

SELECTED BEHAVIORAL CHANGES OF STUDENTS
ATTENDING THE SOUTHERN OKLAHOMA AREA
VOCATIONAL-TECHNICAL CENTER
DURING 1966-67

By

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CHAPTER I

INTRODUCTION

In every phase of our economy much educational effort is organized and directed toward meeting the needs of youth. These needs ought to be the central theme of the organized experience programs found in our schools. The planning of the learning activities must be concerned with the development of the individual student and with consideration for the role which he will play as the citizen of a community, as a homemaker, and as a productive worker.

In our democratic society, we stress the importance of the individual and his rights, his privileges, and his role as a citizen. We should also stress his responsibilities and duties to himself, his family, his community, and his country. A major part of this responsibility is to be a productive citizen; to a great extent, this may be accomplished through useful employment. Therefore, the task of vocational education is to provide meaningful experience which will complement and supplement the common learnings in general education. Such instruction should take place in a learning situation in which the skills and related knowledge needed for useful employment may be developed.

Many educational groups have defined the needs of youth and, through these definitions, have given direction and purpose to our educational effort. The Educational Policies Commission has played a

major role in defining the purposes of our educational activities. The conclusion, which is Part III of the Commission's statement entitled, "The Central Purpose of American Education," defines the central purpose as follows:

Individual freedom and effectiveness and progress of the society require the development of every citizen's rational powers. Among the many important purposes of American schools the fostering of that development must be central.

Man has already transformed his world by using his mind. As he expands the application of rational methods to problems old and new, and as people in growing numbers are enabled to contribute to such endeavors, man will increase his ability to understand, to act, and to alter his environment. Where these developments will lead cannot be foretold.

Man has before him the possibility of a new level of greatness, a new realization of human dignity and effectiveness. The instrument which will realize this possibility is that kind of education which frees the mind and enables it to contribute to a full and worthy life. To achieve this goal is the high hope of the nation and the central challenge to its schools.¹

Dr. Max Rafferty, California Superintendent of Public Instruction, in replying to the question, "What's the purpose of education?" stated, "It doesn't have one, sir. It has five." Dr. Rafferty, who is frequently in disagreement with other educators, concluded his remarks by listing the purposes of education as follows:

1. To pursue the truth.
2. To hand down the cultural heritage of the race.
3. To teach organized, disciplined, systematic subject matter.
4. To help the individual realize his own potential.
5. To ensure the survival of our country.²

¹The Central Purpose of American Education. Washington: National Education Association, Educational Policies Commission, 1961, p. 6.

²Max Rafferty, Superintendent of Public Instruction. "The Five Main Purposes of Education," Human Events. (Washington, D.C., July 1, 1967), p. 10.

If human potentialities are to be realized, education must be concerned not only with rational powers, theoretical and philosophical concepts, but equally with translating these factors into realities expressed in the behavior of every citizen. This objective is not likely to be achieved unless each human being has the opportunity, through education to develop his abilities and talents. Vocational education can, perhaps, make a contribution toward the realization of the Educational Policies Commission's central purpose, as well as those expressed by Dr. Rafferty.

In 1961 the Secretary of Health, Education, and Welfare appointed a Panel of Consultants to study vocational education needs. Headed by Chicago School Superintendent Benjamin C. Willis, the Panel reported in part:

. . . We believe that, in a democracy, everyone should have access, throughout life to the education and training needed to develop to his highest potential. . . .

General education--language and arithmetic skill, plus basic knowledge of the world about us--itself contributes indispensably to occupational competence. Vocational education and general education are complementary and equally important to individual occupational competence.

The Panel concludes that expanded vocational education, apprenticeship, and technical training are especially needed now to prepare both new workers and the unemployed to fill the job openings available for skilled or specialized workers. These education programs should be administered with flexibility in order to adjust to the rapidly changing technology and to the varied social and economic needs of individuals. . . .³

Today, education must introduce youth to the world of work as well as to the world of ideas. To fit today's youth for the rapid changes

³U.S. Department of Health, Education, and Welfare, Office of Education. Education for a Changing World of Work. (Special Report of the Panel of Consultants on Vocational Education). Washington: U.S. Government Printing Office, 1963, p. v, p. 264.

that are taking place in the emerging world of work, the separation of occupational education from general education would increase the possibility of limiting the individual's future development because of lack of related knowledge obtained through general education.

The area vocational-technical center concept was developed under the Vocational Education Act of 1963.⁴ To be specific, the Vocational Education Act of 1963 provides for training of: (1) high school students; (2) full-time study for persons who have completed or left high school; (3) persons presently employed but who need training or retraining to achieve stability or advancement in employment; and, (4) persons who have academic, socio-economic or other handicaps that prevent them from succeeding in the regular vocational education programs in local high school districts. Many small local high school districts are not financially able to provide the occupational training programs desired by their students. The area school concept maintains that it could provide training in any trade or skill below professional level, for which a need exists and employment is available, within commuting distance of almost all of the residents in Oklahoma. The area vocational-technical centers are providing facilities for a comprehensive program of occupational training. The area vocational-technical center is an integral part of each participating local high school. The local high school curriculum is enriched by 10 to 15 units, without cost to the local State Aid Funds.⁵

⁴Catalog of Federal Programs for Individual and Community Improvement. (Washington: Office of Economic Opportunity, December 15, 1965), p. 217.

⁵The Organization of Vo-Tech Centers in Oklahoma, Bulletin. Stillwater, Oklahoma: The State Board for Vocational Education, 1966, p. 6, 8.

The education of high school youth for today's world of work must be concerned with their minds as well as with their skills. Technical competence is important, but no more so than competence in general knowledge in the realm of ideas and their application to one's chosen occupation. The integration of technical competence and general knowledge must be an educational concern.

The passage of State Question 434 in 1965 made it legal for local school districts to join together in developing vocational-technical programs at a location within commuting distance of the cooperating local districts.

Credits earned at the vocational-technical center are transferred to the local high school and will count as high school credits. The student will receive his high school diploma from his local high school. The courses offered in the center are the curriculum offering of each local participating high school; therefore, the area vocational-technical curriculum can be considered as an addition to the secondary school curriculum.

Students who have the desire, initiative, and aptitude for training at the area vocational-technical center may attend. A comprehensive counseling and testing program is provided by the center in coordination with the local high school counselor. This method of providing occupational education may be an effective means of providing incentive for motivating students to work for specific goals in vocational and related academic training.

Young people who have acquired a skill and a good basic education will have a better chance at interesting work, good wages, and steady employment. Education and occupation are together an index to probable

future income and chances for steady employment.⁶ There is a correlation between the amount of education and the average earnings of individuals. This is not to say that there is a causal relationship between the two, but it is a recognizable fact.

Studies as early as 1917 and many studies since have shown that persons with more years of education generally have larger incomes.⁷

Miller⁸ found that in 1958 average earnings for males 25 years of age and over, associated with varying years of education were as follows:

Less than eight years	\$2,551
Eight years	\$3,769
High school, one to three years	\$4,618
High school, four years	\$5,567
College, one to three years	\$6,966
College, four years and more	\$9,206

Miller⁹, in his study, estimated the lifetime earnings of individuals from age 18 to death in the United States, according to different educational groups. As depicted in Table I, an elementary school graduate could expect about 40 percent more lifetime income on the average than the person who had no schooling or who terminated his formal education before finishing the eighth grade. In 1958 the average high school graduate could expect about 42 percent more lifetime earnings than the elementary school graduate. The average college graduate could

⁶U.S. Department of Commerce, Lifetime Earnings by Level of Education, Basic Data, 1960 Census of Population.

⁷John K. Norton, Education and Economic Well-Being in American Democracy, (Washington, D.C.: Educational Policies Commission, National Education Association, 1940), pp. 115-121.

⁸H. P. Miller, "Annual and Lifetime Income in Relation to Education," American Economic Review, Vol. 50, Dec., 1960, pp. 962-986.

⁹Ibid.

expect to have a lifetime earning of about 40 percent more than the average high school graduate.

TABLE I
ESTIMATED EARNINGS FROM AGE 18 TO DEATH
AND YEARS OF SCHOOLING COMPLETED

Schooling	Average Lifetime Earnings
Elementary	
Less than 8 years	\$129,764
8 years	\$181,695
High School	
1-3 years	\$211,193
4 years	\$257,557
College	
1-3 years	\$315,504
4 or more years	\$435,242

Source: Miller, H. P., *Income of the American People*, (New York: John Wiley and Sons, 1955), p. 21.

These data present as clearly as possible the economic value of an education. Getting as much education and training as one's abilities and circumstances permit is, therefore, of great importance for today's youth.

Oklahoma is attempting to meet the occupational training needs of today's youth through the development of area vocational-technical centers. The area vocational-technical center is defined as a larger administrative unit designed to serve more efficiently an area larger than the traditional local school district. This concept of area school maintains that it can provide training in any trade or skill below professional level, for which a need exists and employment is available,

within commuting distance of almost all of the residents in our State.¹⁰

According to the State Plan for Vocational Education in Oklahoma,¹¹ the types of training in trades and skills will depend upon (1) local needs; (2) regional needs; and, (3) national needs. These needs are determined through careful research, surveys, and study by the elected board for the area vocational-technical district in cooperation with the State staff for area vocational-technical centers. The following is a representative list of courses that may be offered. This is a partial listing. Courses may be selected from the following:

Aeromechanics	Diesel Mechanics
Appliance Repair	Farm Machinery Repair
Auto Body Repair	Food Services
Auto Mechanics	Horticulture
Business Education	Machine Shop
(Bookkeeping, Office	Offset Printing
Procedures, Steno.)	Photography
Commercial Art	Practical Nursing
Cosmetology	Pre-Technical Chemistry
Data Processing	Radio-T.V. Repair
Dental or Medical	Refrigeration and Air
Office Assistant	Conditioning
Sewing Services	Vocational-Technical
Sheet Metal	Electronics
Small Engine Repair	Vocational Carpentry
Vocational-Technical	Welding
Drafting	

The thesis for the development of the area vocational-technical center is that a broader program of educational opportunities can be provided with reduced costs, wider range of offerings, and provide a greater attraction for competent staff members. The objective of

¹⁰A New Concept in Vocational-Technical Education in Oklahoma, Stillwater, Oklahoma: The State Board for Vocational Education, 1966, p. 1.

¹¹Ibid, pp. 7, 8.

vocational courses is to teach occupational skills and related information which will benefit a person entering employment. The technical courses provide basic scientific and mathematical knowledge and specialized training required of a specific industry. Technical mathematics and science are included in the curriculum of the technical program.

Each student will spend one-half day at the area vocational-technical school and one-half day at his local high school. He will receive his diploma from his local high school upon graduation.

Statement of the Problem

The primary concern of this study is to ascertain the effect of attending the Southern Oklahoma Area Vocational-Technical Center on the student's behavior at his local high school.

The innovation of the area vocational-technical center in Oklahoma is a basic change from the traditional process of providing vocational training in the local high school setting.

In recognizing the importance of a sound basic education as well as acquiring a skill for fitting a student in today's changing world of work, this study will investigate selected behavioral changes effected in students attending the Southern Oklahoma Area Vocational-Technical Center. The behavioral changes to be studied are academic achievement, social behavior, and participation in extracurricular activities.

These students are transported from their home high schools to the area center for one-half of each school day for vocational and technical training. Will this discriminatory treatment affect the behavior of the student at the home high school?

Need for the Study

There is a need for information that can be used by administrators and teachers in the planning and organization of the curricula at the home high schools for the area center approach to vocational-technical training.

Since there are a number of vocational-technical centers planned for future development in Oklahoma, the information obtained in this study of the Southern Oklahoma Area Vocational-Technical Center should be relevant to the proposed centers.

Objectives of the Study

In recognition of the need for information which could give direction in the planning and organization of the educational program at the home high school and the area vocational-technical center, this study was designed to determine the effect of the area center on:

1. The academic achievement of the participating students in the courses taken at the home high school.
2. Student participation in extracurricular activities at the home high school.
3. The social behavior at the home high school of the participating students.

Scope and Limitations of the Study

There are four area vocational-technical centers operating in Oklahoma. These centers are: Southern Oklahoma Area Vocational-Technical Center at Ardmore; Area Vocational-Technical Center--Duncan High School at Duncan; Oklahoma City Area Vocational-Technical Center

at Oklahoma City; and Tulsa Area Vocational-Technical Education Center at Tulsa.

Since the programs at all four centers are similar, the Southern Oklahoma Area Vocational-Technical Center at Ardmore was selected for this study because it was not only one of the latest centers to be established, but includes a larger number of more diverse high schools than the other vocational-technical centers. This situation should give a broader perspective of the effects of the area vocational-technical centers than could be learned from the more homogeneous grouping at the other centers.

The students, the home high school teachers and others involved in the Ardmore Area Vocational-Technical Center will be less conditioned or accustomed to the new situation and environmental factors and will, therefore, be more aware of changes in the behavior patterns being considered in this study.

The Southern Oklahoma Area Vocational-Technical Center at Ardmore, Oklahoma, is designed to serve the vocational-technical training needs of those individuals living within a 50-mile radius of the site. There are 2,467 high school students.¹²

Twelve high schools are participating in the area vocational-technical center programs. From the total enrollment of the 12 high schools, 229 of the students are participating in the area center programs. Two of the high schools are in the Ardmore district with 88 students enrolled at the area center. The other participating school districts are: Berwyn, 4 students; Davis, 15 students; Dickson, 18

¹²State Department of Education, "Report of the Superintendent of Public Instruction," Oklahoma City, Oklahoma.

students; Graham, 4 students; Healdton, 26 students; Lone Grove, 2 students; Madill, 21 students; Plainview, 11 students; Sulphur, 33 students; and Wilson, 7 students.

The 12 home high schools included in the study vary in student enrollment, district evaluation and number of teachers employed. This results in a variation among schools in the number of choices the students may have in academic courses at his home high school.

The major limitations of the study will be the variation of academic course offerings in the home high schools and variation of observations on the student's social behavior attributable to the individual differences of teachers within the home high schools.

The limitations are somewhat restrictive, but not to the extent as to invalidate the results of the study.

Definition of Terms

The following definitions will make more explicit the meaning of terms as used in this study:

The term, social behavior, is the degree of cooperation, use of class time, and orderly conduct or discipline exhibited by the student.

The term, extracurricular activities, refers to the student's participation in athletics, band, glee club, drama, etc. at the home high school.

The academic grade point average is the average of all grades received by the student for his performance in non-vocational courses of study at the home high school for which the student received credit toward graduation.

The home high school of the student is the high school in which the student is currently enrolled for academic courses.

The home high school teachers are those teachers in the home high school who had contact with the student during both the 1965-66 and 1966-67 school years.

CHAPTER II

REVIEW OF LITERATURE

A considerable amount of research has been carried out in the area of vocational and technical education. Most of these studies were surveys of occupational needs and job analysis as a basis for curriculum development. There appears to be little or no evidence of research regarding the relationship between vocational education and other disciplines in the educational program.

Two early studies on the effect of mental exercise in regard to high school courses taken by students had little or no relationship to increasing or decreasing the intelligence scores of high school students. Broyler, Thorndike, and Woodyard conducted a research study in 1923 with 8,564 high school pupils concerning gains in intelligence scores according to studies taken during the year. Their conclusions were:

The general results were that the amount of gain bore only a slight relation to the studies taken. The bright gained more than the dull, but pupils who took, say, Latin, geometry, English and history gained little more than pupils of equal intelligence who took arithmetic or bookkeeping, cooking or sewing, English and history.¹

A follow-up study in 1925 on 5,000 students confirmed the results of the first study.²

¹Cecil R. Broyler, Edward L. Thorndike, and Ella Woodyard. "A Second Study of Mental Discipline in High School Studies," Journal of Educational Psychology, 18 (1927), p. 377-404.

²Ibid.

Simms,³ in a 1962 study of eight possible variables as determinants of academic achievement, found that "non-intellectual factors" such as values and motivations play as important a role in determining academic achievement as factors which may be said to be purely "intellectual".

Simms' study certainly is not conclusive evidence that vocational-technical education or other interest factors would increase the academic achievement of the student. His study does suggest that factors other than intelligence may influence the behavior changes of high school students.

According to Barlow⁴:

The conjecture that vocational education can help to create a desire to learn the three R's is supported by just enough evidence to make that possibility an enticing problem for study.

Wyeth,⁵ referring to the interest variable as a "corner stone" in the educational process, suggests that the failures of schools and society were not that they failed to interest students in school work, but that they did not use the student interests that were present to help students develop interests in related areas.

³James Carroll Simms, "Values and Status Variables as Determinants of Academic Achievement," (Unpublished Ph.D. dissertation, Emory University, 1962).

⁴Herman G. Richey, (ed.), Vocational Education, The Sixty-fourth Yearbook of the National Society for the Study of Education, Part 1, Chicago: The University of Chicago Press, 1965.

Melvin L. Barlow, "The Challenge to Vocational Education," 1-18, p. 13.

⁵Ezra R. Wyeth, "Motivation: An Empty Word in Education," The Clearing House, Vol. 39 (March, 1965), No. 7, p. 436,437.

Frazier,⁶ in a 1966 study of the effects of vocational education on culturally disadvantaged youth, suggests that there may be a need for adjusting academic course content to relate more closely to the vocational needs of the trainee. He found that vocationally-related mathematics taught in the Manpower program was more effective than was the traditional-oriented mathematics taught in the high school program. He suggests that academic achievement of vocational students may relate to the type of academic training; that is, training-related versus traditional academic training may affect the results. This suggests a possible need for different approaches to teaching academic courses in the home high schools so that course content is directly related to the vocational needs of the individual. Further research is needed to determine the effect of teaching methods on student achievement.

The area vocational-technical center may be the vehicle for focusing the student's interest in academic courses at the home high school. The extent to which the area center student perceives the academic subjects at the home high school as contributing to his success in his chosen vocation may enhance his interest in subject matter courses. This interest may be reflected in academic achievement and social behavioral changes at the home high school.

Studies have been made to determine whether interests of any type are predictive of academic performance. Cronbach⁷ states that interest measures alone have a very low correlation with grades, but when used

⁶William Donald Frazier, "A Comparative Study of Some Effects of Vocational Education on Culturally Disadvantaged Youth," (Unpublished Ed.D. dissertation, Oklahoma State University, 1966).

⁷Lee J. Cronbach, Essentials of Psychological Testing, New York: Harper and Brothers, 1949.

with ability measures the predictions of ability measures are greatly enhanced. He also states that specific keys of the Dunlap Academic Preference Blank predict grades in related courses from 0.50 to 0.70 correlation. Travers⁸ found that interest tests were of some value for predicting grades in courses within the areas of interests.

Spies⁹ found that a non-intellectual predictor (electronics interest) was the largest contributor in the prediction of the pass-fail criterion at the electronics school. The study demonstrated the practical value of non-intellectual measures in combination with intellectual measures in the prediction of achievement in classroom learning at the technical training school.

Bender¹⁰ did a similar study and concluded that together with knowledge of the aptitude of the individual, the non-intellective factors did contribute to the explanation of variation in grade point averages.

The above research is by no means conclusive, but it does suggest a possible relationship between home high school academic achievement and the training programs at the area vocational-technical center. The student's perception of this relationship would influence the effect of

⁸Robert M.W. Travers, "Significant Research on the Prediction of Academic Success," W. T. Donahue and Associates, ed. The Measurement of Student Adjustment and Achievement, Ann Arbor: University of Michigan Press, 1949.

⁹Carl Joseph Spies, "Some Non-Intellectual Predictors of Classroom Success," (Unpublished Ph.D. dissertation, Washington University, 1965.)

¹⁰Dorothy Margaret Bender, "Relationships Among Self-Expectations, Self-Concept, and Academic Achievement," (Unpublished Ph.D. dissertation, The University of Wisconsin, 1965.)

the area center program on the academic achievement of the student at the home high school.

The investigator recognized that students attending the area vocational-technical center would carry fewer academic courses than those students in the control group who spend the whole day at the home high schools. In an effort to determine the effect of this condition on academic achievement, five studies were perused, Andrew,¹¹ Hountras,¹² Merrill,¹³ Shaw,¹⁴ and Schwilk,¹⁵ and it was found in these studies that the number of courses carried has little or no effect on the student's performance. These studies indicate that any variation in the academic achievement of the two groups being investigated would not be due to the number of academic courses they carried during the school years of 1965-66 and 1966-67.

The Educational Policies Commission of the National Education Association alludes to the interrelation of vocational education and academic courses in the following statement:

¹¹Dean C. Andrew, "Relationship Between Academic Load and Scholastic Success of Deficient Students," Personnel and Guidance Journal, 34 (1956), pp. 268-270.

¹²Peter Timothy Hountras, "The Relationship Between Student Load and Achievement," Journal of Educational Research, 51 (1958), pp. 355-360.

¹³Reed M. Merrill and Hal W. Osborn, "Academic Overload and Scholastic Success," Personnel and Guidance Journal, 35 (1959), pp. 509-510.

¹⁴Merville C. Shaw and Donald J. Brown, "Scholastic Underachievement of Bright College Students," Personnel and Guidance Journal, 36 (1957), pp. 195-199.

¹⁵Gene L. Schwilk, "Academic Achievement of Freshmen High School Students in Relationship to Class Load and Scholastic Aptitude," Personnel and Guidance Journal, 37 (1959), 455-456.

A strong program of vocational education can serve several important purposes. Opportunities to learn job skills are relatively easy for the pupil to value. They can increase his interest in school. They can help him to consider himself a useful and respected person. They can develop the initiative and sense of responsibility that are basic to preparation for college as well as for new jobs. And they can be designed to introduce or incorporate lessons in science, economics, or other subjects.¹⁶

Guba supports the above contention in Role, Personality and Social Behavior,¹⁷ by suggesting that achievement motivation is influenced by the student's ability to integrate institutional values and goals with his individual values and goals. The Educational Policies Commission and Guba both emphasize the importance of coordinating the institutional values and goals of the area center and home high school curriculums with the student's values and goals. The cooperative efforts of the local school administrators, teachers, counselors and parents will be needed if the educational programs are to fit the needs of the students.

Enrollment in the area vocational-technical center program may tend to limit student participation in extracurricular activities at the home high school.

Smith found in her study of high school student activities that there was a relationship between the student activities and academic aptitude. She summarized this in her statement:

Those individual personal characteristics of students which were significantly related to greater activities

¹⁶Education and the Disadvantaged American, Washington: National Education Association, Educational Policies Commission, 1962, p. 18.

¹⁷E. G. Guba, Role, Personality and Social Behavior, Columbus, Ohio: Bureau of Educational Research and Service, Ohio State University, 1958.

participation were superior social maturity, emotional stability, and leadership as well as high academic aptitude.¹⁸

Other investigators found that extracurricular activities of high school students were of value for morale building as well as incentives for learning.

Abrahamson reported in his study that:

Participation in extracurricular activities in a school program act as a reward in that students involved in the activities developed a deeper sense of appreciation for school, a higher level of morale, and a keen feeling of sharing in the school program.¹⁹

Chamberlain in a 1964 study, points out some characteristics that extracurricular activities contribute to the student's educational process. He found:

The high school club program provides values beyond those of regular classes. These values are in the form of social and democratic skills, as well as learning experiences in specialized areas of knowledge. Clubs also provide a means for students to identify with their schools. . . .²⁰

Burton, in The Guidance of Learning Activities, supports Chamberlain's study in stating that, "Social motives such as the need for affiliation and status, provide very strong incentives for learning."²¹

¹⁸Anita Pearl Smith, Differential Personality Characteristics Associated with Participation in High School Student Activities, (Unpublished Ph.D. dissertation, University of Minnesota, 1964).

¹⁹Stephenson Abrahamson, "Our Status System and Scholastic Rewards," Journal of Educational Sociology, XXV (March, 1952), pp. 441-450.

²⁰Richard Henry Chamberlain, "High School Clubs: An Appraisal by Students," (Unpublished Ed.D. dissertation, University of Southern California, 1964).

²¹William H. Burton, The Guidance of Learning Activities, (New York: Appleton-Century-Crofts, Inc., 1952), p. 552.

These studies do indicate that extracurricular activities are important incentives for motivating student behavioral change.

In determining any changes in the social behavior of students in this study, the home high school administrators and teachers should be able to make a valid evaluation. The teachers perception of social behavior change will be based on past experiences with the students who are being evaluated. A number of authorities were consulted to determine the validity of accepting the home high school teacher's perception of social behavior change used in this study. The following excerpts tend to support the writer's assumption that the teachers could make a valid evaluation of the social behavior change in their students.

Hilgard describes perception as:

The process of becoming aware of objects, qualities, or relations by way of the sense organs. While sensory content is always present in perception, what is perceived is influenced by set and prior experiences so that perception is more than a passive registration of stimuli impinging on sense organs.²²

Sherif and Sherif took the approach that perception is influenced by psychological structuring involving factors that are (1) internal and (2) external. They state that:

Perceptual structuring is not only a cognitive affair, it is jointly determined by the totality of functionally related external and internal factors coming into the structuring process at a given time. The external factors are stimulating events, other persons, groups, cultural products, and the like. The internal factors are motives, emotions, attitudes, general status of the organism, effects of past experience.²³

Allport suggests this definition of perception:

²²Ernest R. Hilgard, Introduction to Psychology, 2nd ed. (New York: Harcourt, Brace, and Company, 1957), p. 587.

²³M. Sherif and Carolyn W. Sherif. An Outline of Social Psychology, New York: Harper and Brothers, 1956, p. 38.

As a first approximation let us say that it has something to do with our awareness of the objects or conditions about us. It is dependent to a large extent upon the impressions these objects make upon our senses. It is the way things look to us, or the way they sound, feel, taste or smell. But perception also involves, to some degree, an understanding, awareness, a "meaning" or a "recognition" of these objects.²⁴

Sperling²⁵ suggests that perception is the act of interpreting a stimulus registered in the brain by one or more sense mechanisms, perception of a present situation in terms of past experiences.

Sperling's concept of perception is supported by Ryan's study, "Trait Ratings of High School Students by Teachers."²⁶ An examination was made of high school teachers' trait ratings of students. Three classes were used as replication. Intercorrelations among traits were high, thus offering evidence for the interchangeability of trait names. The definitions of the traits in Ryan's study did include the social behavior traits being investigated in the current study. Ryan suggested that teachers rate on the basis of general impression. Since the current study is investigating change in social behavior, Ryan's study does support the assumption that teachers are able to rate a behavioral change.

The mechanics involved in attending the area vocational-technical center may affect the student's peer group and thus effect a behavioral change at the home high school.

²⁴Floyd H. Allport, Theories of Perception and the Concept of Structure. New York: John Wiley and Sons, Inc., 1955, p. 14.

²⁵Abraham F. Sperling, Psychology Made Simple, Garden City, New York: Doubleday and Company, Inc., 1957, p. 38.

²⁶F. J. Ryan, "Trait Ratings of High School Students by Teachers," Journal of Educational Psychology, Vol. 49, No. 3 (June, 1958), 141-147.

Muma,²⁷ in a study of academic performance, found that junior and senior high school students who were highly accepted by their peers were more successful in academic performance than those students who were not accepted.

This suggests that further research is needed to determine the effect of participation in the area vocational-technical center program on the student's peer group.

²⁷ John R. Muma, "Peer Evaluation and Academic Performance," The Personnel and Guidance Journal, XLIV (December, 1965), 405-409.

CHAPTER III

METHODOLOGY

The purpose of this chapter was to state the hypotheses, to describe the method by which the population for the study was determined, the sampling procedure used, the method of data collection and design.

The Hypotheses Tested

This study was based upon the testing of certain selected null hypotheses of no significant difference in selected behavioral changes at the home high school in students who participated in the training programs at the Southern Oklahoma Area Vocational-Technical Center compared with students who did not attend the area center.

Selected hypotheses which were tested to provide evidence which might substantiate tenability were:

1. No significant difference exists in the academic grade point average change for the school years of 1965-66 and 1966-67 between the area vocational-technical center students and those students who did not attend the area vocational-technical center.
2. No significant difference exists in participation of extracurricular activities at the home high school for the school years of 1965-66 and 1966-67 between the area vocational-technical center students and those

students who do not attend the area vocational-technical center.

3. No significant difference of social behavior change exists for the school years of 1965-66 and 1966-67 at the home high school between the area vocational-technical center students and those students who do not attend the area vocational-technical center.

The Population

The Southern Oklahoma Area Vocational-Technical Center and the 12 participating high schools were selected for this study because the structure and operational procedure being used at Ardmore closely resembles the proposed plan for the future development of area vocational-technical centers in Oklahoma.

The Southern Oklahoma Area Vocational-Technical Center at Ardmore, Oklahoma, was designed to serve the vocational-technical training needs of the 2,467 high school students encompassed in a 50-mile radius of the school site.¹

The Ardmore Vocational-Technical Center is serving a larger number of more diverse high schools than the other three established centers. This should give a broader perspective of the effects of the area vocational-technical centers than could be learned from the more homogeneous grouping at the other three centers now in operation.

The Ardmore center training program began the first semester of the 1966-67 school year. The students, the home high school teachers

¹State Department of Education.

and others were not conditioned to the new situation and environmental factors and, therefore, should be more cognizant of the selected factors considered in this study.

The Sample

The study involved two groups of high school students who were currently enrolled in 12 Southern Oklahoma high schools.

Group 1 included 229 high school students present at the Southern Oklahoma Area Vocational-Technical Center on the day of the interview. There were four absentees not included in the study.

Group 1 was considered as the treatment or experimental group for this study.

Group 2, the control group, was a stratified random sample of 229 students who are not participating in the area center programs.

The purpose of the control group was to determine norms of expected change in the three dependent variables investigated in this study. These were: (1) academic achievement; (2) extracurricular activities; and, (3) social behavior.

The two sample groups were stratified according to home high school, grade level classification, and sex to reduce variance due to teachers, courses, size of home high school, etc. This design should also minimize variation due to maturation.

A questionnaire was administered to all the area vocational-technical center students (Group 1) present on March 2, 1967. The questionnaire identified the student, his home high school, sex, and high school grade level (Appendix A). Group 2 was then determined by using the stratified random sampling technique. The students in Group 2

were stratified according to home high school, sex, and high school grade level in the same proportions as in Group 1.

Table II shows the results of the sampling procedure used for this study. There were 61 eleventh grade boys from the 12 high schools participating in the area center program and an equal number of eleventh grade boys from each of the same high schools who did not participate in the area center program. A total of 37 eleventh grade girls from 9 high schools participated in the area center program and an equal number of eleventh grade girls from the same high schools were selected who were not in the area center program. Eighty-six twelfth grade boys from 11 high schools participated in the area center program and an equal number of non-area center twelfth grade boys from the same high schools were selected for the study. Forty-five twelfth grade girls from eight high schools participated in the area center program and an equal number of non-area center twelfth grade girls from the same high schools were selected for the study.

Table II shows how the subjects in the study are represented according to high school, grade level, and sex.

Procedure for Collection of Data

Four hundred fifty-eight students were identified for this study. These included 229 students who received training at the Southern Oklahoma Area Vocational-Technical Center and 229 students who received no training at the area center.

The academic grade point average and the extracurricular activity data of each student for the 1965-66 and 1966-67 school years were obtained from his high school records (Appendix B).

TABLE II
STUDENTS ATTENDING THE AREA VOCATIONAL-TECHNICAL CENTER
BY SEX AND HIGH SCHOOL

Home High School	11th Grade		12th Grade		Total
	Boys	Girls	Boys	Girls	
Ardmore	16	14	26	19	85
Douglas	1	2	5	5	13
Berwyn	1	1	2	0	4
Davis	5	1	4	5	15
Dickson	5	3	10	0	18
Graham	2	0	0	2	4
Healdton	9	3	9	5	26
Lone Grove	1	0	1	0	2
Madill	4	4	12	1	21
Plainview	3	1	6	1	11
Sulphur	10	8	8	7	33
Wilson	<u>4</u>	<u>0</u>	<u>3</u>	<u>0</u>	<u>7</u>
Total	61	37	86	45	229

The social behavioral change for the students was obtained by means of a questionnaire completed by each of the high school teachers who had contact with the students both years (Appendix C).

The high school teacher completed a questionnaire on all students in her class. The teacher was not informed of the purpose of the questionnaire. The investigator then selected from the questionnaires data applicable to the students in this study.

Complete data were collected on all variables under consideration in this investigation.

Design of the Study

This study can properly be considered an ex post facto design where the experimental and control groups are statistically compared in retrospect. Kerlinger defines this type of research as:

. . . that research in which the independent variable or variables have already occurred and in which the researcher starts with the observation of a dependent variable or variables. He then studies the independent variables in retrospect for their possible relations to, and effects on the dependent variable or variables.

The investigator was aware that an ex post facto design is less scientific than a controlled experimental design. He was equally aware that ex post facto design is generally more suitable for research in educational problems than is experimental design.

Kerlinger advocates caution in interpretation when conducting this type research. He emphasizes the value of ex post facto design in his statement:

²Fred N. Kerlinger, Foundations of Behavioral Research. New York: Holt, Rinehart and Winston, Inc., 1965, p. 360.

Despite its weakness, much ex post facto research must be done in psychology, sociology, and education simply because many research problems in the social sciences and education do not lend themselves to experimental inquiry. . . . Controlled inquiry is possible, of course, but true experimentation is not. . . . Even if we would avoid ex post facto research we cannot.

It can even be said that ex post facto research is more important than experimental research. This is, of course, not a methodological observation. It means, rather, that the most important social scientific and educational research problems do not lend themselves to controlled inquiry of the ex post facto kind. . . . If a tally of sound and important studies in psychology, sociology, and education were made, it is likely that ex post facto studies would outnumber and outrank experimental studies.³

That interpretable data may be derived from the study was based on the assumption that the setting in which the two groups were found was such that any subject in the study might conceivably have been a member of either group.

Statistical Procedure

The problem was to determine, in terms of probability, whether observed differences between Group 1, area center students, and Group 2, non-area center students, signify that the populations sampled were themselves really different.

The procedures of statistical inference enable the investigator to determine, in terms of probability, whether the observed difference was within the range which could easily occur by chance or whether it was so large that it signifies that the two samples were probably from two different populations.

³Ibid, p. 372-373.

All statistical results are reported in terms of significance levels or exact probabilities--either in the body of the thesis or in the appendices. This method of reporting allows the reader to set his own significance level for rejection of the null hypothesis tested. In order to eliminate any investigator bias, however, the 0.05 level of significance was selected at the outset of the study as the level which must be attained before the investigator would reject the null hypothesis. The conclusions made in this study were based on the 0.05 significance level.

The hypotheses regarding the distribution of Group 1 and Group 2 among the social behavior categories was tested by using the nonparametric statistical Chi Square.

Siegel⁴ discussed the use of the chi square test for k independent samples to determine the significance of the observed values in each category of social behavior.

The chi square test⁵ was used to determine the significance of the observed values in the number of extracurricular activities for the two groups. The student's extracurricular activities were classified into categories of more activities, some, or less activities for 1966-67 compared to the number of extracurricular activities for 1965-66.

To test for differences in the grade point averages of Group 1 and Group 2, the analysis of covariance⁶ was used. Covariance was used

⁴Sidney Siegel. Nonparametric Statistics for the Behavioral Science. New York: McGraw-Hill Book Company, Inc., 1956, p. 174.

⁵Ibid.

⁶Robert G.D. Steel and James H. Torrie. Principles and Procedures of Statistics. New York: McGraw-Hill Book Company, Inc., 1960, p. 305-331.

primarily to adjust the 1966-67 grade point averages of Group 1 and Group 2 for differences in the 1965-66 grade point averages by regression to be estimates of what they would have been had the two groups had a common grade point average for 1965-66.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

Introduction

The purpose of this chapter is to present the results of statistical analyses of the data. The 0.05 level of probability was used to determine the significance of all statistical tests. The alternate hypotheses were non-directed.

Hypotheses were tested in the order listed in Chapter III.

Testing of Hypotheses

Hypothesis I:

No significant difference exists in the academic grade point average change for the school years of 1965-66 and 1966-67 between the area vocational-technical center students and those students who did not attend the area vocational-technical center.

Table III shows the observed variation in the grade point averages of the two groups for the 1965-66 and 1966-67 school years. The extreme variation in the 1965-66 grade point averages as explained in Chapter III, would be a contributing factor to the observed variation in the 1966-67 grade point averages of the two groups. Thus the need for using a correction factor to adjust the means of the two groups is apparent in determining the effect of the Ardmore Area Vocational-Technical Center on the participating students (Appendix D).

TABLE III

VARIATION IN GRADE POINT AVERAGES FOR GROUP 1 AND GROUP 2
FOR 1965-66 AND 1966-67 SCHOOL YEARS

Groups	1965-66	1966-67	Change
1 Area Center Students	1.78703	1.85026	+0.06
2 Non-Area Center Students	2.27319	2.40113	+0.13
Difference	0.48616	0.55087	+0.06471

Table IV gives the 1966-67 grade point averages after they have been adjusted for the 1965-66 variation. The difference in the 1966-67 grade point average of Group I and Group II was 0.55. After applying the correction factor and adjusting for the 1965-66 variation in the grade point averages, the adjusted difference was 0.15.

TABLE IV

ADJUSTED 1966-67 GRADE POINT AVERAGES
FOR GROUP 1 AND GROUP 2

Groups	1966-67 Grade Point Average	1966-67 Grade Point Average Adjusted for 1965-66 Variation	Standard Error of Adjusted Mean
1 Area Center Students	1.85026	2.05030	0.3529
2 Non-Area Center Students	2.40113	2.20110	0.3529
Mean Difference	0.55087	0.15080	0.0000

The analysis of covariance test for significant difference was used to analyze the academic grade point averages of the two groups used in the study. The 1965-66 grade point averages of Group 1 and Group 2 were used as a covariable in the test of differences in the 1966-67 grade point averages.

The test performs a regression technique to control for error variance in the 1966-67 grade point average due to the observed variation in the 1965-66 grade point averages of Group 1 and Group 2. The calculated F value of 8.795 (Appendix D) was highly significant at the 0.05 level of probability; therefore, the null hypothesis of no difference among treatments was rejected. The results of the analysis of covariance indicated a significant difference for the two groups in academic grade point average adjusted for the 1965-66 grade point average.

An examination of the 1966-67 adjusted grade point averages of the two groups, Table IV, shows that those students who did not attend the area vocational-technical center did earn higher grades in academic courses at the home high schools than those students who participated in the area vocational-technical center programs earned at the home high schools.

It is of interest to note that students not attending the area vocational-technical center were enrolled in a variety of general education courses at the 12 participating schools to obtain the credits needed for graduation. Each of the 229 non-area center students were enrolled in from one to three of the following courses: trigonometry, advanced algebra, solid geometry, plane geometry, world history, chemistry, physics, Spanish, speech, journalism, Oklahoma history, and civics.

The area center students as well as the non-area center students completed the State and their respective local high school required courses.

Hypothesis II:

No significant difference exists in the change of the number of extracurricular activities participated in at the home high school for the school years of 1965-66 and 1966-67 between the area vocational-technical center students and those students who do not attend the area vocational-technical center.

These data were analyzed by the use of the chi square test. The chi square statistic was computed to measure the significance of the discrepancies in the obtained frequencies and the expected frequencies of change in the extracurricular activities of Group 1 and Group 2.

The results of the chi square test for differences in extracurricular activity change is shown in Table V.

TABLE V

CHI SQUARE ANALYSIS OF 1966-67 EXTRACURRICULAR ACTIVITY PARTICIPATION FOR GROUP 1 AND GROUP 2

Group	More Activities	Same Activities	Less Activities	N
1 Area Center Students	19	100	110	229
2 Non-Area Center Students	86	122	21	229

$$\text{Pr } [X^2 (2) > 105.4] < 0.005$$

The calculated chi square value of 105.4 exceeded the tabled chi square value of 5.991 associated with a probability of 0.05. This

result indicated that highly significant differences did exist for the two groups; therefore, the null hypothesis was rejected.

Further examination of Table V reveals an inverse trend in the extracurricular activity participation of the two groups from the 1965-66 school year through the 1966-67 school year. One hundred ten area center students participated in fewer extracurricular activities this year than last year while only 21 non-area center students followed this trend. Only 19 area center students increased their extracurricular activities compared to 86 non-area center students who did participate in more activities in 1966-67 than in the 1965-66 school year.

Hypothesis III:

No significant difference of social behavior change exists for the school years of 1965-66 and 1966-67 at the home high school between the area vocational-technical center students and those students who do not attend the area vocational-technical center.

Three factors were considered in the assessment of social behavior change: (1) cooperation, the student's ability to function as a class member in meeting the objectives of the course; (2) use of time, the student's ability to profitably utilize class time in working toward the objectives of the course; and, (3) discipline, the orderly conduct of the student in the class.

Data relating to each factor were analyzed by use of the chi square test. The chi square statistic was computed to measure the significance of the discrepancies in the obtained frequencies and the expected frequencies of the three factors of social behavior change for Group 1 and Group 2.

Table VI indicated the results of the test for differences in "cooperation".

The chi square value of 17.648 calculated between Group 1, area center students, and Group 2, non-area center students, exceeded the tabled chi square value of 5.991 associated with a probability of 0.05. This result indicated that highly significant differences in "cooperation" did exist for the two groups.

Table VI reveals that 64 area center students improved in the "cooperation" factor while only 18 of the 229 demonstrated less cooperation at their home high schools. The non-area center students had 28 showing improvement and 21 showing less cooperation at the home high schools.

TABLE VI
CHI SQUARE ANALYSIS OF CHANGE IN COOPERATION

Groups	N	Improved	Same	Less
1 Area Center Students	229	64	147	18
2 Non-Area Center Students	229	28	180	21

$$\text{Pr } [X^2 (2) > 17.64798] < 0.001$$

The results of the chi square test for differences in the student's "use of time" is shown in Table VII.

The resulting analysis presented in Table VII has a calculated chi square value of 19.712. The value exceeded the tabled chi square value of 5.991 associated with a probability of 0.05. This result indicated

that highly significant differences did exist for the two groups in the "use of time" factor of social behavior.

Table VII shows that 58 area center students improved in their use of time compared to 22 non-area center students. Thirty non-area center students showed a decrease in the same factor while only 23 area center students decreased in the "use of time" factor.

TABLE VII
CHI SQUARE ANALYSIS OF CHANGE IN USE OF TIME

Groups	N	Improved	Same	Less
1 Area Center Students	229	58	148	23
2 Non-Area Center Students	229	22	177	30

$$\text{Pr } [X^2 (2) > 19.71221] < 0.001$$

Table VIII gives the results of the chi square test for differences in "discipline" for the two groups.

TABLE VIII
CHI SQUARE ANALYSIS OF CHANGE IN DISCIPLINE

Groups	N	Improved	Same	Less
1 Area Center Students	229	42	177	10
2 Non-Area Center Students	229	26	187	16

$$\text{Pr } [X^2 (2) > 5.424] = 0.08$$

The resulting analysis presented in Table VIII shows a calculated chi square value of 5.42. The tabled chi square associated with a probability of 0.05 is 5.991. The calculated chi square of 5.424 is not significant at the 0.05 probability level although it is significant at the 0.08 level.

Although the differences in the "discipline" factor of social behavior for the two groups is not significant at the 0.05 level, Table VIII does indicate that the area center students did show improvement. Forty-two area center students showed improvement compared to 26 non-area center students showing improvement in the "discipline" factor. Ten area center students were in the lower category with 16 non-area center students.

The results of the chi square tests on the three factors of social behavior indicated significant differences did exist for the two groups in (1) cooperation and (2) use of time. While the test did not indicate significant difference at the 0.05 level of probability in the third factor, discipline, the difference was significant at the 0.08 level of probability. Although the chi square test indicated no significant difference for the discipline factor at the 0.05 level of probability, when combined with the highly significant differences of the other two factors of social behavior, cooperation and use of time, the null hypothesis of no difference in social behavior change between the two groups was rejected.

CHAPTER V

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

Purpose of the Study

The purpose of this study was to determine if participation in the Southern Oklahoma Area Vocational-Technical Center programs would significantly affect:

1. The academic achievement of the participating students in the courses taken at the home high school.
2. Student participation in extracurricular activities at the home high school.
3. The social behavior at the home high school of the participating students.

Methodology of the Study

The study was an ex post facto design where the experimental and control groups were statistically compared in retrospect. Granting that the ex post facto design is less scientific than a controlled experimental design, the ex post facto design is found to be more generally suitable for research in educational problems than is the experimental design.

The study involved 458 high school students who were currently enrolled in 12 Southern Oklahoma high schools. The treatment group included 229 high school students present at the Southern Oklahoma Area Vocational-Technical Center on the day of the interview. The control

group was a stratified random sample of 229 students not participating in the area center programs. The two sample groups were stratified according to home high school, grade level classification, and sex to reduce variance due to teachers, courses, size of home high school, etc. Stratification was also used to minimize variation due to maturation.

The purpose of the control group was to determine norms of expected change in the three dependent variables investigated in this study. These are: (1) academic achievement; (2) extracurricular activities; and, (3) social behavior.

A questionnaire was administered at the area vocational-technical center to identify the student, his home high school, sex, home high school teachers, and high school grade level. The students in the control group were then determined by using the stratified random sampling technique with the above criteria.

The academic grade point average and the extracurricular activity data of each student for the 1965-66 and 1966-67 school years were obtained by the investigator from the student's high school records.

The social behavioral change for the students was obtained by administering a questionnaire to each of the home high school teachers who had contact with the students both years. The home high school teacher completed a questionnaire on all students in her class. The investigator then selected from the questionnaire data applicable to the students in this study.

Complete data were collected on all variables under consideration in this investigation. The data were summarized, coded, and analyzed with electronic computing equipment.

Summary of the Findings

It was found that students who did not attend the Southern Oklahoma Area Vocational-Technical Center did earn significantly higher grades in academic courses at the home high school than were earned by those students who participated in the area vocational-technical center programs.

Analysis of data related to the nature and extent of extracurricular activity indicated a significant change in the participation pattern of the area center students. Data reveal that 110 of the total 229 area center student enrollees did participate in fewer extracurricular activities than they had participated in the previous year when they were not enrolled in the area center programs. This may be contrasted with the extracurricular participation pattern of a like number of students enrolled only in the home high school. Only 21 of this latter group participated in fewer such activities than they had during the previous year of similar enrollment. It was further revealed that 19 area center students as compared to 86 non-area center students did participate in more extracurricular activities. These results would seem to verify the conclusion that students attending the area vocational-technical center participated in fewer extracurricular activities at their home high schools during the year than did comparable students with total enrollment at the home high school.

Three factors were considered in the assessment of social behavior change: (1) cooperation, emphasizing the student's ability to function as a class member in meeting the objectives of the course; (2) use of time, centering on the student's ability to profitably utilize class time in working toward achieving the objectives of the course; and, (3)

discipline, affirming the desirability of orderly conduct by the student. Such assessments were based upon collected data covering student behavior in classes attended at the home high school.

Analysis of data indicated highly significant differences in "cooperation" existing between the two groups. Data further revealed that 64 area center students improved in the "cooperation" factor while only 28 of the non-area center students showed such improvement. In contrast, 18 area center students and 21 non-area center students were rated as showing less cooperation at the home high school.

Results from the analysis of the "use of time" factor of social behavior revealed highly significant differences existing between the two groups. Data further reveal that 58 area center students and 22 non-area center students improved in the "use of time" factor during the period covering the 1965-66 school year through the 1966-67 school year. Correspondingly, 23 area center students and 30 non-area center students showed a decrease in the "use of time" factor.

Further analysis of data relating specifically to the "discipline" factor did not indicate a significant difference in the two groups at the 0.05 probability level. However, data analysis does indicate that area center students did demonstrate greater improvement in this factor than did the non-area center students. It is noteworthy that 42 area center students as compared to 26 non-area center students did show improvement in the "discipline factor". Only ten area center students as compared to 16 non-area center students were found to have moved to a lower category.

Conclusion of the Study

Establishment of area vocational-technical centers in Oklahoma was a basic change from the traditional process of providing vocational training in the local high school. This study was undertaken to ascertain the effect of this special type occupational training provided by the Southern Oklahoma Area Vocational-Technical Center on the student's behavior at his home high school. Findings of this study establish the assumption that participating students are affected.

Implications of the Study

Results of this study strongly indicate that area center students are inclined to be more cooperative, make better use of their time in class, and exhibit better discipline in their home high schools while participating in area center programs. The study also indicated that academic achievement was not enhanced while attending the area vocational-technical center. It was also found that area center students tend to spend less time at their home high schools participating in extracurricular activities.

Why there was a decline in academic achievement at the home high school cannot be fully explained in the terms of data analyzed. There would seem to be a rather strong implication, resulting from the analysis of data relating to social behavior, that home high school teachers were not biased to the extent of giving lower scores in academic courses solely because the student did participate in the area center programs. The reduction in participation in extracurricular activities may be partially explained by the area center students being away from the home high school for a half of each school day.

It is suggested that further research is needed to discover the interrelated factors associated with the exhibited decline in academic achievement and participation in extracurricular activities. There is need for research to further clarify the nature and extent of the effect of area vocational-technical centers on the student's rapport with his peer group, his attitude toward fellow students and teachers, and his sustained interest for further education.

Home high schools may need to give serious consideration to scheduling required general education courses in such a manner that students in training at the area vocational-technical center can attend the home high school for full days rather than half days and thus be less segregated from the home high school student body except in elective courses. It would also seem appropriate that administrators and teachers in area vocational-technical centers attempt to find ways of incorporating related basic general education materials more directly into the content of courses in their curricula. This might well enhance articulation of general education courses pursued at the home high school with the individual student's vocational interests and program chosen.

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APPENDIX A

STUDENT QUESTIONNAIRE

APPENDIX A

STUDENT QUESTIONNAIRE

Instructions

Please answer all items ACCURATELY. The information will be STRICTLY CONFIDENTIAL. Thanks for your help on this study.

1. Your name _____

2. Your home high school _____

3. Your birth date: Month _____ Day _____ Year _____

4. Your age _____ 5. Your sex _____

6. What course of training are you taking at the Area Vo-Tech Center?

7. Why did you decide to attend the Area Vo-Tech Center? _____

8. What is your classification in high school? Soph ___ Jr ___ Sr ___

9. Fill in the blanks below with your home high school teacher's name.

Teacher's Name
1965-1966
(Last Year)

Teacher's Name
1966-1967
(This Year)

Superintendent _____

Principal _____

English _____

Mathematics _____

Science _____

History _____

10. List additional names of teachers you had last year who are also your teachers this year.

_____ Teacher's Name	_____ Subjects Taught
_____ Teacher's Name	_____ Subjects Taught

APPENDIX B

ACADEMIC GRADE POINTS AND EXTRACURRICULAR ACTIVITIES
FROM HOME HIGH SCHOOL RECORDS

APPENDIX C

SOCIAL BEHAVIORAL CHANGES AS OBSERVED BY THE HOME HIGH
SCHOOL TEACHERS

APPENDIX D

ANALYSIS OF COVARIANCE

APPENDIX D

ANALYSIS OF COVARIANCE

The use of covariance to control error is a means of increasing the precision with which treatment effects can be measured by removing, by regression, certain recognized environmental effects that cannot be controlled effectively by the design of the study. For example, in comparing the effect of the area center on academic achievement, the students in the two groups did vary in their 1965-66 grade point averages. If initial grade point average, 1965-66, is correlated with change in grade point average, 1966-67, a portion of the experimental error for gain can be the result of differences in the student's 1965-66 grade point average.

By covariance analysis, the contribution to experimental error for change in grade point average which can be attributed to differences in the initial grade point average, may be computed and eliminated from experimental error for change.

Covariance was used primarily to adjust the 1966-67 grade point averages of Group 1 and Group 2 for differences in the 1965-66 grade point averages.¹

The model used, a mathematical description was:

$$Y_i = \mu + \beta(X_i - \bar{x}) + \tau_i + \epsilon_i$$

¹Ibid.

where

Y_i = 1966-67 grade point average

μ = mean of 1966-67 grade point averages

β = $\Sigma xy / \Sigma x^2$

$\beta(X_i - \bar{x})$ = correction factor for 1965-66 grade point average

τ_i = treatment

ϵ_i = random error

Table IX, Page 60, shows the results of the analysis of covariance used in testing adjusted treatment means as reported in Chapter IV.

TABLE IX
ANALYSIS OF COVARIANCE TABLE

Source	DF	YY	Sum-Squares (Due)	Sum-Squares (About)	DF	Mean-Square
Treatment (Between) Area Center & Non-Area Center Students	1	34.746309				
Error (Within)	456	355.419180	230.635491	124.783689	455	0.27425
Treatment & Error (Total)	457	390.165488	262.969829	127.195659	456	
Difference for Testing Adjusted Means				2.411970	1	2.41197

Null Hypothesis: No difference among treatments after adjusting with covariates.

$$F = \frac{2.41197}{0.27425} = 8.795, 1 \text{ and } 455 \text{ df}$$

$$F(1,455) = 8.795$$

$$P_r[F \text{ calc} > 8.795] < 0.005$$

VITA

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Doctor of Education

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