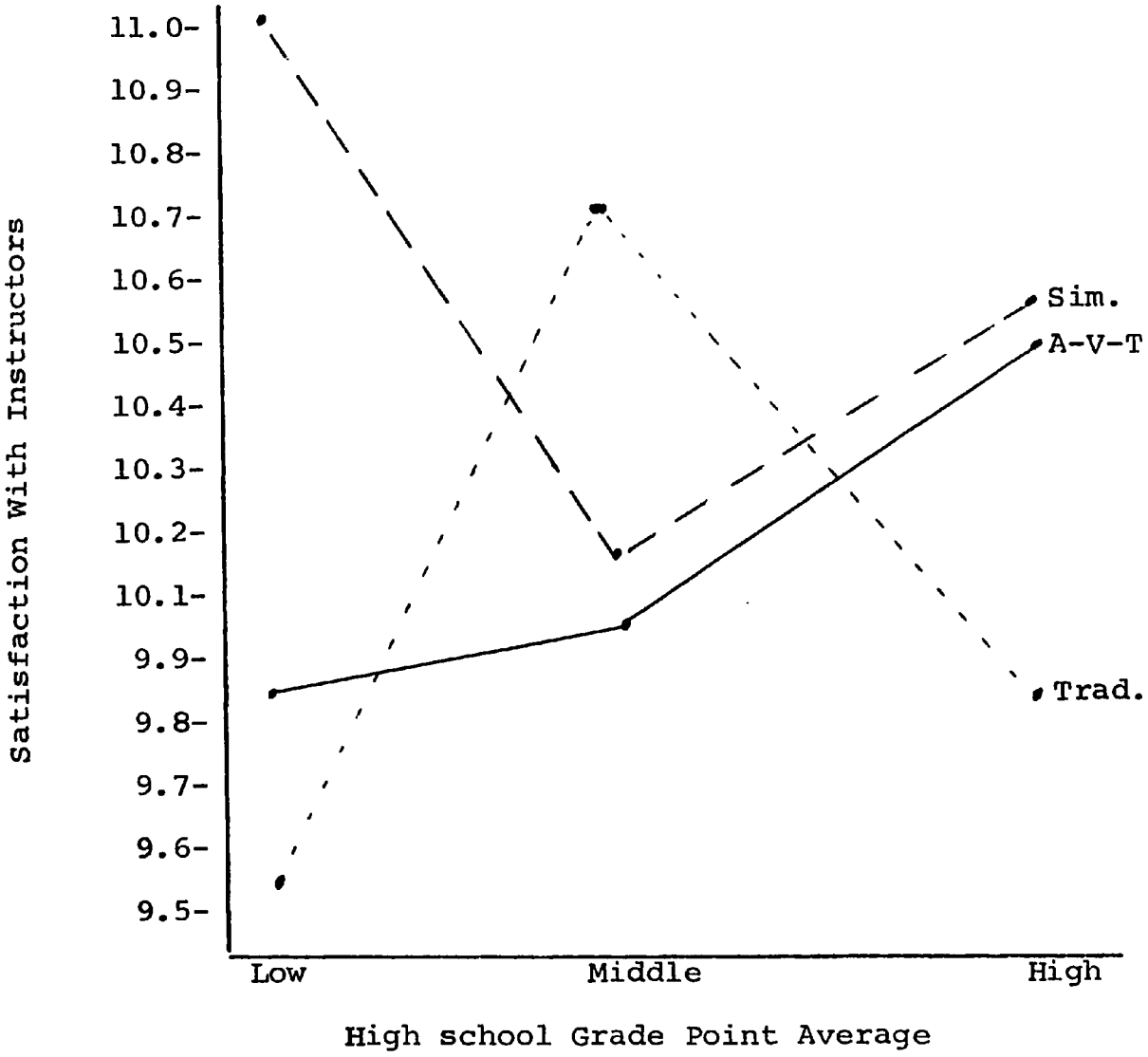


Fig. 4.9.--Profiles of Means for Methods When Satisfaction With Instructors is Being Considered

The data in Figure 4.8 indicate that when the traditional method is used those students whose high school grade point averages were high show more involvement than those students whose high school grade point averages were low and middle. When the simulated method is used those students whose high school grade point averages were middle and high did not show as much involvement as those students whose high school grade point averages were low; whereas for the audio-visual-tutorial method high school grade point average does not seem to have an effect.

The data in Figure 4.9 indicate that when the traditional method is used those students whose high school grade point averages were low and high did not show as much satisfaction with instructors as those students whose high school grade point averages were middle. When the simulated method is used those students whose high school grade point averages were middle and high did not show as much satisfaction with instructors as those students whose high school grade point averages were low; whereas for the audio-visual-tutorial method those students whose grade point averages were high showed more satisfaction with instructors than those students whose high school grade point averages were low and middle.

Although it was not hypothesized, there was a significant difference between (1) the mean "interaction" scores for

students whose high school grade point averages were low, middle and high; (2) the mean college grade point averages for students whose high school grade point averages were low, middle and high; and (3) the mean class grade point averages for students whose high school grade point averages were low, middle and high.

Hypothesis Three

Hypothesis Three is concerned with the question of whether the affective characteristics of the students will be related to the effectiveness of the instructional methods when the seven dependent variables are considered. The dependent variables are (1) involvement, (2) interaction, (3) satisfaction with instructors, (4) satisfaction with program, (5) confidence in ability, (6) college grade point average, and (7) class grade point average. Each will be considered in turn. In considering the statement of the null hypotheses related to Hypothesis 3, the most important analysis will be that of the interaction effects in the analysis of variance.

In determining whether differences between the above variables could be significant, F ratios are shown first for the differences in methods between the audio-visual-tutorial, simulated and traditional instructional methods; second for the differences in methods between the independent variables; and third the interaction effect.

However, the major interest is in the significance of the interaction effect as stated in the following null hypotheses.

Motivation

Students were stratified by Motivation for School Achievement and by method and seven 3 x 3 analysis of variance were performed to test the following null hypotheses.

Hypothesis $3a_1$* The mean student involvement score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to motivation.

Hypothesis $3b_1$ The mean student interaction score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to motivation.

Hypothesis $3c_1$ The mean student satisfaction with instructors score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to motivation.

Hypothesis $3d_1$ The mean student satisfaction with program score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to motivation.

Hypothesis $3e_1$ The mean student confidence in ability score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to motivation.

---

*$3a_1$ = Theoretical Hypothesis, dependent variable, independent variable.

Hypothesis $3f_1$ The mean college grade point average score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to motivation.

Hypothesis $3g_1$ The mean student class grade point average score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to motivation.

Table 18 presents the means and sample sizes for the seven dependent variables when students are stratified by motivation and method.

Table 19 presents the summary data for the 3 x 3 analysis of variance.

Hypotheses $3a_1$, $3b_1$, $3c_1$, $3d_1$, $3e_1$, $3f_1$, and $3g_1$ were all concerned with the interaction effect between motivation and method. Hypotheses $3a_1$, $3b_1$, $3c_1$, $3d_1$, $3f_1$, and $3g_1$ were retained; however hypothesis $3e_1$ was rejected. There seems to be a significant interaction between motivation and method when confidence in ability is being considered.

An F value of 2.40 is required to reject the null hypothesis at the five per cent level. The obtained value of F in Table 19 for motivation and confidence in ability is 2.9980. Therefore, Hypothesis $3e_1$ is significant at the five per cent level.

This effect is illustrated in Figure 4.10.

TABLE 18

MEANS AND SAMPLE SIZES FOR THE THREE INSTRUCTIONAL METHODS FOR EACH OF THE SEVEN DEPENDENT VARIABLES WHEN MOTIVATION IS BEING CONSIDERED

		Teaching Method						
		Audio-Visual-Tutorial		Simulated		Traditional		
	Level	Mean	N	Mean	N	Mean	N	Total
				Involvement				
Motivation	Low	9.2389	24	9.5384	26	9.5294	34	9.5226
	Middle	9.7910	66	9.6060	68	9.6470	72	9.6813
	High	8.4285	7	8.5000	4	8.4285	14	8.4523
	Total	9.5000	97	9.2148	98	9.2016	120	9.2187
				Interaction				
Motivation	Low	10.6521	24	13.3846	26	10.4705	34	11.5024
	Middle	10.5000	66	12.8181	68	10.7351	72	11.3844
	High	11.0000	7	14.5000	4	10.5714	14	12.0238
	Total	10.7507	97	13.5675	98	10.5923	120	11.6368
				Satisfaction with Instructors				
Motivation	Low	9.9545	24	9.9230	26	10.6470	34	10.1748
	Middle	10.1060	66	10.6666	68	10.2941	72	10.3555
	High	9.8750	7	9.5000	4	9.0000	14	9.4583
	Total	9.9785	97	10.0298	98	9.9803	120	9.9962

TABLE 18 (Continued)

		Teaching Method						
		Audio-Visual Tutorial		Simulated		Traditional		
	Level	Mean	N	Mean	N	Mean	N	Total
		Satisfaction with Program						
Motivation	Low	6.2173	24	6.2307	26	6.9411	34	6.4630
	Middle	6.3230	66	6.3880	68	6.3235	72	6.3448
	High	5.1428	7	6.0000	4	6.4285	14	5.8571
	Total	5.8943	97	6.2062	98	6.5643	120	6.2216
		Confidence in Ability						
Motivation	Low	6.2727	24	6.0370	26	5.4117	34	5.9071
	Middle	6.0923	66	5.5522	68	5.5000	72	5.6148
	High	4.8571	7	6.0000	4	5.7142	14	5.5523
	Total	5.7407	97	5.8630	98	5.5419	120	5.7152
		College Grade Point Average						
Motivation	Low	27.8636	24	31.0370	26	26.1176	34	29.0060
	Middle	27.2153	66	27.8209	68	26.8529	72	27.2963
	High	28.4285	7	30.0000	4	32.8571	14	30.4285
	Total	28.5024	97	29.6193	98	28.6092	120	28.9103
		Class Grade Point Average						
Motivation	Low	32.5000	24	30.8461	26	27.1428	34	30.1629
	Middle	28.7076	66	28.8955	68	28.7647	72	28.7892
	High	30.7142	7	30.0000	4	33.5714	14	31.4285
	Total	30.6406	97	29.9138	98	29.8263	120	30.1269

TABLE 19

SUMMARY TABLE OF ANALYSIS OF VARIANCE FOR MOTIVATION AND METHODS USING THE SEVEN DEPENDENT VARIABLES

Source	S.S.	df	M.S.	F	Decision
Involvement					
Methods	0.4119	2	0.2059	-	Accept
Motivation	26.8536	2	13.4268	6.3428**	Reject
Interaction	0.5778	4	0.1444	-	Accept
error	632.9365	299	2.1168		
Interaction					
Methods	204.7922	2	102.3961	38.7097**	Reject
Motivation	7.6882	2	3.8441	1.4532	Accept
Interaction	14.5524	4	3.6381	1.3753	Accept
error	790.9238	299	2.6452		
Satisfaction with Instructors					
Methods	0.6069	2	0.3034	-	Accept
Motivation	15.3112	2	7.6556	2.9903	Accept
Interaction	19.2603	4	4.8150	1.8807	Accept
error	765.4822	299	2.5501		
Satisfaction with Program					
Methods	13.0446	2	6.5223	4.0995*	Reject
Motivation	5.7411	2	2.8705	1.8042	Accept
Interaction	12.6732	4	3.1683	1.9914	Accept
error	475.7046	299	1.5909		
Confidence in Ability					
Methods	2.6003	2	1.3001	1.0671	Accept
Motivation	3.2206	2	1.6103	1.3217	Accept
Interaction	14.5622	4	3.6405	2.9880*	Reject
error	364.2894	299	1.2183		
College Grade Point Average					
Methods	26.6667	2	13.3333	-	Accept
Motivation	294.1792	2	147.0896	3.0815*	Reject
Interaction	365.4089	4	91.3522	1.9138	Accept
error	14271.8766	299	47.7320		
Class Grade Point Average					
Methods	19.7559	2	9.8779	-	Accept
Motivation	199.3348	2	99.6674	1.5931	Accept
Interaction	421.6226	4	105.4056	1.6848	Accept
error	18705.9775	299	62.5617		

*$F_{.05}$ (2,300) = 3.03

*$F_{.05}$ (4,300) = 2.40

**$F_{.01}$ (2,300) = 4.69

**$F_{.01}$ (4,300) = 3.40

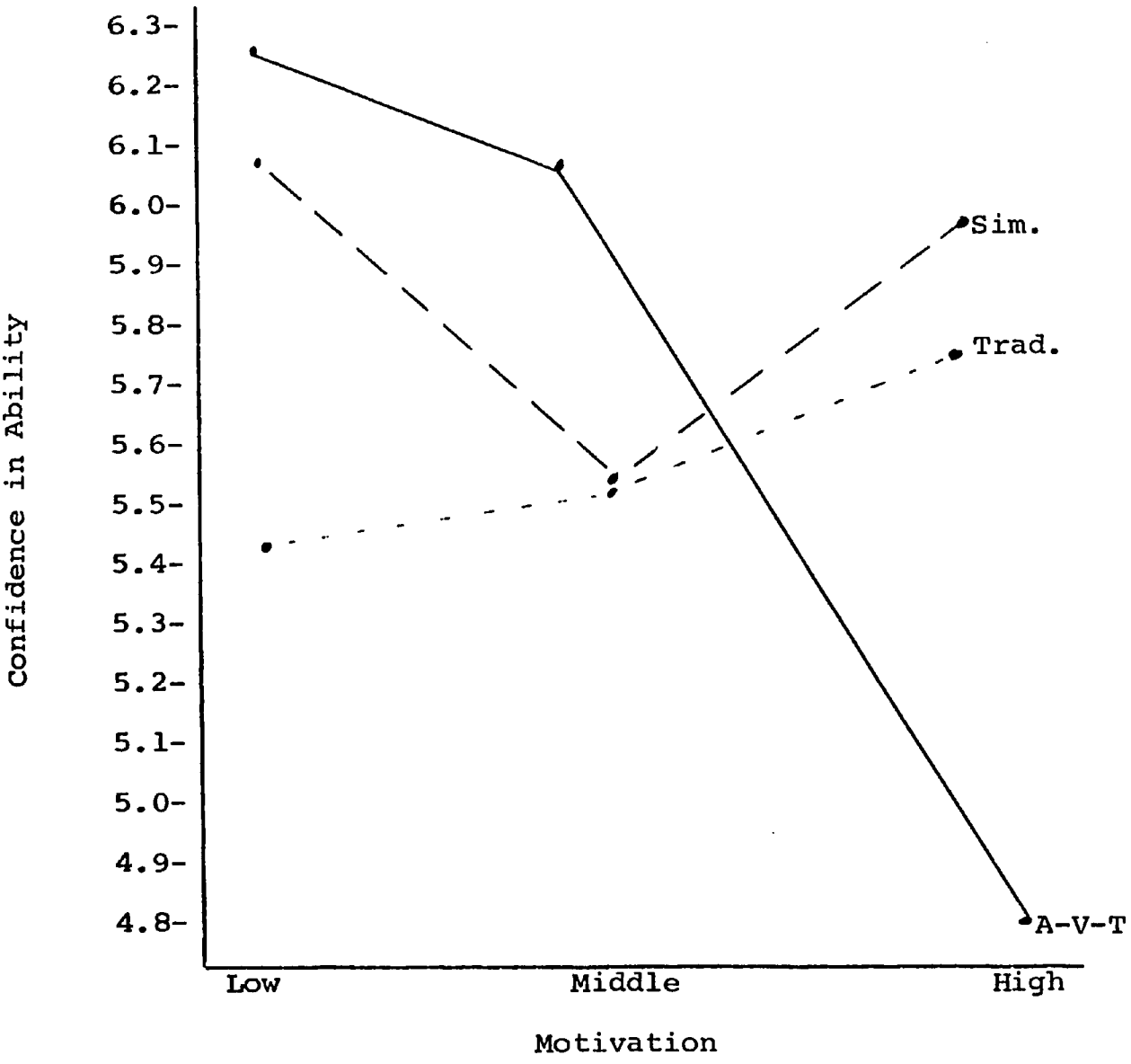


Fig. 4.10.--Profiles of Means for Methods When Confidence in Ability is Being Considered

The data in Figure 4.10 indicate that when the audio-visual-tutorial method is used those students whose motivation was high did not perceive as much confidence in ability as those students whose motivation was low and middle; whereas for the simulated and the traditional methods motivation does not seem to have an effect.

Although it was not hypothesized, there was a significant difference between the mean college grade point averages for students whose motivation was low, middle and high.

Self-Concept of Ability

Students were stratified by self-confidence of ability and by method and seven 3 x 3 analysis of variance were performed to test the following null hypotheses.

Hypothesis $3a_2$* The mean student involvement score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to self-concept of ability.

Hypothesis $3b_2$ The mean student interaction score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to self-concept of ability.

Hypothesis $3c_2$ The mean student satisfaction with instructors score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to self-concept of ability.

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*$3a_2$ = Theoretical Hypothesis, dependent variable, independent variable.

Hypothesis $3d_2$ The mean student satisfaction with program score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to self-concept of ability.

Hypothesis $3e_2$ The mean student confidence in ability to achieve score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to self-concept of ability.

Hypothesis $3f_2$ The mean student college grade point average score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to self-concept of ability.

Hypothesis $3g_2$ The mean student class grade point average score for students using audio-visual-tutorial, simulated, and traditional methods will not differ according to self-concept of ability.

Table 20 presents the means and sample sizes for the seven dependent variables when students are stratified by self-concept of ability and method.

Table 21 presents the summary data for the 3 x 3 analysis of variance.

Hypotheses $3a_2$, $3b_2$, $3c_2$, $3d_2$, $3e_2$, $3f_2$, and $3g_2$ were all concerned with the interaction effect between self-concept of ability and method. Hypotheses $3a_2$, $3b_2$, $3c_2$, $3d_2$, $3e_2$, and $3f_2$ were retained; however hypothesis $3g_2$ was rejected. There seems to be a significant interaction between self-concept of ability and method when college grade point average is being considered.

TABLE 20

MEANS AND SAMPLE SIZES FOR THE THREE INSTRUCTIONAL METHODS FOR EACH OF THE SEVEN DEPENDENT VARIABLES WHEN SELF-CONCEPT OF ABILITY IS BEING CONSIDERED

		Teaching Method						
		Audio-Visual-Tutorial		Simulated		Traditional		
	Level	Mean	N	Mean	N	Mean	N	Total
				Involvement				
Self-Concept of Ability	Low	10.0000	11	9.7500	8	9.2857	14	9.6785
	Middle	9.5000	72	9.4166	74	9.5476	82	9.4880
	High	9.7692	14	10.0000	16	9.3000	24	9.6897
	Total	9.7564	97	9.7222	98	9.3777	120	9.6187
				Interaction				
Self-Concept of Ability	Low	11.1818	11	14.0000	8	10.5714	14	11.9177
	Middle	10.7428	72	12.8888	74	10.6988	82	11.4434
	High	9.6923	14	13.0000	16	10.5238	24	11.0720
	Total	10.5389	97	13.2962	98	10.5980	120	11.4777
				Satisfaction with Instructors				
Self-Concept of Ability	Low	10.3636	11	10.5000	8	10.1428	14	10.3354
	Middle	9.8857	72	10.4722	74	10.3333	82	10.2304
	High	10.5384	14	10.1250	16	9.8000	24	10.1544
	Total	10.2625	97	10.3657	98	10.0920	120	10.2400

TABLE 20 (Continued)

		Teaching Method						
		Audio-Visual-Tutorial		Simulated		Traditional		
	Level	Mean	N	Mean	N	Mean	N	Total
Satisfaction with Program								
Self-Concept of Ability	Low	6.5454	11	6.5000	8	7.2857	14	6.7770
	Middle	6.1714	72	6.3333	74	6.3690	82	6.2912
	High	6.1538	14	6.1250	16	6.5000	24	6.2596
	Total	6.2902	97	6.3194	98	6.7182	120	6.4426
Confidence in Ability								
Self-Concept of Ability	Low	6.4545	11	6.2500	8	6.1428	14	6.2824
	Middle	6.1142	72	5.7777	74	5.6097	82	5.8338
	High	5.2857	14	5.1250	16	4.5714	24	4.9940
	Total	5.9514	97	5.7175	98	5.4413	120	5.7034
College Grade Point Average								
Self-Concept of Ability	Low	32.7272	11	30.0000	8	25.1428	14	29.2900
	Middle	27.1805	72	29.6944	74	27.7317	82	28.2022
	High	27.1538	14	24.6250	16	27.4000	24	26.3929
	Total	29.0205	97	28.1064	98	26.7581	120	27.9616
Class Grade Point Average								
Self-Concept of Ability	Low	33.0000	11	30.0000	8	27.2857	14	30.0952
	Middle	29.7777	72	30.0833	74	28.6097	82	29.4902
	High	25.3076	14	26.3750	16	30.5000	24	27.3942
	Total	29.3617	97	28.8196	98	28.7984	120	28.9932

TABLE 21

SUMMARY TABLE OF ANALYSIS OF VARIANCE FOR SELF-CONCEPT OF ABILITY AND METHODS USING THE SEVEN DEPENDENT VARIABLES

Source	S.S.	df	M.S.	F	Decision
Involvement					
Methods	5.1896	2	2.5948	1.1851	Accept
Self-Concept	2.2716	2	1.1358	-	Accept
Interaction	7.6903	4	1.9225	-	Accept
error	654.6743	299	2.1895		
Interaction					
Methods	270.8023	2	135.4011	52.2369**	Reject
Self-Concept	19.4896	2	9.7448	3.7594*	Reject
Interaction	21.8057	4	5.4511	2.1030	Accept
error					
Satisfaction with Instructors					
Methods	2.1437	2	1.0718	-	Accept
Self-Concept	0.6194	2	0.3097	-	Accept
Interaction	11.1466	4	2.7866	1.0456	Accept
error	796.1373	299	2.6626		
Satisfaction with Program					
Methods	6.7617	2	3.3808	2.0993	Accept
Self-Concept	6.8195	2	3.4097	2.1172	Accept
Interaction	3.4342	4	0.8585	-	Accept
error	481.5291	299	1.6104		
Confidence in Ability					
Methods	7.7209	2	3.8604	3.3876*	Reject
Self-Concept	38.7666	2	19.3833	17.0091**	Reject
Interaction	1.4095	4	0.3523	-	Accept
error	340.7339	299	1.1395		
College Grade Point Average					
Methods	150.9858	2	75.4929	1.5729	Accept
Self-Concept	183.7397	2	91.8698	1.9142	Accept
Interaction	570.6436	4	142.6601	2.9724*	Reject
error	14350.1665	299	47.9938		
Class Grade Point Average					
Methods	10.5899	2	4.2949	-	Accept
Self-Concept	198.8155	2	99.4077	1.5566	Accept
Interaction	519.6826	4	129.9206	2.0344	Accept
error	19093.8330	299	63.8589		

$^{*}F_{.05}$ (2,300) = 3.03 $^{*}F_{.05}$ (4,300) = 2.40

$^{**}F_{.01}$ (2,300) = 4.69 $^{**}F_{.01}$ (4,300) = 3.40

An F value of 2.40 is required to reject the null hypothesis at the five per cent level. The obtained value of F in Table 21 for self-concept of ability and college grade point average is 2.9724. Therefore, Hypothesis $3g_2$ is significant at the five per cent level.

This effect is illustrated in Figure 4.11.

The data in Figure 4.11 show that when the audio-visual-tutorial method is used those students whose self-confidence of ability was middle and high did not achieve as high a college grade point average as those students whose self-confidence of ability was low. When the simulated method is used those students whose self-confidence of ability was high did not achieve as high a college grade point average as those students whose self-confidence was low and middle. When the traditional method is used those students whose self-confidence of ability was low did not achieve as high a college grade point average as those students whose self-confidence of ability was middle and high.

Although it was not hypothesized, there were significant differences between (1) the mean "interaction" for those students whose self-confidence of ability was low, middle and high; and (2) the mean class grade point averages for those students whose self-confidence of ability was low, middle and high.



Fig. 4.11.--Profiles of Means for Methods When College Grade Point Average is Being Considered

Occupational Values

Students were stratified by occupational values and by method and seven 3 x 3 analysis of variance were performed to test the following null hypotheses.

Hypothesis $3a_3$* The mean student involvement score for students taught using audio-visual-tutorial, simulated and traditional methods will not differ according to occupational values.

Hypothesis $3b_3$ The mean student interaction score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to occupational values.

Hypothesis $3c_3$ The mean student satisfaction with instructors score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to occupational values.

Hypothesis $3d_3$ The mean satisfaction with program score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to occupational values.

Hypothesis $3e_3$ The mean student confidence in ability to achieve score for students taught using audio-visual-tutorial, simulated, and traditional methods will not differ according to occupational values.

Hypothesis $3f_3$ The mean student college grade point average score for students taught using audio-visual-tutorial, simulated and traditional methods will not differ according to occupational values.

Hypothesis $3g_3$ The mean student class grade point average score for students taught using audio-visual-tutorial, simulated and traditional methods will not differ according to occupational values.

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*$3a_3$ = Theoretical Hypothesis, dependent variable, independent variable.

Table 22 presents the means and sample sizes for the seven dependent variables when students are stratified by occupational values and method.

Table 23 presents the summary data for the 3 x 3 analysis of variance.

Hypotheses $3a_3$, $3b_3$, $3c_3$, $3d_3$, $3e_3$, $3f_3$, and $3g_3$ were all concerned with the interaction effect between occupational values and method. Hypotheses $3a_3$, $3b_3$, $3c_3$, $3d_3$, $3f_3$, and $3g_3$ were retained; however, hypothesis $3e_3$ was rejected. There seems to be a significant interaction between occupational values and method when confidence in ability is being considered.

An F value of 2.40 is required to reject the null hypothesis at the five per cent level. The obtained value of F in Table 23 for occupational values and confidence in ability is 2.6539. Therefore, Hypothesis $3e_3$ is significant at the five per cent level.

The data in Figure 4.12 indicate that when the audio-visual-tutorial method is used those students whose occupational values were high did not show as much confidence in ability to achieve as those students whose occupational values were low and middle; whereas for the simulated and the traditional methods occupational values did not seem to have an effect.

TABLE 22

MEANS AND SAMPLE SIZES FOR THE THREE INSTRUCTIONAL METHODS FOR EACH OF THE SEVEN DEPENDENT VARIABLES WHEN OCCUPATIONAL VALUES ARE BEING CONSIDERED

		Teaching Method						
		Audio-Visual-Tutorial		Simulated		Traditional		
	Level	Mean	N	Mean	N	Mean	N	Total
				Involvement				
Occupational Values	Low	9.2069	30	9.5000	40	9.5555	36	9.4208
	Middle	9.7586	60	9.4800	52	9.4000	74	9.5462
	High	9.6666	7	10.3333	6	9.6000	10	9.8666
	Total	9.5440	97	9.7711	98	9.5185	120	9.6112
				Interaction				
Occupational Values	Low	10.6551	30	12.9500	40	10.2222	36	11.2757
	Middle	10.7931	60	13.2000	52	10.8571	74	11.6167
	High	9.3333	7	12.3333	6	10.6000	10	10.7555
	Total	10.2605	97	12.8277	98	10.5597	120	11.2159
				Satisfaction with Instructors				
Occupational Values	Low	9.8620	30	10.6000	40	10.5555	36	10.3391
	Middle	10.0517	60	10.3600	52	10.0857	74	10.1658
	High	10.7500	7	9.8571	6	10.2000	10	10.2690
	Total	10.2212	97	10.2723	98	10.2804	120	10.2579

TABLE 22 (Continued)

		Teaching Methods						
		Audio-Visual-Tutorial		Simulated		Traditional		
	Level	Mean	N	Mean	N	Mean	N	Total
		Satisfaction with Program						
Occupational Values	Low	6.3103	30	6.3000	40	6.9444	36	6.5182
	Middle	6.2241	60	6.2800	52	6.2857	74	6.2632
	High	5.7142	7	6.5000	6	6.6000	10	6.2714
	Total	6.0828	97	6.3600	98	6.6100	120	6.3509
		Confidence in Ability						
Occupational Values	Low	6.3448	30	5.7500	40	5.6666	36	5.9204
	Middle	6.0516	60	5.7200	52	5.3714	74	5.7143
	High	4.7142	7	5.2500	6	5.8000	10	5.2547
	Total	5.7035	97	5.5733	98	5.6126	120	5.6298
		College Grade Point Average						
Occupational Values	Low	28.3793	30	30.2500	40	28.1111	36	28.9134
	Middle	28.3793	60	28.0400	52	26.8571	74	27.7588
	High	21.8888	7	26.6666	6	28.2000	10	25.5851
	Total	26.2158	97	28.3188	98	27.7227	120	27.4191
		Class Grade Point Average						
Occupational Values	Low	29.1034	30	29.8500	40	26.8333	36	28.5955
	Middle	30.7758	60	29.0800	52	29.6571	74	29.8376
	High	23.0000	7	30.0000	6	29.6000	10	27.5333
	Total	27.6264	97	29.6433	98	28.6968	120	28.6555

TABLE 23

SUMMARY TABLE OF ANALYSIS OF VARIANCE FOR OCCUPATIONAL VALUES AND METHODS USING THE SEVEN DEPENDENT VARIABLES

Source	S.S.	df	M.S.	F	Decision
		Involvement			
Methods	1.8325	2	0.9162	-	Accept
Occup. Values	3.9750	2	1.9875	-	Accept
Interaction	7.9839	4	1.9959	-	Accept
error	651.2815	299	2.1871		
		Interaction			
Methods	184.0496	2	92.0248	35.1636**	Reject
Occup. Values	19.3792	2	9.6896	3.7025*	Reject
Interaction	11.1547	4	2.7886	1.0655	Accept
error	782.4959	299	2.6170		
		Satisfaction with Instructors			
Methods	0.1101	2	0.5506	-	Accept
Occup. Values	1.9836	2	0.9918	0	Accept
Interaction	11.1265	4	2.7816	1.0451	Accept
error	795.7448	299	2.6613		
		Satisfaction with Program			
Methods	7.4557	2	3.7278	2.3184	Accept
Occup. Values	4.3843	2	2.1921	1.3633	Accept
Interaction	7.9851	4	1.9962	1.2415	Accept
error	480.7762	299	1.6079		
		Confidence in Ability			
Methods	0.4355	2	0.2183	-	Accept
Occup. Values	9.2184	2	4.692	3.8086*	Reject
Interaction	12.8470	4	3.2117	2.6539*	Reject
error	361.8479	299	1.2101		
		College Grade Point Average			
Methods	119.7855	2	59.8927	1.2275	Accept
Occup. Values	235.0479	2	117.5239	2.4088	Accept
Interaction	288.0474	4	72.0118	1.4759	Accept
error	14587.8519	299	48.7888		
		Class Grade Point Average			
Methods	99.1972	2	49.5986	-	Accept
Occup. Values	174.5877	2	87.2938	1.3704	Accept
Interaction	484.7663	4	121.1916	1.9025	Accept
error	19046	299	63.7014		

*$F_{.05}$ (2,300) = 3.03 *$F_{.05}$ (4,300) = 2.40

**$F_{.01}$ (2,300) = 4.69 **$F_{.01}$ (4,300) = 3.40

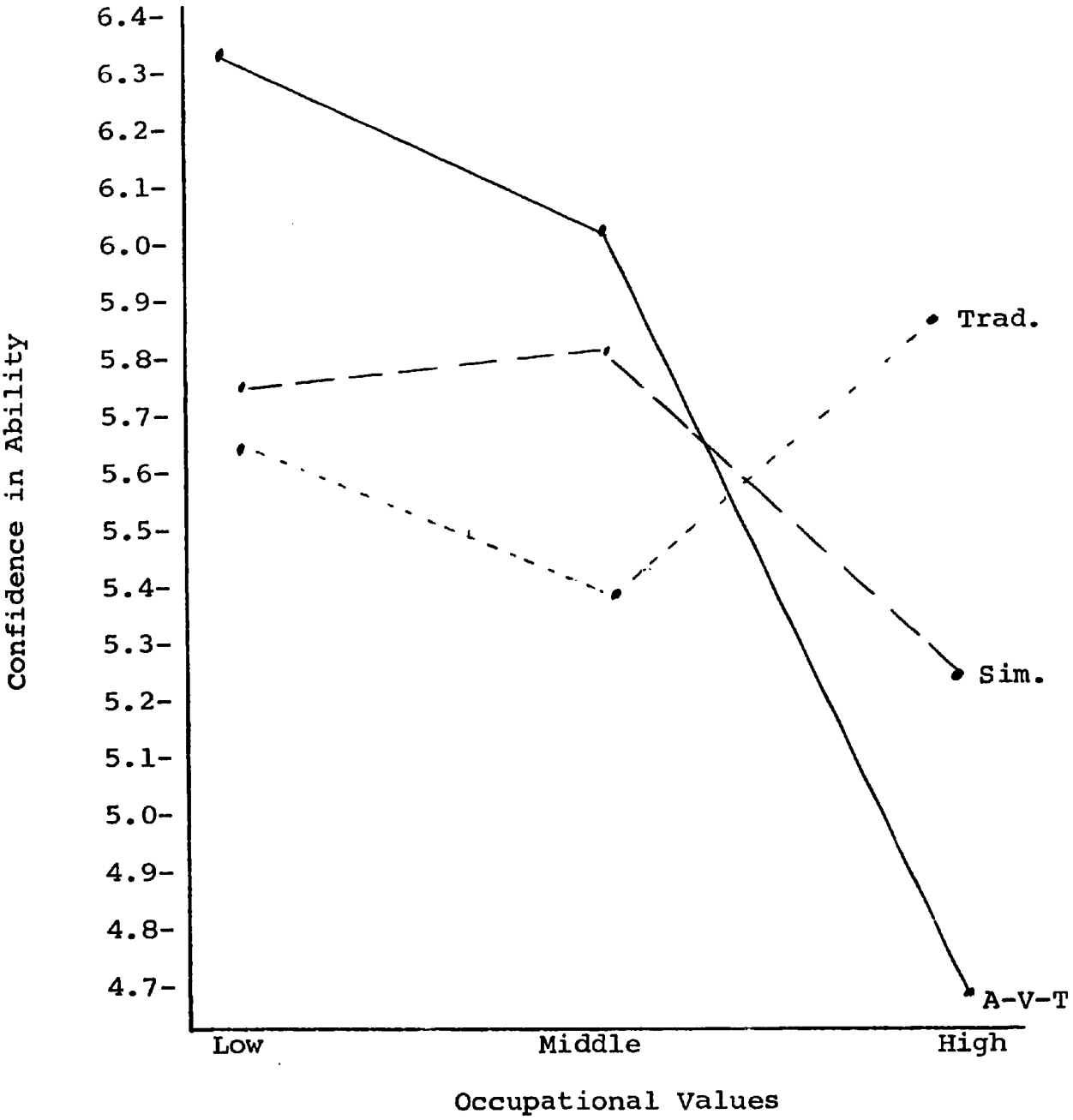


Fig. 4.12.--Profiles of Means for Methods When Confidence in Ability is Being Considered

Resume of Results Related to Hypotheses

When students from the (1) audio-visual-tutorial method; (2) simulated method; and (3) traditional method were compared for effectiveness of method on seven dependent variables, the outcomes of the study were as follows:

1. Simulated students have more positive attitudes toward the "interaction" in the classroom than did audio-visual-tutorial and traditional students.

2. Audio-visual-tutorial students have more positive attitudes toward confidence in ability to achieve in their program than did simulated and traditional students.

3. When father's education was the accompanying independent variable the null hypothesis was considered tenable on one of the seven F Tests for class grade point average.

4. When mother's education was the accompanying independent variable the null hypothesis was considered tenable on two of the seven F Tests for (1) satisfaction with instructors, and (2) class grade point average.

5. When father's occupation was the accompanying independent variable the null hypothesis was considered tenable on three of the seven F Tests for (1) satisfaction with instructors; (2) college grade point average, and (3) class grade point average.

6. When mother's occupation was the accompanying independent variable the null hypothesis was considered tenable on one of the seven F Tests for "interaction."

7. When high school grade point average was the accompanying independent variable the null hypothesis was considered tenable on two of the seven F Tests for (1) involvement, and (2) satisfaction with instructors.

8. When motivation was the accompanying independent variable the null hypothesis was considered tenable on one of the seven F Tests for confidence in ability to achieve in their program.

9. When self-concept of ability was the accompanying independent variable the null hypothesis was considered tenable on one of the seven F Tests for college grade point average.

10. When occupational values was the accompanying independent variable the null hypothesis was considered tenable on one of the seven F Tests for college grade point average.

Interpretation of Results

The writer first hypothesized that the instructional methods would differ in their effectiveness with students. The empirical findings do not, in fact, support the hypotheses that the audio-visual-tutorial students, the simulated students or the traditional students will identify more positive involvement, satisfaction with instructors, satisfaction with program and achieve higher college and class grade point averages. However, the findings do indicate that in one of the sub-hypothesis the significant difference favored the audio-visual-tutorial group on the variable confidence in ability to achieve in the instructional program.

It appears that the audio-visual-tutorial students scored significantly higher on this scale. This is not surprising to the writer since the audio-visual-tutorial method provides an opportunity for the student to exhibit much self confidence. The structure of the learning experience allows the student to work on an independent basis. The preceding findings suggest that students in an audio-visual-tutorial class, which provides for independence and which is highly individualized, perceive more confidence in ability to achieve than students in the other two instructional methods where the student has less independence.

In another sub-hypothesis the findings indicate that the significant difference favored the simulated group on the variable "interaction." The simulated method is characterized by much interaction such as students working with others on an individual basis or in groups, and there is also a high degree of participation in class activities. This finding suggests that the simulated students perceived a high degree of interaction among members of the group. Therefore, students in the simulated instructional group scored significantly higher on the interaction scale than did students in the audio-visual-tutorial and traditional methods.

The writer also hypothesized other significant differences between the three different instructional methods. It was predicted that differences will occur in instructional methods on dependent variables according to demographic and affective characteristics. The findings indicate significant interaction was shows between: (1) high school grade point average and involvement; (2) mother's occupation and "interaction"; (3) mother's education, father's occupation, high school grade point average and satisfaction with instructors; (4) motivation, occupational values and confidence in ability to achieve; (5) father's occupation and college grade point average; self-concept of ability and college grade point average; and (6) father's education and class grade point average,

mother's education and class grade point average; and father's occupation and class grade point average.

The results of the interaction indicated above are shown by low, middle and high levels on the tables that follow.

Table 24 shows that when high school grade point average interacts with involvement a simulated method appears to serve students more favorably. Students whose high school

TABLE 24

LEVELS FOR INTERACTION BETWEEN HIGH SCHOOL GRADE POINT AVERAGE AND INVOLVEMENT FOR METHODS

High School Grade Point Average	Audio-Visual-Tutorial	Simulated	Traditional
	Involvement		
L*	M	H	L
M	M	M	L
H	M	M	M
Totals	3M	1H, 2M	1M, 2L

*Levels (L = Low; M = Middle; H = High).

grade point averages are low, middle and high all perceive high, and middle involvement such as (1) when in class, they usually feel wide awake and involved in class activities; (2) they perceive themselves as working harder than most students on school work; and (3) they usually cooperate with the teacher.

This finding suggests that the simulated method is more effective with students on involvement than the audio-visual-tutorial and simulated methods.

Table 25 presents the interaction effect between mother's occupation and the variable "interaction" in the classroom. Students whose mother's occupations are low, middle and high all perceive middle and high "interaction" in the classroom when the simulated method is used. An examination of the Table shows that the simulated instructional method is clearly more effective with students on "interaction" than the audio-visual-tutorial and traditional methods. As indicated in the discussion above the simulated method provides for a high degree of participation and interaction in class activities. This finding suggests that the simulated method is more effective with students on "interaction" and as shown in Table 6 is significantly different from the audio-visual-tutorial and the traditional methods.

Table 26 presents the interaction effect between (1) mother's education and satisfaction with instructors; (2) father's occupation and satisfaction with instructors; and (3) high school grade point average and satisfaction with instructors. An examination of the Table indicates that students in the simulated method perceive more over-all satisfaction with instructors such as teacher interest, knowledge of subject,

TABLE 25

LEVELS FOR INTERACTION BETWEEN MOTHER'S OCCUPATION AND "INTERACTION" FOR METHODS

Mother's Occupation	Audio-Visual-Tutorial	Simulated	Traditional
	"Interaction"		
L*	L	H	L
M	L	H	L
H	L	M	L
Totals	3L	2H, 1M	3L

*Levels (L = Low; M = Middle; H = High).

and style of presentation than students in the other two instructional methods. There is more of an opportunity to judge the instructor in these roles in the simulated method than in the audio-visual-tutorial method where the student works independent of the teacher. However, a student in the traditional instructional method would also have an opportunity to judge the teacher in these roles. The results indicate that the simulated method is more effective with students when satisfaction with instructors is being considered.

Table 27 presents the interaction between motivation and confidence in ability; and occupational values and confidence in ability. The audio-visual-tutorial instructional

TABLE 26

LEVELS FOR INTERACTION BETWEEN MOTHER'S EDUCATION AND SATISFACTION WITH INSTRUCTORS; FATHER'S OCCUPATION AND SATISFACTION WITH INSTRUCTORS; AND HIGH SCHOOL GRADE POINT AVERAGE AND SATISFACTION WITH INSTRUCTORS FOR METHODS

	Audio-Visual-Tutorial	Simulated	Traditional
Mother's Education	Satisfaction with Instructors		
L*	M	L	M
M	L	L	L
H	L	M	L
Father's Occupation			
L	M	L	L
M	M	M	M
H	L	L	H
High School Grade Point Average			
L	L	H	L
M	L	M	M
H	M	M	L
Totals	4M, 5L	1H, 4M, 4L	1H, 3M, 5L

*Levels (L = Low; M = Middle; H = High).

TABLE 27

LEVELS FOR INTERACTION BETWEEN MOTIVATION AND CONFIDENCE IN ABILITY; AND OCCUPATIONAL VALUES AND CONFIDENCE IN ABILITY FOR METHODS

	Audio-Visual-Tutorial	Simulated	Traditional
Motivation	Confidence in Ability		
L*	H	H	M
M	H	M	M
H	L	H	M
Occupational Values			
H	H	M	M
M	H	M	M
L	L	M	M
Totals	4H, 2L	2H, 4M	6M

*Levels (L = Low; M = Middle; H = High).

method shows that students perceive more confidence in ability when this method is used. As indicated in the discussion above, the student is free to work on independent learning experiences based on his own special needs. Success with this type of self-instruction over a period of time would help the student gain self confidence. This finding suggests that the audio-visual-tutorial method is more effective with students

on confidence in ability and as shown in Table 7 is significantly different from the simulated and the traditional methods.

The results of interaction between father's occupation and college grade point average; and self-concept of ability and college grade point average is presented in Table 28. It

TABLE 28

LEVELS FOR INTERACTION BETWEEN FATHER'S OCCUPATION AND COLLEGE GRADE POINT AVERAGE; AND SELF-CONCEPT OF ABILITY AND COLLEGE GRADE POINT AVERAGE FOR METHODS

Father's Occupation	Audio-Visual-Tutorial	Simulated	Traditional
	College Grade Point Average		
L*	M	M	H
M	M	M	L
H	M	M	L
Self-Concept of Ability			
L	M	M	L
M	M	M	M
H	M	L	M
Totals	1H, 5M	5M, 1L	1H, 2M, 3L

*Levels (L = Low; M = Middle; H = High).

appears that students in audio-visual-tutorial method achieved higher over-all college grade point averages than did students in the simulated and traditional methods. Since the student spends a major portion of his time working on individual assignments geared to his own needs, interest and ability, the writer assumes that the positive achievement in the audio-visual-tutorial instructional method can be attributed to the high degree of individualization of the method. The findings suggest that students in classes which are highly individualized achieve better over-all college grades.

An examination of Table 29 indicates that the audio-visual-tutorial instructional method, the simulated instructional method, and the traditional instructional method are equally as effective with students on class grade point average. This finding suggests that one method was no more effective than another when class grade point average is being considered. The preceding findings can be interpreted as follows: (1) students will experience success in any one of the three classroom structures considered in this study; and (2) there are many factors in the classroom organization that contribute to the success of students.

TABLE 29

LEVELS FOR INTERACTION BETWEEN FATHER'S EDUCATION AND CLASS GRADE POINT AVERAGE; MOTHER'S EDUCATION AND CLASS GRADE POINT AVERAGE; AND FATHER'S OCCUPATION AND CLASS GRADE POINT AVERAGE FOR METHODS

	Audio-Visual-Tutorial	Simulated	Traditional
Father's Education	Class Grade Point Average		
L*	L	M	M
M	M	M	M
H	H	M	M
Mother's Education			
L	L	M	M
M	M	M	M
H	H	L	M
Father's Education			
L	M	M	H
M	M	M	L
H	M	M	M
Totals	2H, 5M, 2L	8M, 1L	8M, 1L

*Levels (L = Low; M = Middle; H = High).

Summary

On the assumption that instructional methods that are more individualized would be more effective with students than instructional methods that are more traditional or less individualized, it was predicted that one method would be more effective with students on selected variables related to achievement than another method. However, when the analysis of the data in this study was done, which was restricted to the comparison of means for the three groups, the results indicate significant differences on only two of the seven dependent variables. Therefore, the hypothesis is not supported.

It was also predicted that instructional methods would differ in their effectiveness with students according to demographic and affective characteristics of the student; also one instructional method would appear more favorable to students than another instructional method. Although interaction effects were registered for several of the dependent variables and did differ according to demographic and affective characteristics, the audio-visual-tutorial instructional method appeared to be more positive, based on perceptions of students, two times; the simulated instructional method appeared to be more positive based on perceptions of students three times.

However, the audio-visual-tutorial instructional method registered a statistically significant difference on only one

variable; the simulated instructional method also registered a statistically significant difference on only one variable. There are not enough statistically significant differences between the methods to support the hypotheses.

CHAPTER V

SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

The major theoretical positions advanced in this study are: (1) one instructional method is more effective with students than another instructional method when selected factors related to achievement are being considered; and (2) selected factors related to achievement will differ between the methods according to demographic and affective characteristics.

Specifically, this study focused on comparing three different instructional methods on seven dependent variables related to achievement. The dependent variables were involvement in the classroom, "interaction" in the classroom, satisfaction with instructors in the classroom, satisfaction with instructional program, confidence in ability to achieve in the instructional program, college grade point average, and class grade point average. The design of the study also required eight independent variables to be used in testing the hypotheses. The independent variables, demographic and affective, were father's educational history, mother's educational history, father's occupational history, mother's

occupational history, motivation for school achievement, self-concept of ability, occupational values, and high school grade point average.

The samples consisted of ninety-eight students who were enrolled in an audio-visual-tutorial instructional program; ninety-nine students who were enrolled in a simulated office instructional program; and one hundred twenty students who were enrolled in a traditional instructional program. The data were collected by questionnaires administered at the end of the students' second semester in the instructional program.

The purpose of the study was to determine whether or not one instructional method out of three was more effective with certain types of students than the other two when compared on the seven dependent variables; also the purpose was to determine whether or not demographic characteristics of students and affective characteristics of students would have any effect on the seven dependent variables.

Summary of Findings

This study was designed to provide data which would allow a meaningful comparison of three different instructional methods with the intent that it would lead to a more complete understanding of the effectiveness of methods with students.

For the purposes of investigation, three major theoretical hypohteses were stated in null form to be accepted or

rejected in the light of the evidence collected. The first major hypothesis, supported by seven sub-hypotheses (one for each dependent variable), stated that instructional methods will not differ in their effectiveness with students when each of the seven dependent variables is being considered. The three instructional groups were compared on the seven dependent variables. Of the seven variables, two were found to be statistically significant. The significant difference favored the simulated method on one variable, and favored the audio-visual-tutorial method on one variable. The other five variables were not significant.

The second and third major hypotheses stated that demographic and affective characteristics of the students will not be related to the effectiveness of instructional methods when each of the seven dependent variables is being considered. Significant interaction was noted for demographic and affective characteristics and dependent variables for the following: (1) high school grade point average and involvement; (2) mother's occupation and "interaction"; (3) mother's education and satisfaction with instructors; father's occupation and satisfaction with instructors; and high school grade point average and satisfaction with instructors; (4) motivation and confidence in ability; and occupational values and confidence in ability; (5) father's occupation and college

grade point average; and self-concept of ability and college grade point average; and (6) father's education and class grade point average; mother's education and class grade point average; and father's occupation and class grade point average.

Attempts were made to compare the three instructional methods used in this study by exploring the coherence and consistency of the many bits of evidence as indicated by the findings. A definite, clear or consistent relationship between demographic characteristics, affective characteristics and dependent variables presented in this study has not been evident, and the relationships which did exist were, for the most part, similar in all three methods.

Each of the three major null hypotheses was accepted. This resulted in the conclusion that students in all three methods indicated a consistently favorable perception of the instructional methods that does not differ significantly when related to the seven dependent variables in this study.

As indicated by the findings, there is a seeming paradox in that there are a number of inconsistencies that appear in the research data. For example, when a significant interaction was shown between an independent variable and a dependent variable the writer found it difficult to take one or more than one variable and generalize with regard to the effect it has on certain students. Therefore, it is left to the discretion

of the reader to ascertain the scientific tenability of the conclusions in this study by examining the coherence and consistency of the many bits of evidence, the congruity of the theory, and the interlocking of the individual bits of evidence with theory.

Implications

In considering implications of the results of this study, it should be recalled that the three schools used in this study are open-door institutions that in effect accept all individuals age eighteen or older who apply for admission. Therefore, any discussion about this investigation must be considered within the context of this fact.

Given this fact, it is clear that students have considerable freedom in their choices of programs or in electing courses in which they enroll. This means that instructors in courses that do not have specific prerequisites may have students who range in ability and motivation from the bottom of the low-achieving typology to the top of the high-achieving one. This range of talent and interest presents educators with problems in establishing instructional programs and in devising appropriate teaching strategies.

There is one aspect of this instructional problem that should be mentioned, instructors may be in somewhat of a dilemma or a confusion of goals. They may insist that all

students acquire a certain minimum of knowledge and competency in a subject or they may establish individual goals for students that take into account their differences in ability, interest, and prior knowledge or preparation. If instructors emphasize the former approach, some students may not be challenged and others may be out of their achievement depths from the beginning. If the latter approach is emphasized, instructors will have to give much more individualized attention on the basis of what a student has mastered in relation to where he was when he started the course.

There are other problems inherent in the facts of the range of ability and characteristics of community college students such as special problems and responsibilities for the administrators of the college. While admission to the college is in no way a promise of successful or pleasant experiences for students, the college does have some obligation to prevent failure in instructional programs where it may be prevented. It has a responsibility to be resourceful, innovative and flexible in attempting to help its students succeed in a program.

Another consideration in this study is the size and selection of the sample used which limits the inferences that can be made about the results. The selection of the sample was not random, and it cannot be assumed that the selected

sample is representative. The lack of randomness in the three samples, therefore, limits the inferences that can be made about the relationships and effectiveness found in this study. In similar investigations, it is suggested that the number of schools be increased and students be randomly assigned.

The implication that a more individualized instructional programs services a wider range of abilities is drawn from the findings indicating more positive attitudes and more favorable interaction in the audio-visual-tutorial and the simulated instructional methods, although these findings did not cause the writer to favor one instructional method over another.

Recommendations

The findings in this study suggest that further research should be conducted that would investigate the same variables included in this study in order to reinforce the findings in this study. However, the writer recommends that the sample sizes be increased. The samples should also include representation from several ethnic groups, male students, and be expanded to include more schools. Variables showing a significant difference in this study should be studied further in an attempt to determine what underlying factors may have influence on the differences.

A separate study designed to isolate additional factors in the classroom which are related to learning such as specific

learning experiences, general learning experiences, student-teacher interaction, would compliment the findings of this study and would contribute to meeting the needs of individual students.

Attention should also be given to research that focuses on forces that influence the student in out-of-school life to see if there is a relationship to how well the student achieves in school.

The author believes that future studies taking into account not only the traditional criteria of grades and test scores but also such factors as time available for school studies, financial situation of students, interests, educational and vocational aspirations, and motivation of students will be useful in developing teaching strategies and learning environments that creatively nurture academic potential and personal development.

The suggestions and recommendations made in this study cover only a few of the possibilities that could be considered. Community colleges are institutions of the twentieth century and are created to meet special and changing needs of many individuals for post-secondary education. By their nature and purpose they should be flexible in their policies and procedures and free to try out many different strategies for meeting the needs of students and helping them to be successful in college.

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APPENDICES

APPENDIX A

THE QUESTIONNAIRE

Student Code_____

You are requested to complete this questionnaire. The sole purpose of this questionnaire is academic research into students' attitudes in Community and Junior Colleges. Please do not identify yourself and please be assured that all respondents will remain anonymous. Please follow the directions given in each unit carefully.

Thank you for your cooperation.

Demographic Data:

Please respond to the questions by either marking your choice with a check or filling in the required information.

1. Age _____

2. Sex: 1. Male _____
   2. Female_____

3. Marital Status:
   1. Single 1._____
   2. Married 2._____
   3. Divorced 3._____
   4. Separated 4._____

4. Ethnic Origin:
   1. Caucasian 1._____
   2. Negro 2._____
   3. Other 3._____

5. Your reasons for being a student at this institution: (check only one)
   1. To prepare for a four-year program 1._____
   2. To obtain a marketable skill 2._____
   3. To raise my grade point average 3._____
   4. To stay out of the army 4._____
   5. The only one I could afford 5._____
   6. No other institution would accept me 6._____

6. Check one of the following categories which most closely resembles the financial status of your parents in terms of yearly income.
   1. $20,000 and over 1._____
   2. $12,000-$20,000 2._____
   3. $8,000-$12,000 3._____
   4. $5,000-$8,000 4._____
   5. $3,000-$5,000 5._____
   6. $3,000 or below 6._____

	Father	Mother
7. Please check the highest educational level attained by your parents. Check for both parents.		
1. Graduate school	1.____	1.____
2. Graduated from college	2.____	2.____
3. Some college	3.____	3.____
4. Completed high school	4.____	4.____
5. Some high school	5.____	5.____
6. Completed grade school (6th)	6.____	6.____
7. Some grade school	7.____	7.____

Occupation of Parents:

1. Owner of a large business-(factory company, large store, etc.) employing five or more persons.	1.____	1.____
2. Owner of a small business--employing four or fewer persons.	2.____	2.____
3. Professional--doctor, nurse, teacher, lawyer, chemist, engineer, or other profession requiring a college education.	3.____	3.____
4. Manager or executive--works for someone else, but is in charge of a business or a branch of a business (a store, etc.).	4.____	4.____
5. White-collar worker--employed by someone else as a salesman, government employee, bookkeeper, secretary, policeman, fireman, clerk, etc.	5.____	5.____
6. Skilled trades--works at a skilled trade as a foreman, supervisor of skilled workers, or works as a bricklayer, carpenter, electrician, plumber, etc.	6.____	6.____
7. Farmer or related farm work--owns a farm or works on one for someone else.	7.____	7.____
8. Semi-skilled worker--works for others at a job which is not a trade, such as a factory worker, cook, bus/truck driver, etc.	8.____	8.____

		Father	Mother
9.	Domestic worker--works for someone else in their home as a gardner, chauffeur, maid, etc.	9.____	9.____
10.	Unemployed--check this if your head of the family has been out of work for more than a year.	10.____	10.____
11.	Is she a housewife?	1.____ 2.____	

MOTIVATION FOR SCHOOL ACHIEVEMENT

(CHECK ONE)		YES	NO
1.	Students should set their goals only as high as they can easily reach.	_____	_____
2.	Does it bother you if another student makes better grades than you do?	_____	_____
3.	Would you rather be a leader in a small school than to be just another student in a large school?	_____	_____
4.	Does failure discourage you from trying as hard the next time?	_____	_____
5.	You should select your friends from among those whose goals are generally as high as your own.	_____	_____
6.	Would you like to take a school subject in which no tests were to be given?	_____	_____
7.	Do you often compare your work with the work of others?	_____	_____
8.	Are you usually on time with written assignments?	_____	_____
9.	Do you believe, "Win or lose, who cares?"	_____	_____
10.	Do you try to make better grades than other students in your class?	_____	_____

		YES	NO
11.	Rewards should be given regardless of effort or achievement.	_____	_____
12.	Would you, or do you, enjoy being one of the class leaders?	_____	_____
13.	The person who makes the highest grade on a test is to receive an award. Would you stay home from a social event or an athletic contest to study?	_____	_____
14.	Do you stick to an assignment until it is completed even though it is dull and boring to you?	_____	_____
15.	If you lost several times consecutively, would you quit trying?	_____	_____
16.	Would you prefer to enroll in a course in which no grades are to be given?	_____	_____
17.	Would you ever enter a contest with other students knowing you had a very slight chance of winning?	_____	_____
18.	Do you think that school letters should be given for high grades as well as for football and basketball?	_____	_____
19.	If you had to choose between taking part in a contest or being one of the judges, would you choose to be a judge?	_____	_____
20.	Do you think that you enjoy trying to do well in your school subjects more than other students in your classes?	_____	_____
21.	Would you prefer to sit in the back of a classroom?	_____	_____
22.	Rewards earned are worth more than those which come without effort.	_____	_____
23.	The more people who seek the same goal the harder you try for it.	_____	_____

		YES	NO
24.	What parents expect of their children is more important than what the child wants for himself.	_____	_____
25.	Your friend stopped running when it became evident that he was losing the race. Would you have stopped running in this situation?	_____	_____
26.	Do you tell your parents about your successes?	_____	_____
27.	Do you tell others about your failures?	_____	_____
28.	When someone is being praised do you wish you were?	_____	_____
29.	When someone else is praised, does it cause you to give less effort?	_____	_____
30.	Is there someone you enjoy beating in a contest or in school grades?	_____	_____

--Taken from: The Journal of Educational Research, (Vol. 62, No. 6, Feb. 1969)
Russell, Ivan L., "Motivation for School Achievement: Measurement and Validation"

SELF-CONCEPT OF ABILITY

How would you rate yourself on the following abilities compared with other students?

	Above Average	Average	Below Average	
31.	_____	_____	_____	Academic
32.	_____	_____	_____	Athletic
33.	_____	_____	_____	Artistic
34.	_____	_____	_____	Writing essays
35.	_____	_____	_____	Reading
36.	_____	_____	_____	Using library
37.	_____	_____	_____	Study skills and habits
38.	_____	_____	_____	Taking notes in class
39.	_____	_____	_____	Preparing for exams

--Taken from: A dissertation submitted by Eileen Louise Herridge, 1971. --Selected Non-Intellectual Variables to Academic Achievement of Students at an Open-Door Community College.

OCCUPATIONAL VALUES

Consider to what extent a job or career would have to satisfy each of these requirements before you could consider it IDEAL

(Indicate: High, Medium, Low by CHECKING ONE)	High	Medium	Low
The ideal job for me would have to . . .			
40. Provide an opportunity to use my special abilities or aptitudes	____	_____	____
41. Provide me with a chance to earn a good deal of money	____	_____	____
42. Permit me to be creative and original	____	_____	____
43. Give me social status and prestige	____	_____	____
44. Give me an opportunity to work with people rather than things	____	_____	____
45. Enable me to look to a stable, secure future	____	_____	____
46. Leave me relatively free of supervision by others	____	_____	____
47. Give me a chance to exercise leadership	____	_____	____
48. Provide me with adventure	____	_____	____
49. Give me an opportunity to be helpful to others	____	_____	____

--Taken from: Measures of Occupational Attitudes and Occupational Characteristics (IRS) Rosenberg, 1957, p. 233.

Here is a list of statements that describe life in the classroom. Check the blank in front of the statement that best tells how you feel about this class.

INVOLVEMENT

50. When I'm in this class, I
____ usually feel wide awake and very interested
____ am pretty interested, kind of bored part of the time
____ am not very interested, bored quite a lot of the time
____ don't like it, feel bored and not with it

51. How hard are you working on schoolwork compared with the others in your class?
____ harder than most.
____ about the same as most.
____ a little less than most.
____ quite a bit less than most.

52. How many of the students in this class do what the teacher suggests?
____ most of them do.
____ more than half do.
____ less than half do.
____ hardly anybody does.

INTERACTION

53. How often do the students in this class help one another with their schoolwork?
____ most of the time.
____ sometimes.
____ hardly ever.
____ never.

54. How do you feel about your participation in class activities?
____ not satisfied at all.
____ not very satisfied.
____ fairly satisfied.
____ very satisfied.

55. I learn best when
____ I work by myself.
____ I work with a friend.
____ I work with a group.
____ I work with the instructor.

56. In class, working with others is
_____ the best way for me to learn.
_____ sometimes good, sometimes not.
_____ not as good as working alone.
_____ a waste of time for me.

--Taken from: Diagnosing Classroom Learning Environment by Fox, Luszki, Schmuck

SATISFACTIONS WITH INSTRUCTORS

57. Do your instructors seem to be interested in teaching?
_____ seem very interested in teaching.
_____ seem pretty interested in teaching.
_____ seem a little interested in teaching.
_____ do not seem interested in teaching.

58. Do you feel that the instructors really know what they are talking about--really know their subjects?
_____ really know their subjects.
_____ know their subjects pretty well.
_____ know their subjects a little.
_____ do not know their subjects too well.

59. How good are your instructors at teaching their subjects?
_____ very good teachers.
_____ pretty good teachers.
_____ not very good teachers.
_____ very bad teachers.

SATISFACTION WITH TRAINING

60. Do you think all of what you did in this class will be useful for the job you're being trained for, or was some of it a waste of time?
_____ all of it will be useful.
_____ most of it was useful.
_____ some of it was useful.
_____ most of it was a waste of time.

61. All in all, how do you feel about the training you got in this class?
____ training was excellent.
____ training was very good.
____ training was all right.
____ training was not too good.

CONFIDENCE IN ABILITY TO ACHIEVE

62. How well do you think you will do in this training program? Do you think you will be able to learn the things being taught?
____ I am sure I will be able to learn without any trouble.
____ I am sure I will be able to learn, but I may have a little trouble.
____ I think I will be able to learn, but I will have some trouble.
____ I am afraid I might not be able to learn.

63. How do you think you will do compared to the others in your training program?
____ I think I will do much better than most others in my class program.
____ I think I will do a little better than most others.
____ I think I will do about the same as most others.
____ I think I will do much worse than most others.

--Taken from: A National Attitude Study of Trainees in MDTA Institutional Programs by Gerald Gurin (IRS)

FROM COLLEGE RECORDS

High School Grade Point Average _____

Grade Point Average in this Class _____

Over-all Grade Point Average at this College _____

APPENDIX B

CUT POINTS FOR INDEPENDENT AND DEPENDENT VARIABLES TO ESTABLISH HIGH, MIDDLE AND LOW LEVELS

CUT POINTS TO STRATIFY FAMILY EDUCATIONAL HISTORY FOR FATHER AND MOTHER

High Level

Graduate School
Graduated from four-year college

Middle Level

Graduated from two-year college
Some college
Completed high school

Low Level

Some high school
Completed grade school (6th)
Some grade school

CUT POINTS TO STRATIFY FAMILY OCCUPATIONAL HISTORY FOR FATHER AND MOTHER

High Level

Owner of a large business
Owner of a small business
Professional
Manager or executive

Middle Level

White collar worker
Skilled trades

Low Level

Farmer or related farm work
Semi-skilled worker
Domestic worker
Unemployed

CUT POINTS TO STRATIFY HIGH SCHOOL GRADE POINT AVERAGE

Histogram/Frequencies

Scores

1.000	+1
1.100	+
1.200	+X4
1.300	+XXXX11
1.400	+XXXXXXXX19
1.50	+XXXXXXXX20
1.600	+XXXXXXXXXXXXXXXXX37
1.700	+XXXXXXXXXXXXXXXXXXXXXXXXX51
1.800	+XXXXXXXXXXXXXXXXXXXXXXX49
1.900	+XXXXXXXXXXXXXX32
2.000	+XXXXXXXXXXXXXXXX38
2.100	+XXXXXXXXX22
2.200	+XXXX12
2.300	+XXXX12
2.400	+
2.500	+X4
2.600	+2
2.700	+2

317 Observations Plotted (Each X = 2)

CUT POINTS TO STRATIFY MOTIVATION FOR SCHOOL ACHIEVEMENT

Histogram/Frequencies

	Scores	
	10.000	+X4
	11.000	+
	12.000	+
	13.000	+
High	14.000	+
	15.000	+X3
	16.000	+
	17.000	+
	18.000	+
	19.000	+XX5
	20.000	+XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX71
	21.000	+X3
	22.000	+2
	23.000	+XXX7
	24.000	+XX6
Middle	25.000	+XXXXXXXXXXXX27
	26.000	+
	27.000	+XXXX12
	28.000	+XXXX9
	29.000	+
	30.000	+XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX99
	31.000	+XXXX9
	32.000	+1
	34.000	+1
	35.000	+XXXXXXXXXXXX27
Low	36.000	+2
	37.000	+
	38.000	+2
	39.000	+2
	40.000	+XXX10

308 Observations Plotted (Each X = 2)

CUT POINTS TO STRATIFY SELF-CONCEPT OF ABILITY

Histogram/Frequencies

	Scores	
	37.000	+1
	38.000	+1
	39.000	+X2
High	40.000	+X2
	41.000	+XX3
	42.000	+XXXXXXXX10
	43.000	+XXXXX6
	44.000	+XXXXXXXXXXXXX16
	45.000	+XXXXXXXXXXXX14
	46.000	+XXXXXXXXXXXXXXXXXXXXXXXX26
Middle	47.000	+XXXXXXXXXXXXXXXXXXXXXXXXXXXXX31
	48.000	+XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX38
	49.000	+XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX42
	50.000	+XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX40
	51.000	+XXXXXXXXXXXXXXXXXXXX23
	52.000	+XXXXXXXXXX12
	53.000	+XXXXXXXXXXXXXXXXXXXXXXXXXX28
Low	54.000	+XXXXXXXXX11
	55.000	+XXX4
	56.000	+X2
	57.000	+XXXX5

317 Observations Plotted (Each X = 1)

CUT POINTS TO STRATIFY OCCUPATIONAL VALUES

Histogram/Frequencies

	Scores	
	8.000	+X2
	9.000	+
	10.000	+
	11.000	+1
	12.000	+1
	13.000	+
High	14.000	+
	15.000	+
	16.000	+X2
	17.000	+X2
	18.000	+XXXX5
	19.000	+XXXXXXXX10
	20.000	+XXXXXXXXXXXXXXXX18
	21.000	+XXXXXXXXXXXXXXXXXXXXXXXXXXXX30
Middle	22.000	+XXXXXXXXXXXXXXXXXXXXXXXXXX28
	23.000	+XXXXXXXXXXXXXXXXXXXXXXXXXXX29
	24.000	+XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX43
	25.000	+XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX38
	26.000	+XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX37
	27.000	+XXXXXXXXXXXXXXXXXXXXXXX26
Low	28.000	+XXXXXXXXXXXXXXXXXXXXXXXXXX27
	29.000	+XXXXXXXXXXXXX15
	30.000	+1

315 Observations Plotted (Each X = 1)

CUT POINTS TO ESTABLISH LOW, MIDDLE, AND HIGH LEVELS FOR DEPENDENT VARIABLES

Involvement in the Classroom	-		Total Score 12
Low Level	-	Score range	1 - 4
Middle Level	-	Score range	5 - 8
High Level	-	Score range	9 - 12
Interaction in the Classroom	-		Total Score 16
Low Level	-	Score range	1 - 5
Middle Level	-	Score range	6 - 11
High Level	-	Score range	12 - 16
Satisfaction with Instructors	-		Total Score 12
Low Level	-	Score range	1 - 4
Middle Level	-	Score range	5 - 8
High Level	-	Score range	9 - 12
Satisfaction with Program	-		Total Score 8
Low Level	-	Score range	1 - 2
Middle Level	-	Score range	3 - 5
High Level	-	Score range	6 - 8
Confidence in Ability to Achieve	-		Total Score 8
Low Level	-	Score range	1 - 2
Middle Level	-	Score range	3 - 5
High Level	-	Score range	6 - 8