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A STUDY OF VOCATIONAL EDUCATION IN A COMPREHENSIVE
HIGH SCHOOL WITH RECOMMENDATIONS FOR VOCATIONAL
EDUCATION AND EDUCATIONAL SPECIFICATIONS FOR
INDUSTRIAL EDUCATION AT EAST HIGH SCHOOL,
SALT LAKE CITY, UTAH

by

Frank B. Barrows

A dissertation submitted in partial fulfillment
of the requirements for the degree

of

DOCTOR OF EDUCATION

in

Industrial Education

Approved:

UTAH STATE UNIVERSITY
Logan, Utah

1970

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Frank B. Barrows

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ABSTRACT

A Study of Vocational Education in a Comprehensive High School with Recommendations for Vocational Education and Educational Specifications for Industrial Education at East High School, Salt Lake City, Utah

by

Frank B. Barrows, Doctor of Education

Utah State University, 1970

Major Professor: Dr. Neill C. Slack
Department: Industrial Education

This study resulted from the selection of East High School in Salt Lake City to participate in a State Sponsored "comprehensive high school" project entitled "Project Success." The primary emphasis of the project was to encourage the development of vocational education as part of the high school curriculum.

The purpose of this study was to assist the Salt Lake City School District and East High School in the planning of vocational education programs and facilities by providing a rationale for vocational education within a comprehensive high school, making specific recommendations for vocational education programs, and by writing educational specifications for the programs recommended for Industrial Education.

Data were gathered through a review of the literature,

an opinionnaire mailed to graduates of East High School, a survey of local employers, and conferences with District planners and East High School personnel.

The recommendations resulting from this study were presented in the form of nine mandates for a comprehensive high school, followed by fourteen criteria for the vocational education programs at East High School.

A major recommendation was that East High School establish a Center for Bifocal Vocational Education, having vocational education programs that give as much emphasis on developing the personal traits and attitudes of the students as they do on developing specific job skills. The phrase "bifocal vocational education" was coined to stress this dual focus or dual emphasis. A Department of Personal Development was suggested that would be primarily concerned with developing the employability traits and attitudes that are deemed as important as the specific job skills.

Specific occupational clusters were suggested as a basis for the recommended vocational education. These are: Industrial Occupations, Business Occupations, and Home and Service Occupations.

A further recommendation was for expansion of the vocational education to include the entire Salt Lake City area through cooperative work experience and work-study programs.

Educational specifications for the recommended industrial education programs were written and presented to the district for use as guide to planning additional facilities.

PREFACE

In the spring of 1968 East High School in Salt Lake City, Utah, agreed to participate in Project Success, sponsored by the Utah State Department of Education. Project Success was intended to help three large high schools in Utah develop into "comprehensive" high schools. The decision to participate in it followed an earlier decision to build a vocational education annex to East High School.

This report is the result of a field study undertaken to assist the Salt Lake City School District and East High School in three areas:

1. In obtaining information upon which to base decisions pertaining to the extent and type of vocational education to offer at East High School.
2. To make specific recommendations for vocational education programs at East High School.
3. In writing educational specifications for the recommended programs in Industrial Education for inclusion in the new vocational education annex.

The original intent of the field study was to gather information from a review and synthesis of current trends and innovations in vocational education and from questionnaires directed at current students, graduates of East High School and from local employers. From this information, recommendations for programs were to be made and educational

specifications written.

Initial meetings with Dr. Arthur Wiscombe, Deputy Superintendent; Miss Huberta V. Randolph, Director of Curriculum; Mrs. Rosamond Demman, Director of Vocational Education; and Dr. Leonard Glismann, Specialist in Industrial Arts; and the staff of East High School disclosed a need for a report defining a "comprehensive" high school and the role of vocational education within that comprehensive context. As Project Success was to assist East High School to become comprehensive, a rationale and philosophy for vocational education within the comprehensive framework was felt to be a necessary starting point. A study was therefore undertaken to provide East High School personnel with a discussion of the comprehensive high school and of the role of vocational education in a comprehensive high school.

An opinionnaire was developed with the aid of the East High School counseling staff and mailed to graduates to obtain their views on the East High School education, types of occupations they had entered, what the strong and weak aspects of their high school education were, etc. A questionnaire was mailed to a selection of local employers to ascertain their views on vocational education and their willingness to aid East High School in its vocational education endeavors. A review of student records was initiated to ascertain the vocational interests of current students. This line of inquiry was abandoned when it became apparent that those interests listed were romantic choices not

realistically based on aptitude or interest tests; nor was there a record of occupational counseling.

From these lines of inquiry, specific recommendations were made to East High School in the form of a report that was printed by the District in April, 1969, and entitled The Role of Vocational Education in a Comprehensive High School. It is presented herein as Part I, Chapters I through VI.

Educational specifications were written for the recommended industrial education programs and submitted to the District in July, 1969. These specifications are presented herein as Part II, Chapter VII.

Chapter VIII of this report is a discussion of the field study and presents some suggestions that it is hoped will be helpful to future graduate students who undertake similar studies.

Although the two reports as submitted to the Salt Lake City School District were of somewhat different format than they appear herein as Chapters I through VII, the content is basically the same.

As Part I, Chapters I through VI, was written for the faculty and staff at East High School who were faced with a challenge to become a "comprehensive" high school as the result of their involvement in Project Success, considerable space was used to present a background and philosophy for a comprehensive high school and to discuss the place of vocational education in a comprehensive high school. The

chapters that follow in Part I, therefore, were intended to present this rationale to East High School and suggest some vocational education programs that would be compatible with this philosophy and rationale.

The study was begun in June, 1968, and the information gathered during June, July and August of that year. The fall and winter of 1968 were spent in organizing the material for the first report which was printed by the school district in April of 1969. The educational specifications were written and presented to the district in July of 1969.

PART I
THE ROLE OF VOCATIONAL EDUCATION IN A
COMPREHENSIVE HIGH SCHOOL

CHAPTER I
INTRODUCTION

If the present trend continues, we are going to have seven-and-a-half to eight million high school dropouts in the next ten years. This probably means that in some areas we are going to have seventy to eighty percent of the young people unemployed. I think it's dynamite. If young people don't have any hope, any prospect for the future, what are they going to turn to?¹

In the years since the above article appeared in Look Magazine, it has become painfully obvious what these young people are going to turn to. Starting with the beatniks and progressing to the hippies, an increasing number of youth have alienated themselves from both the educational system and society. Urban unrest, the big city riots, the ghetto problems, crime and unemployment among the racial minorities are all symptoms of an ailing society for which education is largely to blame for being delinquent in meeting the demands of youth.

Within the last two decades the rapid advance of technology has completely transformed the world of work. Complex machines and automation are systematically displacing the unskilled worker. Liberated from monotonous, repetitive labor, he is also deprived of income and job security and joins the ranks of the unemployed seeking work in jobs that no longer exist. Lacking a sound basic education and the knowledge of how to

¹Leonard, George B., "Are We Cheating Twenty Million Students?", Look, XXVII (June 4, 1963), pp. 36-40.

learn (or relearn), he has reached a frustratingly hopeless dead-end. This displaced worker, and millions like him, is joined yearly by high school leavers who are equally unprepared to face the modern world of work where the major survival characteristic is the ability to change with the job.

Paradoxically, at the same time untrained youth and unskilled workers are seeking work, there are a multitude of skilled and semi-professional positions going unfilled for the lack of qualified applicants. A portion of the displaced workers can be retrained for these vacancies, but the majority lack upgrading abilities short of complete re-education at a tremendous cost. There have been several notable attempts to retrain the displaced workers, such as the M.D.T.A. programs and the Job Corps, meeting with some measure of success. Ironically, the employed taxpayer has already paid to have these people properly trained through school taxes, only to find that he is once again paying the bill for the school's failure to produce a marketable product the first time.

The American school system must accept a large part of the blame for the existing situation. For years it has boasted a free, equal and "comprehensive" education for all the nation's youth while actually practicing a type of intellectual discrimination by catering to the twenty-percent who will eventually graduate from college and largely ignoring the educational needs of the other eighty-percent. Grant Venn states this educational shortcoming clearly:

...Tragically, the nation's education system is, when viewed as a whole, in what Edward Chase describes as a gross imbalance, its attention concentrated

on the twenty-percent of the students who go through college...

But what about the other eighty-percent who will not graduate from college? Unfortunately, the "pursuit of excellence" has left most of them behind. At the junior high school, high school, and junior college levels, most students, whatever their abilities, aptitudes, and interests, study those subjects that form the high road to the baccalaureate degree. More than a few of them have difficulty appreciating the logic of this course. Despite propaganda about the importance of staying in school, they drift out of the educational institutions in droves...

...Turned out of an educational system oriented toward someone else's college degree rather than their own work needs, and entering a labor market whose jobs require constantly higher levels of education and skill development, their prospects are bleak. Fully a fifth of the out-of-school youth under twenty-one are unemployed, and the youth unemployment rate, already higher than it was during the depression, reaches higher levels month after month. Those who do find work end up in low-skill, low-pay jobs, jobs without security and without a future, jobs frustratingly below their occupational potential...that so many of today's youth did not receive adequate occupational education attests a serious shortcoming of the educational system.²

These educational shortcomings are not new, but it is only since the technological revolution that they can no longer be swept under the carpet. Up to a few years ago, the unskilled high school graduate or dropout was not very visible because he could find a job on the farm, he could work in a service station, he could run an elevator, he could caddy on a golf course. Golf caddies are now electric carts, elevators are automated, and service station attendants need

²Venn, Grant, Man, Education, and Work, (Washington, D.C.: American Council on Education, 1964) pp. 2, 3.

training. Nowadays jobs just are not available for the untrained, hence their visibility and the resultant national concern about the relevance of the typical high school education.

The demands and rewards for adherence to the status quo, which for years has effectively stifled creativity among teachers, is gradually being replaced by the realization that the answers to the current problems must be found through new, innovative approaches and experimentation with all phases of the educational endeavor. Administrative climate is changing from a closed, autocratic mode to the more open climate where the teacher is given freedom to experiment and create.

It is in this new administrative climate that the State of Utah has selected three high schools to become experimental, exemplary "comprehensive" high schools, one of which is East High School in Salt Lake City. East High School has long provided a quality, college-oriented, academic curriculum aimed primarily at preparing the students for future study in a four-year college or university. Little has been done to provide comprehensive vocational offerings for the non-college bound, or to prepare students for a post-high school technical or vocational education.

The changing characteristics of the school population reflect the change in the general population that feeds the school. Originally an upper-middle class residential area of large, single-family dwellings, the area has followed the pattern of many cities throughout the United States. The improvement of freeways and commuting capabilities, the rise

of "bedroom communities," suburban shopping centers, and liberal long-term financing are just some of the factors that have contributed to the change in urban characteristics. This change has resulted in an urban concentration of lower socio-economic families. The school population reflects this change and necessitates modification of the school curriculum, its philosophy and its goals.

Realizing the need for this modification, the district and school administrators have the problem of planning for change of deciding what type of modifications to bring about. To produce an intelligent and workable plan for change, many decisions must be made on a wide variety of problems; some of which are the philosophy, curriculum, staff changes and additions, the type of facilities to build that will meet the needs of today and of ten or twenty years from now, and the extent of incorporation of modern educational and instructional technology.

The problem facing East High School was to decide what manner of vocational education to offer that will best meet the needs of the students within the framework of a "comprehensive high school" and within the future employment needs of Utah. The inclusion of vocational education into a previously academic curriculum does not necessarily guarantee the comprehensiveness of the high school.

Until recently, federal legislation restricted vocational education to five strictly defined and relatively inflexible categories. Current legislation allows much more latitude in what is considered vocational education. The 1963 Vocational

Education Act expands vocational education:

Unlike earlier acts, the new act is concerned more with groups of people and their particular educational needs than with the categories of vocations they will prepare for. In fact it mentions occupational categories only twice: once in the definition of "vocational education," to point out that education for business and office occupations is indeed included; and later, in sections amending the George-Barden and Smith-Hughes Acts, to specify the changes that will be made under each of the categories there. The Congress has left to each State the matter of deciding what occupations the schools will educate for.³

The amendments to the Vocational Education Act of 1963, passed in October, 1968, further liberalize, or de-categorize what can be called "vocational education." Therefore, the decision of what manner of vocational education to provide for students is no longer dictated by the confines of previously established occupational categories. It is left squarely up to East High School to decide what type of vocational education, if any, shall be a necessary part of a comprehensive high school education.

Statement of the Problem

The recent selection of East High School to become a comprehensive high school entails, among other things, master planning for vocational education programs and facilities. The decisions that must be made concerning the direction these programs take should be based upon adequate information about the student population and on business and industrial needs. With sufficient information, vocational education programs

³U. S. Office of Health, Education and Welfare, The Vocational Education Act of 1963, Office of Education, Bulletin OE-80034.

and facilities can be designed to meet the employment needs of the students and industry today and in the immediate future.

The problem, therefore, was that no master plan existed for changing East High School into a comprehensive high school.

One section of the master plan for a comprehensive high school deals with the programs and facilities for vocational education. This study was concerned with the creation of that section of the master plan.

Purpose of the Study

The purpose of this study was to apply established educational planning methodology that resulted in recommendations for programs in vocational education and educational specifications for facilities in industrial education at East High School in Salt Lake City.

The data and information, and the resultant recommendations, were to assist the administration and the school board in the decision making process regarding the direction to be taken in the vocational education at East High School. The presentation provided the faculty and staff at East High School with rationale for the inclusion of vocational education into a comprehensive high school. The model educational specifications for facilities in industrial education resulting from this study were of assistance to the school board and the architect in designing the vocational education facilities as an integral part of the comprehensive high school.

Procedure

To obtain sufficient information upon which to base recommendations, the following procedure was followed:

1. A review of the literature to ascertain
 - a. a definition and the role of a comprehensive high school.
 - b. what the role of vocational education is within a comprehensive high school.
 - c. what the trends are in contemporary vocational education.
 - d. what the trends are in employment in general and Utah in particular.
2. A sampling of graduates of East High School to ascertain their opinions regarding their high school education.
3. Local business and industry were surveyed to ascertain their willingness to support vocational education at East High School through such methods as advisory committees, cooperative work experience programs, etc.
4. Consultations with the administrative personnel in the Salt Lake City Public School District and at East High School who are directly concerned with the problems involved.

Definitions of Terms

(1) Vocational Education: The term "vocational education" means vocational or technical training or re-training which is given in schools or classes (including field or laboratory work and remedial or related academic and technical instruction incident thereto) under public supervision and control or under contract with a state board or local educational agency and is conducted as

part of a program designed to prepare individuals for gainful employment as semiskilled or skilled workers or technicians or sub-professionals in recognized occupations and in new and emerging occupations or to prepare individuals for enrollment in advanced technical education programs, but excluding any program to prepare individuals for employment in occupations which the Commissioner determines, and specifies by regulation, to be generally considered professional or which requires a baccalaureate or higher degree; and such term includes vocational guidance and counseling (individually or through group instruction) in connection with such training or for the purpose of facilitating occupational choices; instruction related to the occupation or occupations for which the students are in training or instruction necessary for students to benefit from such training; job placement; the training of persons engaged as, or preparing to become, teachers in a vocational education program or preparing such teachers to meet special education needs of handicapped students; teachers, supervisors, or directors of such teachers while in such a training program; travel of students and vocational education personnel while engaged in a training program; and the acquisition, maintenance and repair of instructional supplies, teaching aids, and equipment, but such term does not include the construction, acquisition, or initial equipment of buildings or the acquisition or rental of land.⁴

(2) Occupational Education: Education designed to contribute to occupational choice, competence, and advancement. It includes vocational, technical, professional, and basic education, as well as counseling, and the special contributions of the practical arts and other forms of "general education."

(3) Industrial Education: A generic term applying to all types of education related to industry, including both Industrial Arts Education and Vocational Industrial Education (formerly called T. and I. Education). As used in this paper those educational activities designed to teach students about and prepare them for the industrial occupations.

(4) Industrial Occupations: Those occupations involving skills needed in the refining,

⁴Public Law 90-576, Amendments to the Vocational Education Act of 1963, Section 108 (1).

manufacturing, production and servicing of industrial materials, products and goods.

(5) Business Occupations: Those occupations related to the operation and administrations of business, and the procurement, distribution and sales of goods and services. Previously divided in education into Business Education and Distributive Education.

(6) Service Occupations: Occupations concerned with serving individuals in institutions and in commercial and other establishments; the performing of tasks in and around private households; and protecting the public against crime, fire, accidents, and acts of war.

(7) Area Vocational School: VEA 1968, Section 108 (2) (B) the department of a high school exclusively or principally used for providing vocational education in no less than five different occupational fields to persons who are available for study in preparation for entering the labor market.⁵

(8) Educational Specifications: An integral part of the educational planning process. A report addressed to the architect that describes the nature of the activities that are to be housed and specifies the uses to which the building spaces are to be put. Educational specifications also serve to clarify and solidify the educational concepts of the staff.⁶

⁵ Ibid.

⁶ McClurkin, W. D., School Building Planning, (New York: The MacMillan Company, 1964), pp. 74-77.

CHAPTER II
THE COMPREHENSIVE HIGH SCHOOL

Any study designed to produce recommendations for vocational education in a comprehensive high school must first consider what is meant by the term "comprehensive." Secondly it must determine the place, if any, of vocational education within this comprehensive framework. Several questions immediately arise. When is a high school comprehensive? What are the purposes and the objectives of a comprehensive high school? How is comprehensiveness measured? Does the addition of vocational education to an academic curriculum make a school comprehensive?

Perhaps one of the first people to influentially question the relevance of the traditional high school's liberal arts emphasis was Spencer, who, in 1891, published a book in which he dared to question "what knowledge is of most worth." He not only upset the applecart but completely inverted it by assigning a heirarchy to the worth of the knowledge that a school should transmit. The hitherto top-billed Latin, Greek, music, poetry, rhetoric and philosophy were placed at the bottom of the ladder in the heirarchy of worth:

Such then...is something like the rational order of subordination: ---That education which prepares for indirect self-preservation, that which prepares for parenthood; that which prepares for citizenship; that which prepares for the miscellaneous refinements of life...¹

¹ Spencer, Herbert, Education: Intellectual, Moral, and Physical (New York: D. Appleton and Company, 1891), pp. 34-5.

This heirarchy of values broke sharply with tradition. Secondary education in the western culture had dwelt mainly with the miscellaneous activities which Spencer relegated to last place. According to Clark, Klein and Burks² the schools never quite recovered their old position after Spencer's book.

Until around the turn of the century the objectives of education, if stated at all, were given in terms of subject matter mastery.³ A growing discontent with the academically aloof and static pattern of education brought about efforts to state the purpose of education in terms of the needs of society. The Commission for the Reorganization of Secondary Education stated the chief aim of education to be as follows:

The purpose of democracy is to so organize society that each member may develop his personality primarily through activities designed for the well-being of his fellow members... Consequently, education in a democracy, both within and without the school should develop in each individual the knowledge, interests, ideals, habits, and powers whereby he will find his place and use that place to shape both himself and society toward even nobler ends.⁴

The Commission went on to present what have since been known as the Seven Cardinal Principles, and which are still used today as the basic objectives of secondary education.

²Clark, Leonard H., Klein, Raymond L., and Burks, John B., The American High School Curriculum (New York: MacMillan Co., 1965) p. 22.

³Taba, Hilda, Curriculum Development, Theory and Practice (New York: Harcourt, Brace & World, Inc., 1962) p. 207.

⁴Commission for the Reorganization of Secondary Education, 1918, The Cardinal Principles of Secondary Education, U. S. Bureau of Education, Bulletin No. 35, Washington, D. C., p. 7.

They are:

- (1) health
- (2) command of fundamental processes
- (3) worthy home-membership
- (4) vocation
- (5) citizenship
- (6) worthy use of leisure
- (7) ethical character⁵

Committees and commissions since that time have added to these seven objectives by embellishing them with profound statements but have done little to change their basic philosophy. The National Education Association's Educational Policies Commission defined the objectives again in 1938 as self-realization, human relationship, economic efficiency, and civic responsibility and went on to describe the competencies an educated person would display in each of these areas.⁶

In 1944 the same commission identified the Ten Imperative Needs of Youth:

The Common and Essential Needs That All Youth Have in a Democratic Society

1. All youth need to develop saleable skills and those understandings and attitudes that make the worker an intelligent and productive participant in economic life. To this end, most youth need supervised work experience as well as education in the skills and knowledge of their occupations.
2. All youth need to develop and maintain physical fitness.
3. All youth need to understand the rights and duties of the citizen in a democratic society, and to be diligent and competent in the performance of their obligations as members of the community and citizens of the state and nation.

⁵ Ibid., pp. 10-11.

⁶ Educational Policies Commission, The Purposes of Education in American Democracy (Washington, D. C.: National Education Association, 1938).

4. All youth need to understand the significance of the family for the individual and society and the conditions conducive to successful family life.
5. All youth need to know how to purchase and use goods and services intelligently, understanding both the values and received by the consumer and the economic consequences of their acts.
6. All youth need to understand the methods of science, the influence of science on human life, and the main scientific facts concerning the nature of the world and of man.
7. All youth need opportunities to develop their capacities to appreciate beauty, in literature, art, music and nature.
8. All youth need to be able to use their leisure time well and to budget it wisely: balancing activities that yield satisfactions to the individual with those that are socially useful.
9. All youth need to develop respect for others, to grow in their insight into ethical values and principles, and to be able to live and work cooperatively with others.
10. All youth need to grow in the ability to think rationally, express their thoughts clearly, and to read and listen with understanding.⁷

Close examination of each of these ten needs of youth shows that each is an elaboration of one or more of the seven cardinal principles of 1918.

The Association for Supervision and Curriculum Development of the National Educational Association published a pamphlet entitled The High School We Need. Under the authorship of Wiles and Patterson the first section contains some fundamental beliefs about American high schools, two of which are expressed as follows:

⁷ Educational Policies Commission, Education for All American Youth (Washington, D. C.: National Education Association, 1944) pp. 225-226.

The American high school, therefore, must provide youth with experiences which continuously increase the personal, social and vocational competencies needed in our society.

To maintain individual freedom of choice each youth must be free to elect his vocational goals and to pursue a high school program leading to them.⁸

The remainder of the pamphlet is devoted to statements about the program offerings needed to implement the beliefs. A condensed summary appears in Appendix A.

The American Association of School Administrators appointed a special committee in 1964 to identify the imperatives in education. After two years of study they concurred on eight points around which the educational program must be revised and reshaped to meet the needs of the times:

- To make urban life rewarding and satisfying
- To prepare people for the world of work
- To discover and nurture creative talent
- To strengthen the moral fabric of society
- To deal constructively with psychological tensions
- To keep democracy working
- To make the best use of leisure time
- To work with other peoples of the world for human betterment⁹

They state that these imperatives must be at the forefront as curriculums are modified, instructional methods revised and organizational patterns reshaped to meet the educational needs of this country in one of its most dynamic periods.

It would seem, then, that the definition of a comprehensive high school would be that high school that is concerned with

⁸Wiles, Kimball, and Patterson, Franklin, The High School We Need (Washington, D. C.: Association for Supervision and Curriculum Development, National Education Association, 1959) pp. 2-3.

⁹American Association of School Administrators, Imperatives in Education (Washington, D. C.: 1966) p. 15.

the development and maturation of each of the basic objectives of secondary education as set forth by the Commission for the Reorganization of Secondary Education, that is, each of the seven cardinal principles. Each of these seven basic objectives would be given equal emphasis, the end result being the development in each individual of the knowledge, interests, ideas, habits and powers whereby he will find his place and use that place to shape both himself and society towards even nobler ends.

All of the attempts cited above to define the purpose of education in our democracy have in common the statement that vocational education is one of the imperatives. American high schools have overlooked or de-emphasized this main objective of education to the point where the academic education or, to quote Herbert Spencer, "that education which prepares for the miscellaneous refinements of life" is given priority in the curriculum. This is the problem faced by East High School in Salt Lake City, to give equal emphasis to all of the objectives of a comprehensive high school.

The Test of Relevance

Many of the modern developments in educational technology have to do with the improvement in the teaching process, such as computerized instruction, programmed instruction, and integrated teaching aids. These are designed to do a better job of helping the teacher teach, to allow him more time for individualized attention by freeing him from repetitive lectures through the use of such devices as video-tape recorders.

Very little attention has been devoted to the reasons for offering subject matter itself. A better job is being done of teaching the established subjects without necessarily subjecting those subjects to the test of relevance to the needs of the students.

Few people would argue the relevance of mathematics or English as subjects in a high school curriculum, but until the English and mathematics teachers analyze the day to day content of what they teach in light of its future use to the student, they cannot claim relevance. Each, while an important aspect of a general education, has developed its own discipline to the point where it tends to exist in and for itself. Thus the main objective in English may become parsing a sentence or conjugating a verb, while the real reason for English, developing the ability to express and comprehend, both written and orally, becomes lost. In mathematics the means becomes the end by learning the binomial theorem or how to extract a square root longhand while the real reason for mathematics becomes lost--the ability to use it in a practical manner on everyday problems.

Vocational educators have not been immune to the irrelevancy of course content. In electricity students are taught to solve any number of problems using Ohm's Law without ever really understanding the relationships between voltage, current and resistance. Squaring a block of wood becomes an end in itself.

The point is that no matter how good a job may be done of teaching a particular subject matter through programs,

individualized learning, instructional media, etc., unless what is being taught will be of some use to the student in his later life it is irrelevant and a waste of the valuable and limited time available in school.

The traditional subjects are the ones least apt to be subjected to the test of relevancy, and the teachers in these established disciplines are the most likely to become defensive when their reason for being is questioned.

It is precisely this question of curriculum relevancy that is being asked by college students on campuses throughout the country, and that has become the main underlying cause of campus disturbances.¹⁰ The cry for a younger faculty is really a cry for a more relevant curriculum. High schools are less susceptible to the open questioning of the relevance of the subject matter by students because of the paternal attitude of the educators "who know what is good for the students." Instead of protesting a meaningless course, the student is lost by either tuning out or dropping out.

In a study appropriately entitled The Irrational Curriculum,¹¹ a critical look was taken at the relevance of the college preparatory track offered by most high schools. This track is justified on the grounds that it prepares

¹⁰Western Interstate Commission for Higher Education, Reports on Higher Education, XV, No. 1 (November, 1968) pp. 3-6.

¹¹Young, Robert W., The Irrational Curriculum, The Bulletin of the National Association of Secondary School Principals, LI, No. 20 (September, 1967) pp. 46-52.

students for their educational pursuits at institutions of higher learning. The author of the study searched through the records of more than 9000 students before finding 150 matched pairs of students whose intents were to go on to college after completing high school. The students were matched on all characteristics except the high school courses taken. One member of each pair took the traditional college preparatory track while the other member took the maximum number of electives. These pairs were followed into college and it was found that the ones who had not taken the college preparatory track had a significantly higher grade point average in college. It is a sad commentary on the relevance of the typical college preparatory curriculum that it does a poorer job of preparing students for success in college than the so-called non-academic subjects or electives.

Student Involvement in Curriculum Determinations

Relevance does not imply that items of student interest are the basis for selection of content in a high school curriculum. This was recognized early during the debate about relevance of the curriculum. Although today's students are demanding a larger voice in deciding the curriculum, there is a point where the more mature adult must decide for the student what he is to learn. The proper limit of student interest in the selections of curriculum content was well stated by Counts in 1926:

If learning is to proceed at all, the attention of the learner must be secured and his attention

can be secured only through a direct or indirect appeal to his interests. These interests must be utilized to the fullest possible extent, but they cannot be accepted as positive and trustworthy guides in selecting the content of the curriculum. They constitute the raw materials and determine the conditions of education, but they cannot furnish its goals. They reveal the present psychological position of the learner; they do not indicate the direction in which he should move. Until we have found the child's interests we have not found him-- he is still lost in the educational woods. Only as his interests set limits to educational possibilities may they be regarded as guides in the choice of objectives of education. In the selection and validation of the content of the curriculum they should serve as negative, rather than as positive factors. Nothing should be included in the curriculum merely because it is of interest to the children; but whatsoever is included should be brought into closest possible relation with their interests.¹²

After several pages of discussion regarding the "doctrine of interest," Taba concludes as follows:

It seems, therefore, that the principle of meeting the demands of essential, significant subject matter and that of adapting education to the needs and interests of the students are not necessarily in conflict. As one differentiates the levels of choice, it is possible to "fix" the essential things to be learned and allow the details through which to learn them to be determined by student interest, thus providing for both.¹³

Vocational Education In A Comprehensive High School

Almost every commission that has met with the purpose of defining the goals and purposes of education in a democracy has concluded that one of the necessary outcomes is the ability to support oneself and one's family.

¹²Counts, G. S., Some Notes on the Foundations of Curriculum Making, National Society for the Study of Education, Twenty-Sixth Yearbook, Part III (Bloomington, Indiana: Public School Publishing Co., 1926), p. 80.

¹³Taba, Op. Cit., p. 289.

If Maslow's Hierarchy of Needs¹⁴ has any validity, it seems that the very first need of a person is the security that comes with the ability to earn the basic requirements of food, shelter and clothing. This requires an education leading to self sufficiency. Once these basic subsistence and security needs are met through schooling, the person may devote his part time educational activities towards acquiring the refinements of life. An unemployed adult seeking a job has little use for a basic education that consisted of art, music and literature appreciation. Conversely, a secure, employed person may profitably spend his leisure time acquiring such refinements of life as perfecting his golf game, bridge playing skills, or musical appreciation. To give inverse priorities to the educational needs of the majority by emphasizing an academic curriculum can lead to a national disaster. Evidence of campus disturbances and urban riots should force a revision of schooling priorities, and a real evaluation of what Spencer called "what knowledge is of most worth."¹⁵

Much emphasis has recently been placed on developing the ability to learn. Almost all fields of work now require a higher level of preparation than they did a generation ago. Sophisticated technology requires sophisticated workers if it is to remain in operation. The ability to change with the times, to learn new skills as they are required, demands a particular ability not given major emphasis in the average

¹⁴Maslow, A. H., Motivation and Personality (New York: Harper Brothers, 1954), Chapter 5.

¹⁵Spencer, Op. Cit., pp. 34-5.

school curriculum. In the opening remarks of a recent publication of The Teachers College it is stated in this manner:

To put the challenge another way, since the rapidity of change in job requirements and employment patterns now suggests that the most essential of all work skills is the ability to learn, we must ask whether we are giving the attention we should to the development of that ability as an object of particular study.¹⁶

The ability to learn is closely related with the desire to learn; the love of learning, the intellectual curiosity, the desire to see what makes things tick, the urge to find out what is on the other side of the mountain--are these innate characteristics only a few people are endowed with? Can these be learned? Can they be taught? Some studies suggest that there is little a school can do to change students in this respect, that their patterns are pretty well set by their early environment and that high priced schools, integration, teacher preparation and the like have little measurable affect on the student's performance, be he white or black.¹⁷

If the above is the case, if employment nowadays requires a high level of preparation coupled with a desire and ability to continue learning beyond formal schooling, then is it realistic to attempt vocational education for the lower ability

¹⁶Rosenburg, Jerry M., New Conceptions of Vocational and Technical Education (New York: Teachers College Press, Columbia University, 1967), p. 2.

¹⁷Coleman, James S., et al., Equality of Educational Opportunity (Washington, D. C.: Government Printing Office, 1966).

(academically, motivationally, verbally, or however they are measured) students? When job opportunities were distributed in a manner that paralleled the ability distribution of the population (i.e., approximately 15 percent professional, 30 percent skilled, 40 percent unskilled and laborers, and 15 percent unemployable) there was little difficulty in the high school leaver finding employment. Just because there is a trend in the employment distribution towards the need for skilled, well prepared workers, and a decrease in opportunities for the unskilled or the laborer, we cannot assume that the ability levels of the students have also changed in like proportion and that all we have to do is to give them more education. High level, technical vocational education will not help the low ability student nowadays any more than it did twenty years ago. One of the criticisms of modern vocational education is that it has become too selective for the average student with little ability or motivation. Adding vocational education oriented to the higher vocational skills and requiring students of above average aptitudes may help solve the shortage of technicians, but will do little for the low ability student. We must first develop strategies that will make schooling interesting and meaningful for all students, create in them a desire to stay around long enough to develop what abilities they have, and provide them with work experience opportunities for developing and using those abilities.

The prestige of a technician, or pre-technician, program will draw interest and support to a school's vocational education, and there is little doubt that these programs are needed

and should be available to attract the high level student.

Even more important, there now must be designed a program of semi-skilled occupational training to syphon off those youths who do not have the endowment or motivation to achieve in the highly skilled occupations. Such a program should take care of the bulk of students who in many schools take the so-called general curriculum, which is pointed toward nothing. Moreover, here is where the dropout rate is this highest.¹⁸

In such a program the first level of performance could well be the ability to "service" automobiles; gassing them; checking and changing tires, oil, fan belts, batteries and other accessories; lubricating, etc. The attainment of this performance level could be certified by cooperating service stations. The second step might be that of mechanic's helper with performance levels to be met on such items as brake adjustment, wheel balancing, muffler and tail-pipe installation, etc. The performance at these levels would be certified by cooperating automobile repair stations (with endorsement by local unions).

Within the general heading of "automotive" there are numerous identifiable skill levels, stratifiable according to difficulty, through which all students can climb, and, after reaching each level will have a saleable skill. The point in this type of program is that there is no set standard or level of requirement that each student must reach or receive a failing grade. The students will tend to spread themselves out throughout the skill levels within any given occupational category, but never will the student that

¹⁸Rosenberg, Jerry M., Op. cit., p. 13.

reached skill level 5, for example, automatically receive a grade higher than a student who peaked out at level 3. Quite the contrary may actually be the case; the student reaching level 3 may fully develop his limited aptitudes, show great effort and fortitude, and may be deserving of a top grade. On the other hand, the student who reaches level 5 may do so without expending a great amount of effort. In either case, the employer, when seeking a worker capable of performing at a certain level, would be assured from the high school record that the student is capable of that performance.

Directly related to the problem of deciding what type of occupational education to offer in a comprehensive high school is the fact that nearly two-thirds of the work force are in the service sector for which there is no defined employer.¹⁹ Profit and non-profit organizations and government agencies all employ workers in the service sector. Vocational education has been structured around industrial skills, business and office occupations, etc., with little acknowledgment of or recognition for the service occupations. Programs are needed that cut across traditional categories and are designed to teach those competencies needed in the service occupations, such as personal appearance and grooming, meeting the public, handling money, etc. It might be argued that these are all part of a general education, but emphasizing them in a work situation as definite employable

¹⁹Ibid., p. 23.

traits is essential. The waitress, the service station attendant, the bus driver, the receptionist and the retail clerk all have in common the fact that they must face people in such a manner as to be presentable and pleasing. Although their jobs are definitely service in nature, their personal traits largely determine whether the customer returns or goes elsewhere the next time he needs the same service. These are indeed the traits that determine the retention of personnel in the service fields, and as such are justifiable as vocational education.

Vocational Skills Versus Occupational Attitudes

Much has been written concerning the impact technology and automation have had on changing the characteristics of the work force. The cry of industry for skilled technicians has sounded like music to traditional vocational educators. It is a challenge he can meet with his long established methodology. He has had much experience in job analysis and skill training, and by and large he has met the challenge well. Many good technical schools and junior college technician programs have resulted from this effort, but it has resulted in prolonging the middle-class bias of vocational education. It has had an adverse effect on making vocational education responsive to the needs of the semi-skilled and the unskilled worker.

The fact that there are demands for highly trained workers below the professional level does a great deal to justify the traditional stance of vocational education and to keep the middle-class bias in

vocational education. By middle-class bias is meant the view of an occupation as a life work, something one chooses because of capacity and interest, which one pursues avidly and persistently, and by means of which one earns a living throughout one's adult life. In the case of the printer and the plumber, and, presumably, in the case of the electronics technician and the computer programmer, the trade one learns becomes the trade one pursues for years to come, perhaps with some special training as new methods and materials are developed. It is in this way that the middle-class bias, the emphasis on stability and commitment, manifests itself.²⁰

This bias has been a major contributor to the failure of the American public school system to make education meaningful and relevant to the disadvantaged youth from the minority groups or the lower socio-economic levels without the middle-class commitment. These people will be the unskilled or the semi-skilled workers who hold a variety of jobs, generally moving horizontally from one to another, but rarely vertically, without a specific career goal in mind. For these people the specific job skills can be learned on the job in a few hours to a few weeks providing the person can (1) find the job and (2) convince the employer that he is worth hiring. Approximately two-thirds of all jobs in New York State fall in this category.²¹ To the people who work in these jobs the job is not the important thing, but the employee benefits, the overtime, the union affiliation, the health benefits all become the major consideration.

²⁰Ibid., p. 32.

²¹New York State Department of Labor, "Jobs, 1960-1970: The Changing Pattern, Manpower and Technological Change in New York State" (1960), p. 3.

They are not working because of a commitment to the vocation, but as a means of earning a living wage.

How do vocational educators provide for these workers when they are not training for a lifetime vocation? In the main they have not been provided for, and as a result the high school dropout or leaver has faced the world of work without the skills, personal traits and attitudes needed to get and to hold a job. Super speaks of vocational education as focusing on the occupation

. . . rather than on the person who will fill it, even though it is a person who is being trained. . . . It seems not to have occurred to the leaders in vocational education, that for the frequently changing semi-skilled worker, education for a career of changing jobs may itself constitute the most appropriate kind of vocational education . . .²²

Moss sees a gradual revision of the social and philosophical framework of vocational education:

. . . There is a heightened sensitivity to human welfare--a sensitivity to people who need skills rather than to the occupations for which skills are needed. . . . The primary focus of vocational education is veering from meeting the needs of the labor market toward the development of the individual.²³

Summary

The major efforts to state the objectives of secondary education have included or been elaborations of the Seven Cardinal Principles. A test of relevance should be given

²²Rosenberg, Jerry M., Op. Cit., pp. 34-35.

²³Moss, Jerome Jr., "The Past is Prologue," Review of Educational Research, XXXVIII, No. 4 (October, 1968), p. 435.

to the offerings of a high school to assure that they contribute to the attainment of these objectives.

Preparing people for the world of work is included as one of the objectives of the secondary school. Due to the rapidity of change in job requirements and employment patterns in our technological society, vocational education is changing its emphasis from the occupation (specific job skills) to the individuals who will fill those occupations. In the area of the service occupations the job skills are the workers' personal traits, appearance, bearing, work habits and attitudes.

CHAPTER III

VOCATIONAL EDUCATION AND EMPLOYMENT TRENDS

Utah Studies

In 1959 the Utah Department of Employment Security prepared a report entitled Utah Entry Occupations Survey High School Graduates, 1953, 1955, 1957 to determine the kinds of employment the high school graduates found upon completion of their high school studies and to analyze the factors that influenced them. A summary of the findings is given below.

1. More than sixty percent of a sample of Utah's high school students reported performing tasks for pay after school hours or during summer vacation, gaining valuable work experience as well as a certain amount of spending money before graduation.
2. Approximately sixty-eight percent of the 1953, sixty-seven percent of the 1955 and seventy percent of the 1957 graduates in the survey sample enrolled in college. A wide variety of jobs, at progressively higher wage and responsibility levels was reportedly secured by the responding High School graduates. The majority of the jobs occurred in the trade and service industries, followed by substantial numbers in the manufacturing and construction industries, as well as for the governmental agencies.
3. Many of the respondents secured their first or entry jobs on their own initiative. A substantial number felt there should be more thought, planning or assistance given to the transition process between school training and the actual employment situation.
4. Opinions of inadequate aptitude and interest testing as well as limited vocational and career counseling service and facilities were found. These programs are reported by respondents as important and needing improvement.

5. There was general agreement that more specific preparation was needed in many skilled, technical, scientific and professional areas to meet the challenge of today's complex labor market.

6. "Harder" and more classes in mathematics, science and English were the predominant suggestions for improvement of present school curricula. More and better trained teachers as well as more adequate educational facilities, were also on the respondents' lists of suggestions for improving our future workers' skills and qualifications for employment.

7. In view of the jobs obtained by the respondents, it would seem that the seventy-nine percent "career goals" listed in the professional classification (with only five percent in the skilled craftsman categories) lacks realism in planning for Utah's present day Labor Market requirements.¹

In 1963 Lowe performed a business occupations survey where he found that sixty-eight point eight percent of the responding Salt Lake City business firms have jobs that high school seniors could handle,² and fifty-two point five percent would be willing to hire high school students on a part-time basis.³ When asked if they contact high school personnel for references before hiring, only twenty point three percent answered "yes."⁴ Seventy-four point four percent indicated that they prefer to contact prospective employees

¹ Utah State Department of Employment Security, Utah Entry Occupations Survey of High School Graduates, 1953, 1955, 1957, (April, 1959), p. 2.

² Lowe, Calvin Dean, The Need For and Ability to Support a Program of Cooperative Vocational Business Education in the Salt Lake City High Schools (Logan, Utah: Unpublished doctoral dissertation, Utah State University, 1963), p. 42.

³ Ibid., p. 43.

⁴ Ibid., p. 45.

either through the employment service or through friends.⁵

Businessmen were asked to rank thirty-two subject areas taught in the Salt Lake City high schools as to importance with respect to their own businesses. The top ranked six were:

basic arithmetic
salesmanship
English grammar
business mathematics
general business
typewriting

The lowest rankings were given to:

dance
drama
music
history
foreign language⁶
English literature

It is important to note that most of the "academic" subjects were ranked in the lower fifty percent.

Of 3198 students surveyed by Lowe, seventy-seven point two percent indicated that they intended to go on to college, but eighty-one point five percent said they would be interested in high school programs that would allow them to work and gain experience while attending regular classes.⁷

Mortimer's study of 1965 is perhaps the most complete study of vocational industrial and technical education that has been performed for Utah. This 442 page study was the culmination of visits to vocational and technical schools in

⁵Ibid., p. 44

⁶Ibid., p. 56

⁷Ibid., p. 60.

thirty states and an analysis of vocational education and training needs for Utah. Regarding the establishment of stable vocational education programs Mortimer suggests:

There have been many cases where occupationally oriented programs have been established in schools and they have functioned successfully for a period of time, but eventually have drifted away from their basic purpose and have been absorbed into more academic type programs. The problem of keeping vocational and technical programs stable has been one of real concern and in this study attempts were made to ascertain the policies and practices which would be essential to keep programs stable. The study revealed the following things to be very significant:

1. A favorable administration.
2. A high quality program.
3. A dedicated faculty.
4. A public relations program planned for the purpose of informing the public of everything regarding the schools and the programs offered.
5. A definite "ear marking" of the funds allocated so that they cannot be diverted to other programs.
6. A proper organization within the school or division so that the programs offered can operate effectively and efficiently.
7. A clear definition of the purposes of the work.
8. The use of advisory committees consisting of interested members.
9. Honesty with the students in terms of the kind of training they are receiving.

Vocational industrial and technical education programs are operating successfully in a great variety of schools with many kinds of organizational patterns. The important things for successful operation deal more with the items given in the preceding paragraph than they do with the actual organizational pattern. In visiting schools throughout the country it was found that programs operate successfully in just about every kind of organizational pattern that exists.

⁸Mortimer, William E., A Study of Vocational Industrial and Technical Education with Special Reference to the State of Utah (Logan, Utah: Utah State University, Department of Industrial and Technical Education, 1965), pp. 87-88.

Discussing the rate of change in the labor force with respect to the major industry groupings and occupational groups, Mortimer summarizes as follows:

The anticipated percent change in employment by major industry groups by 1975 is as follows:

Service and miscellaneous	61 percent increase
Contract construction	51 percent increase
Government	50 percent increase
Finance, insurance and real estate	43 percent increase
Wholesale and retail trade	38 percent increase
Manufacturing	22 percent increase
Transportation and public utilities	15 percent increase
Mining	No change
Agriculture	30 percent decrease

When the labor force is classified by occupational groups the anticipated changes for 1960 to 1975 are as follows:

Professional, technical, and kindred workers	65 percent increase
Managers, officials, and proprietors except farm	32 percent increase
Clerical and kindred workers	45 percent increase
Sales Workers	35 percent increase
Laborers, except farm and mine	No change
Craftsmen, foremen, and kindred workers	30 percent increase
Operatives and kindred workers	18 percent increase
Service workers	50 percent increase
Farmers and farm managers, laborers and foremen	30 percent decrease ⁹

The fastest growing occupations will be those which call for the most education or specialized training. This makes it obvious that a young worker's chances for good employment will be substantially less if he does not have adequate education and training. As new automated equipment is introduced on a wider scale in business and as automation increases in industry, the skill requirements for all workers will rise and there will be greater demand for employees who have the necessary skills required. This means that there will be increased competition for young people

⁹ Ibid., p. 145.

who have the higher levels of education and training and the boy or girl who does not prepare for work through adequate education and training will find the going rougher and rougher in the years ahead. The unskilled jobs that once absorbed many of the untrained workers will continue to be a narrowing field of employment. The young people who have acquired a skill and a good basic education will have a much better chance at interesting work, good wages, steady employment, and greater satisfaction in life.¹⁰

An exception to the above statement seems to be the service occupations. The main requirement for a job in this area is a personable appearance and the ability to meet people, communicate, and willingness to work. A higher level of education is not necessarily a prerequisite for a service type job, yet according to the predictions above this category has the highest anticipated growth rate. These figures are supported by the Utah Department of Employment Security in 1968, which predicts 72,000 "service and miscellaneous" jobs in Utah by 1975, a growth of 24,400 from 1967. This represents a predicted growth of 51.2 percent. Table 1 of this report is reproduced on the following page.

Mortimer found that in Utah the majority of school board members (78.4 percent) and parents (54.0 percent) were in favor of having the high school vocational and industrial education taught in the regular high school.¹¹ When asked the question, "In what kinds of schools should vocational industrial education be offered?", nearly all superintendents

¹⁰ Ibid., p. 146.

¹¹ Ibid., p. 187.

Table 1. Estimated Utah nonagricultural wage and salaried jobs--by industry

	<u>1960</u>	<u>1965</u>	<u>1966</u>	1967 ¹ <u>(Prelim.)</u>	1970 <u>(Proj.)</u>	1975 <u>(Proj.)</u>
Manufacturing	47,000	49,400	50,500	50,600	56,600	64,000
Mining	13,900	11,900	11,800	11,700	11,300	11,000
Construction	14,900	16,000	15,500	14,100	17,500	22,000
Transportation	22,200	21,500	21,900	23,200	23,100	21,800
Wholesale Trade	15,400	17,800	18,300	18,800	19,800	22,200
Retail Trade	44,200	49,800	51,800	52,800	60,100	70,000
Finance	11,300	12,800	13,000	12,900	14,700	17,000
Service and Misc.	33,100	42,100	45,000	47,600	57,400	72,000
Government	63,100	79,400	90,700	98,500	109,600	125,000
Total	265,000	300,700	318,300	330,200	370,100	425,000

¹Adjusted to include jobs of workers directly involved in copper labor dispute.

Note: Totals may not add due to rounding.

Source: Utah Department of Employment Security, "Jobs in Utah Nonagricultural Establishments, Occupation-Industry, 1960-1975" (Salt Lake City, 1968), p. 9.

said that what could be offered in high school should be given in the local high school. Their reasons for this were as follows:

1. It is preferable to have the students remain in their local high school in order to get the best general education possible.
2. Students enjoy the high school activities, such as athletics, dances, school plays, operas, etc., and prefer to stay in the high schools rather than to go away to another school where there may not be as many of these activities.
3. Parents prefer to keep their children at home until after high school graduation and if vocational or technical high schools were established in central locations the students desiring this kind of work would have to leave home.
4. It is much cheaper for the parents to keep their children at home during their high school education.
5. The establishment of new schools creates the need for an administrative super-structure which is expensive and which can be largely avoided when the work is offered in existing schools.¹²

Mortimer asked three groups in his survey to express themselves regarding the kind of training programs that should be offered in high school and in post-high school vocational education. Superintendents suggested:

metals
 drafting
 electronics
 business courses, especially for girls
 auto mechanics
 woodwork and carpentry
 distributive education for both boys and girls
 basic electricity

¹² Ibid., p. 196.

service trades such as service stations attendants
 and motel maids
 secretarial
 machine shop
 welding
 cosmetology

School board members added:

architectural drawing
 cabinet making
 brick laying
 medical technicians
 diesel mechanics
 data processing
 sheet metal
 plastics
 cement work
 plumbing
 painting
 office machines
 nursing
 vocational agriculture
 laboratory assistants
 clerical
 barbers
 printing and lithography

Suggestions made by parents included a total of
 sixty-four different types of occupations.¹³

It is obvious that even a large high school can offer occupationally oriented programs in just a few of the many and diverse occupations at which its graduates will eventually work. There will be a few students, for example, who may eventually make their living at brick laying, or welding or as medical technologists, but to justify a complete program with teacher specialists in these fields would require a minimum continuous enrollment of fifteen to twenty students. For East High School to decide to offer vocational programs in five specific skill areas would be to deny vocational education for those

¹³ Ibid., pp. 227-8.

students who will enter any of several hundred other specialties.

A large school district such as Pittsburgh, Pennsylvania, has been able to offer some 132 different vocational programs, complete with active advisory committees, and make them available to all students in the district.¹⁴ To accomplish this requires total state and local commitment to the principle of vocational education, concentrated heavy industry with a realization of the need for available trained manpower, and strong dedicated leadership at all levels. At the time of this writing there is no indication that any of these three catalysts will be available in the near future along the Wasatch Front.

The Cluster Concept

It is impractical to attempt to offer each and every occupational option that the students of the school might desire, yet it should be possible to have some practical training for each student regardless of his occupational choice. An approach that seems to be applicable to the comprehensive high school with limited facilities for vocational education is the "cluster concept." This concept calls for identifying groups, or clusters, of occupations that either require a common core of skills or come under a common occupational category.

¹⁴Struck, John W., "The Pennsylvania Story," School Shop, XXVI, No. 7 (March, 1967), p. 41.

Occupational clusters

One cluster concept is that of grouping a variety of jobs performed under a specific occupational heading, and offering classes designed for those students interested in a job within that cluster. An example could be the all encompassing "medical cluster," which would provide basic skills and knowledge for students interested in becoming: hospital orderlies and attendants; practical nurses; medical or dental technologists; medical lab technicians; registered nurses; physical therapists; medical secretaries; hospital administrators; pharmacists or pharmacologists; pharmaceutical, surgical or medical supply; doctors or dentists; public health workers. Each of these persons will ultimately have a different set of skills, but for the youngster choosing some phase of the medical cluster as his or her future work, the high school could provide him with introductory classes, give him some knowledge of the variety and level of jobs within the medical spectrum, and provide him with opportunities to meet, visit and work with the sick and infirm, the crippled and the aged, the doctors, nurses and therapists that work with them. Such a program in high school could be entitled "Pre-med" and would serve the purpose of preparing the youth to enter some phase of specialized training related to that field.

A University of Illinois study identified a core of knowledge that is needed by technicians in the six fields of mechanical, chemical-mechanical, chemical, electronic,

electrochemical and electromechanical technology.¹⁵ This common core could possibly be expanded into a "pre-technical" cluster for offering at a high school level.

Skill clusters

Under a skills cluster, a core of skills basic to an occupational cluster are identified and taught. Thus the common operations performed in any number of industrial jobs can be grouped together. These could be the skills involved with the proper use and maintenance of hand and power tools, a wide variety of measurements (basic to the fast growing field of metrology), applied mathematics, industrial (labor-management) relations, etc. Here the basic skills are acquired upon which the student can build specific job skills in the work-study or work experience program, or in an apprentice or entry level job upon leaving high school. These common skills could and should be part of the student's transcript record, written and certified as achieved levels of performance.

Necessary skill clusters needed by those rapidly growing jobs under the umbrella called the service occupations can be identified. Classes can be designed to improve the student's presentability and public appearance, his grooming and health habits, his "outward personality," his ability to converse intelligently and politely with strangers, etc. These are all

¹⁵Schill, William John, and Arnold, Joseph Paul, Curricula Content for Six Technologies (Urbana, Illinois, Bureau of Educational Research and Department of Vocational and Technical Education, University of Illinois, 1965), 118 pp.

necessary, employability traits common to the service station attendant, waitress, receptionist, sales-clerk, service-man, doorman, bellhop, switchboard operator, and innumerable other jobs where the primary aim is to make a good impression on the customer.

Performance Criteria

Within each occupational cluster there are certain skills necessary for performance of the basic operations or jobs. These skills can be identified and analyzed as to their complexity and can be organized into a hierarchy in terms of learning sequence. By building from the simple to the complex in discreet units, called by some people "instructional packages," the students can be required to demonstrate the performance required by a specific package before tackling the next unit.

If a student is in the power mechanics cluster, for example, the first performance unit may involve learning the basic skills needed for servicing automobiles at a service station. These skills will be learned in a work situation at a cooperating service station and their acquisition evaluated and certified by the station manager. The length of time necessary to acquire these skills will vary with the individual student, and the importance of passing from package to package at one's own speed cannot be over-emphasized. A student should be allowed to challenge the final test for each level of performance when he feels he is ready. The level of performance expected of him will be known ahead of time and the student

can judge for himself when he is ready for evaluation. It should be re-emphasized that each student in a particular occupational cluster will start with and at the basic level and move up through the levels as individual capabilities permit.

Building upon known performance abilities is what San Mateo County calls "Quality Assurance in Education":

A key concept in making this program reproducible elsewhere is that of quality assurance. Quality of new automobiles today is warranted for up to 5 years; used ones occasionally to 25 months. Yet education has great difficulty placing certification upon students; even the diploma may be meaningless. Nationally, some 30,000 functional illiterates today hold such a diploma.

The quality assurance program, to be developed over the next five years by the district teaching staff, will specify the types of student performance each program should produce...

The office occupations laboratory at San Mateo High School is an excellent example of quality assurance; these students can be certified to perform selected occupational skills with a defined degree of accuracy. They can type, file, operate office machines at a given pace and to a given performance level...

One variable which may facilitate quality assurance is that of time, rather than content. In preference to stating a student shall have so many hours of a given discipline, it may be better to state his ability to meet selected performance criteria. These criteria can be developed cooperatively by the schools and the people who can use the services of the students themselves. Then, by varying the amount of time necessary for each individual to meet the criteria, schools can in fact "warranty" their product--the student.¹⁶

¹⁶San Mateo Union High School District, Toward an Exemplary American Comprehensive School District With a Zero-Reject Tradition (San Mateo, California, 1967), p. 7.

Occupational, Vocational and Technical Education

One of the most significant studies of the last few years was undertaken during the summer of 1965 at the Massachusetts Institute of Technology.

This proposal arises out of the evident inadequacy of the principles, practices, content, and organization of contemporary education in providing the majority of the youth of this country with necessary occupational skills. Accordingly, the study is addressed to the following problem: What pattern of education will best prepare American youth for satisfying, useful, gainful work at the termination of the period of formal schooling?¹⁷

One of the six major recommendations resulting from this summer institute had to do with the design of new curriculum:

Therefore, it is recommended that there be initiated a program of development of new curricular patterns and instructional materials for all students beginning with the start of junior high school. In contrast to the traditional overwhelming dependence on the written and spoken word as the road to learning, these new patterns and materials propose to utilize the potential of experimental and investigative activity as a springboard to the acquisition of skills, to understanding and to the development of the ability to think. The intent of this approach is not only to open a new, vocationally oriented educational path for those who have not benefited from the traditional curriculum but also to enrich the learning of those who flourish under it. The point of entry (junior high school) recognizes the potential of existing curriculum reforms, such as those embracing elementary science, mathematics and social studies, that are now being introduced at the elementary level.¹⁸

Although somewhat vague, this recommendation has had far-reaching effects on the design of new vocational education.

¹⁷Frank, N. H., Summary Report of the Summer Study on Occupational, Vocational and Technical Education (Cambridge, Massachusetts: Massachusetts Institute of Technology, 1965), p. 1.

¹⁸Ibid., p. 6.

It emphasizes the strengthening of the manipulative, non-verbal aspects of general or academic education and of the intellectual (abstract) elements of vocational education.

Pittsburgh used the O. V. T. terminology (Occupational, Vocational, Technical) for grouping curricula in vocational education for different levels of achievement or aspiration. The Occupational Core is designed for students interested in semi-skilled and service occupations. Emphasis is placed not only on the skills required, but also on employment attitudes. The Vocational Core is for those students aiming at a skilled trade such as auto mechanics, office machine operator, appliance maintenance and repair, stenographers, etc. The Technical Core is designed for those students aiming at a semi-professional or technical field that generally requires a post-high school education or training.¹⁹

Detroit has also organized its vocational education into levels of student ability and aspiration, or paths, as follows:

1. The science and engineering path: for the best achievers who receive a maximum of theory and demonstration (one period a day for four semesters).
2. The technician path: for good students, who have half-time theory and demonstration and half-time shop or laboratory work (two periods a day in 11th and 12th grades).
3. The trade path: for average students in a standard trade course (three periods a day in 11th and 12th grades).
4. The occupational path: for below-average students. Programs are individualized (for 4 to

¹⁹Ibid., pp. 50, 51.

8 hours a day and entered whenever the student appears to be an imminent dropout.²⁰

A cooperative effort at designing a new program for Industrial-Technical Education has been undertaken by Central Michigan University in conjunction with selected partnership schools, community colleges, industries and their related associations, Chambers of Commerce, and labor. This program functions on three levels--the university, community college, and the high school. The high school plan is intended to appeal to all boys regardless of abilities and talents. The interdisciplinary approach of the M. I. T. Study is the basis of the program:

The industrial-technical courses have their content cast in science, mathematics, and English. The natural relationship of each subject to the others is drawn out and used for augmenting knowledge and for the constant reinforcement of the relationship between the vocational and the academic subjects. Therefore, interrelationships between subjects is an integral feature of the program. The program fosters experiments, research, exercises, and opportunities for solving various types of technical problems.

Teaching teams, television, radio, electronic tape, excursions, self-teaching, teaching machines, and internships are all-important and special features of the program.²¹

In order to accommodate ability differences among students, a three-level program is followed when deemed desirable. The advanced level accommodates the college-bound upper ability group. Graduates from this group provide recruits into teaching and

²⁰Turnquist, Carl H., "Galaxy Approach to Education for the World of Work," School Shoe, XXV (November, 1965), pp. 25-7.

²¹Central Michigan University, The Partnership Vocational Education Project (Mount Pleasant, Michigan), pp. 6, 7.

for advanced study and careers in an area of technology or applied science. This could occur either through immediate enrollment in the University or by community college transfer.

The intermediate level accommodates those middle ability students who may qualify to enter the labor force after graduation or qualify to enter the community college or the University.

The lower level accommodates the lower ability group of students who are not necessarily college caliber and who will enter the labor force before or after graduation.

No student is permanently locked into any of the three-level programs if a shift to another program better meets his needs. The program at each level uses the vocational interest of the student as a motivating force in leading to a sound educational program, but the vocational interest does not result in an educational dead-end.²²

Pre-Technology and Project Feast

Starting in Richmond, California, and spreading to over twenty-five high schools in the Bay Area, and others throughout the United States, the so-called "Richmond Plan" was intended to provide a relevant high school education to the middle forty or sixty percent of students in a high school who are not attracted to either the college-preparatory track or the vocational or industrial arts tracks. The Pre-Tech idea is essentially a "third track" curriculum aimed at preparing students for further pursuits of technician level studies at technical or junior colleges. Its success can be attributed to its inter-disciplinary blending of science, math, English and industrial education. Conceived in 1959

²²Ibid., pp. 7, 8.

as an idea, put into operation in 1962 and graduating its first class in 1965, it would be interesting to speculate what effect its planners had upon the outcomes and recommendations of the M. I. T. Study, as several of the key personnel from the Richmond District attended that summer institute.

...Instead of learning abstract theory as preparation for understanding the more complex concepts encountered in higher education, the pre-tech student moves directly from theory to things, from the abstract to the demonstrable, and what he learns from a single discipline not only relates but is directly applied to what he is learning in the other disciplines at the same time.

Teachers work as a team to reinforce clearly defined inter-disciplinary objectives. Curriculum objectives for each unit of instruction are formulated and agreed upon by four teachers on the teaching team. These objectives are spelled out in clearly measurable terms... Together, the teaching team establishes testing criteria, prepares course outlines, and sequences the subject matter in a logical and meaningful way... The student is provided information in small increments, guided toward responses that induce further responses that carry him along a developmental path, informed of what he is doing at every step, and given the opportunity to demonstrate that he has reached desired objectives at the time he reaches them.²³

Although originally tried as a pre-engineering technology program, the Richmond Plan is adaptable to any occupational cluster that is offered as further education at a technical or junior college. One of the first adaptations was to Project FEAST (Food Education and Service Technology), for which it is ideally suited. High school graduates from Project FEAST have the option of going to work in hotels and restaurants, going for further training at a junior college food service

²³ Richmond High School District, Educational Specifications for a Pre-Tech Facility (Richmond, California, 1968), p. 7.

program, or entering a four-year restaurant and hotel management course in a college. Plans are in effect to apply the pre-tech concept to biomedical technology, information or library technology, business or commercial service technology and electronics technology.²⁴

Work Experience Education

A major recommendation of a survey on vocational education done for the State of Utah stated:

Cooperative training programs in trade and industrial occupations should be started in every school that has sufficient places for training. This program is particularly suited to meet the needs of smaller schools that do not have enough students interested in a particular occupation to justify its being offered, and to supplement the shop program in large schools by providing training in areas not included in the curriculum.²⁵

This advice is based upon the long history of practical work experience supplementing vocational education. The Panel of Consultants made it one their major recommendations in 1963 "for better serving youth with special needs."

Cooperative work experience has been called by such names as "cooperative education," "work education," "work experience"

²⁴Draper, Dale C., Educating for Work (Washington, D.C.: The National Committee on Secondary Education of the National Association of Secondary School Principals, 1967), p. 46.

²⁵George Peabody College for Teachers, Vocational Education in Utah, Digest of the Survey Report (Nashville, Tennessee: Division of Surveys and Field Services, 1956), p. 31.

²⁶Panel of Consultants on Vocational Education, Education for a Changing World of Work (Washington, D.C.: U. S. Department of Health, Education and Welfare, Office of Education, 1963), p. 230.

and "work-study." The latter, work-study, has been used to identify those federally reimbursed programs that provide work for pay in schools and other government agencies for students with special needs, to enable them to continue their studies. The Vocational Education Amendments of 1968 give strong emphasis to the work-study programs, which can be offered in great variety by many different agencies.

The widest possible publicity should be given to the offering of work-study programs. Students who might be discouraged from initiating or continuing their vocational education because of financial pressures or responsibilities at home should be made aware of the fact that they have an opportunity to earn their way through school.

The work-study supervisor on the staff of the local education agency should be responsible for administering the funds under the program and for developing job openings. Job situations may be developed within the schools or with other public agencies. Suggested employing agencies include: schools and colleges; libraries; mental institutions; park, playground, and housing authorities; municipal and State police; welfare, fire, public health, and other similar offices; and the courts. Suggested job types include: file clerks; supply clerks; typists; garden and grounds workers; custodial or maintenance workers; automobile and truck drivers; aides in the group care of children; hospital orderlies; nurses aides; messengers; statistical clerks; tutors; reception clerks; cafeteria workers; laboratory assistants; audio-visual equipment repairmen; and greenhouse, forestry, and nursery assistants.²⁷

The California Handbook on Work Experience Education provides complete guidance for establishing, administering and operating cooperative education programs. There are four criteria that must be met to be called "work experience

²⁷ Kemp, Barbara H., The Youth We Haven't Served (Washington, D. C.: U. S. Department of Health, Education and Welfare, Office of Education, 1966), p. 22.

education programs:"

True work experience education results only when it encompasses a systematic plan whereby young people, while still in school, gain realistic employment experience through part-time work performed under all of the following conditions:

1. The school adopts a specific plan of operation based on a written outline that shows the respective roles of the school, the student, and the employer.
2. The school assigns qualified personnel to direct the program and to coordinate student jobs with the school learnings.
3. The school makes certain that work done by the students is of a useful, worthwhile nature, and that federal, state, and local laws and regulations are followed.
4. The school, with the help of the employer, evaluates work done by students, awards credit for work successfully accomplished, and enters pertinent facts ²⁸ concerning the student's work on his permanent record.

Lowe found that there were 334 Salt Lake City business organizations (out of 636 responding to his questionnaire) indicating a willingness to hire high school students on a part-time basis, and that 81.5 percent of the 3198 students surveyed indicated that they were interested in taking a course in high school which allowed them to gain a work experience while attending regular classes.²⁹ If each of the 334 business firms hired only one student each, they would provide training stations for 12 classes of 27 students, which would justify a full-time coordinator in each of the

²⁸ California State Department of Education, Handbook on Work Experience Education (Sacramento, California, 1965), pp. 1, 2.

²⁹ Lowe, Op. Cit., pp. 75, 76.

Salt Lake City high schools.³⁰ And Lowe was just concerned with cooperative business education!

The Advisory Council on Vocational Education made recommendations "which will serve in helping meet the vocational needs of the nation..." one of which is:

5. It is recommended that the act provide permanent authority for work-study and include work-study and work-experience programs in the secondary schools and those at the post-secondary levels related to vocational and technical education.

This approach would permit maximum flexibility in making all work-experience programs an integral part of the total school program for all students who need or can profit from them. Students could be placed in work stations related to their career objectives and curriculums...

Work-experience has desirable occupational education values in its own right; when coordinated and planned as a part of the total educational program, work-experience and classroom education supplement each other and additional values are achieved.³¹

In reality, the total environment of the student is his classroom--and any exposure serves as a formative influence upon him, be it in school, at home watching TV, or downtown. The school has partial control over his environment for only about 30 hours a week. To the extent that the school can cooperate and coordinate activities with the rest of the community, it will exert more influence upon its final product, the student. Strategies should be developed to ease the transition from school to adulthood, from dependence to self-

³⁰ibid., p. 78.

³¹The Advisory Council on Education, "Vocational Education--The Bridge Between Man and His Work," Industrial Arts and Vocational Education, LVII, No. 6 (June, 1968), pp. 21, 22.

sufficiency, and cooperative work experiences and community involvement by students is a proven method.

The importance and necessity of cooperative work education and work-study programs as part of the community involvement of all students is summed up in the following three quotations:

...Cooperative education has demonstrated its ability to increase motivation, develop early maturity, enhance career guidance and provide adequate means of financing a college education. In passing, it is perhaps interesting to note that some studies of high school dropouts show that a smaller percentage have after-school and Saturday jobs than did those who finished high school. Whether the student learned of the need for more education while holding a part-time job, or the job made school appear more attractive, may or may not be important.³²

If our educational system is to continue to be the chief source for preparing youth for the world of work, it must assume the responsibility for helping youth make the transition from school to work. Our schools and colleges must make orientation to the world of work and exploration in broad occupational fields an integral part of the educational program of each individual.

The strength of our society depends upon the full development of every individual, and thus we must gear our educational system to the concept of continuing education in its broadest sense. To utilize effectively the phenomenon of the explosion of knowledge, practice in adaptation of relevant knowledge must begin with orientation to the world of work.³³

It is well that we remind ourselves also that the formative influence of the home, church, commercial and industrial establishments, police and the courts,

³²Rietz, George A., "Utilizing Community Facilities as a Teaching and Learning Laboratory," Journal of Industrial Teacher Education, IV, No. 2 (December, 1966), p. 38.

³³Venn, Op. Cit., p. 15.

television and movie houses, magazines and paperbacks is no less potent than that of the school. We too easily forget that the burden of bringing up the next generation does not fall wholly on the shoulders of the home and school. . . . Nor do we ordinarily think of business and industry as being educative. But they are great formative agencies. These enterprises are not only involved in extensive training programs but also their concepts, values, and social practices permeate the climate of opinion. Typically they give youth their first contact with the world of adult responsibility. Here the youth learn duties and how to perform them. But equally important is the fact that they learn--depending upon how they are treated--to like or to dislike the establishment, to think that they are given a fair deal or a run-around, to feel that they are respected as human beings or that they count for little or nothing. . . . What youth learns from agencies and institutions of the community shapes his character and his future no less than what he learns from his teachers

. . . Schools in which children are highly motivated, and dropouts consequently low, will be found in a community that mobilizes its social resources and directs them to the creation of an environment that gives significance to the lives of children and youth.³⁴

Summary

Studies relating to vocational education and employment trends in Utah indicate that the high school student is willing to work while attending high school, the employers seem willing to hire him, and the authorities see work experience or work-study as an essential part of a comprehensive education. To be viable in a modern society

³⁴Smith, B. Othanel, "Conditions of Learning," Implications for Education of Prospective Changes in Society, Designing Education for the Future (New York: Citation Press, 1967), pp. 64, 65.

vocational education at the secondary level may have to concentrate on identifying and teaching the common skills needed to prepare a student for entry into a cluster of occupations. In the fast growing "service" type occupations, which are found within most of the occupational categories, the common cluster of skills may well be those concerned with the appearance, bearing and attitudes of the worker, rather than manual skills.

The job skills, knowledge and attitudes deemed necessary for employment can be specified in terms of demonstrable performance or behavior. These performance criteria become the basis for selection of course content and material.

A recommendation of major importance in the majority of reports is the establishment of cooperative work experience and work-study programs as a necessary part of a comprehensive education. Through the use of these programs the confines of the school are effectively expanded to include the entire community.

CHAPTER IV
THE GRADUATE OPINIONNAIRE

An opinionnaire for the purpose of obtaining information and opinions of recent graduates was prepared (Appendix B) with the assistance of the vice-principal and counselors of East High School. Five graduate classes were sampled, taking every sixth name from the graduating class list of the 1963 through 1967 classes. This resulted in the mailing of 527 opinionnaires. Two hundred three returns were received, 109 from male, and 94 from female graduates. Table 2 shows the mailings and returns by class.

Table 2. Number of returns by year from graduate opinionnaire

Class	Men		Women		Total	
	Mailed	Returned	Mailed	Returned	Mailed	Returned
1963	51	23	54	19	105	42
1964	49	27	53	19	102	46
1965	45	18	63	18	108	36
1966	55	21	48	20	103	41
1967	55	20	54	18	109	38
Total	255	109	272	94	527	203

This represents an overall return of 38.5 percent.

It should be pointed out that not all returns were completely filled out, some items were improperly answered or skipped, and hence the totals for each item do not agree, nor do the overall totals agree. Those items that were responded to have been tabulated and the results are given on the next few pages.

The first two questions were designed to ascertain what the student's immediate plans were upon graduating from high school and if they actually did what they planned. The results were as follows:

Table 3. Plans of graduating seniors and what they actually did after graduation

	What the Plans Were			What Was Actually Done		
	Male	Female	Total	Male	Female	Total
University	99	69	168	88	61	149
4-year college	3	4	7	1	3	4
Technical school		1	1		1	1
Junior college	2	1	3	1	2	3
Trade school		6	6		6	6
Business school	1	4	5	1	3	4
Apprenticeship						
Military	1	1	2	9	1	10
Work	9	6	15	12	14	26
Marriage		7	7	2	6	8

Of the 203 respondents, 153, or 75.4 percent, entered a university or a 4-year college upon graduation. The totals in Table 3 do not agree because several respondents checked more than one item.

The graduate was asked to indicate where he received the job training for the full or part-time work he was now doing. Ninety-nine of the graduates, or 62.6 percent, indicated they learned "on the job." Only 11, or 7 percent, received training for their present job while in high school. Of these 11, 9 were girls doing office work. Only 2 boys of the 87 who indicated they were currently working received training for that work while in high school.

Table 4. Type of facility at which the graduates received training for their current full or part-time jobs

	Male	Female	Total
University	15	13	28
4-year college			
Technical school			
Junior college		1	1
Trade school		1	1
Business school	1	6	7
Apprenticeship	4	2	6
Military	5		5
Work or "on the job"	60	39	99
High school	2	9	11
	<u>87</u>	<u>71</u>	<u>158</u>

The next question asked what the graduates were doing now.

Table 5. Responses to the question of what the graduates are doing now.

	Male	Female	Total
Working full-time	31	30	61
Working part-time	49	35	84
School full-time	65	31	96
School part-time	10	18	28
Unemployed, seeking work	1	3	4
Unemployed, not seeking work		4	4
Working part-time, seeking full-time	1		1
In Military	14		14
Housewife		33	33
Other	8		8

The majority of the responses showed a combination of further schooling and work.

A compilation of the next three questions is presented in Table 6.

Table 6. Numbers of graduates having definite vocational goals upon graduating who actually pursued that or a similar goal

	Definite Vocational Goal	Pursued that Goal	
		Number	Percent
Boys	50	28	56
Girls	66	32	48.5
Total	<u>116</u>	<u>60</u>	51.7

Of the total 203 respondents, 57.2 percent indicated that they had a definite vocational goal in mind upon graduation. This question is related to a similar question in which local businessmen were asked if they agreed that every student should have a tentative occupational goal on record, based upon adequate testing of interests, aptitudes and abilities. Of the businessmen that responded to this item, 75.5 percent agreed, 12.5 percent were neutral and 12.5 percent disagreed.

In the next item the graduates evaluated East High School on 15 specific traits or outcomes to determine how helpful the school was in the development of those traits or outcomes. The traits are shown in Table 7, listed in rank order of percentage differences between whether the students thought East High School was very helpful or little or no help.

Table 7. 15 traits and outcomes listed in rank order of percentage differences between whether student thought the school was very helpful or little or no help

Rank	Item	Very Helpful	Some Help	Little or No Help	Difference Between High and Low	
					+ In Favor of School	- Against School
1	Getting along with others	57.8%	36.2%	6.0%	+ 51.8%	
2	Preparing for college	55.0	35.5	9.5	+45.5	
3	Assuming responsibility	49.0	42.9	8.1	+40.9	
4	Respect for the rights of others	49.5	41.0	9.5	+40.0	
5	Thinking through	43.0	47.7	9.3	+33.7	
6	Respect for law and order	31.2	53.5	15.3	+15.9	
7	Understanding world events	27.6	59.7	12.7	+14.9	
8	Understanding myself	27.7	51.3	21.0	+ 6.7	
9	Understanding social systems, races, religions	24.0	50.0	26.0		-2.0%
10	Taking care of my health	23.4	50.0	26.6		-3.2
11	Participating in community and civic affairs	24.6	45.2	30.2		-5.6
12	Conducting my business affairs	22.2	49.0	28.8		-6.6
13	Training for an occupational field	23.1	42.2	34.7		-11.6
14	Identifying an occupational field	22.8	41.8	35.4		-12.6
15	Preparing for marriage and family life	13.4	43.8	42.8		-29.4

Examination of Table 7 shows that the students were quite satisfied that East High School helped them significantly in developing the ability to get along with others. They also feel that East High was very helpful in preparing them for college.

Table 3 shows that 75.4 percent of the respondents went to college and this table shows that 55 percent think East High School was very helpful in preparing them for this venture.

Developing the traits of respect for law and order, respect for the rights of others, assuming responsibility, thinking through problems and understanding world events all seem to be satisfactorily accomplished by East High School in the opinion of the graduates. The reader should be reminded that the graduates are not stating whether they do or do not have these traits, but whether East High School was of help in these areas.

Two additional questions were asked. Do you feel that the type of education you received at East High School best prepared you for what you did after graduating? Do you feel that you had adequate counseling and guidance while you were at East High School that prepared you to make intelligent decisions regarding your future?

Table 8. Number and percent as to whether graduates feel that their East High School education best prepared them for what they did after graduating

	Male		Female		Total	
	Number	Percent	Number	Percent	Number	Percent
Yes	72	67.9	65	69.2	137	68.5
No	34	32.1	29	30.8	63	31.5

Table 9. Response of graduates as to whether they feel they had adequate counseling and guidance

	Male		Female		Total	
	Number	Percent	Number	Percent	Number	Percent
Yes	45	42.5	40	42.5	85	42.5
No	61	57.5	54	57.5	115	57.5

A little over two-thirds of the respondents were satisfied with the type of education they received at East High School. This roughly corresponds with the number of respondents who entered college upon graduating.

The majority of boys and girls (57.5 percent) did not feel that they had adequate guidance and counseling with regard to making intelligent decisions regarding their future. This also appears in some of the comments on a later question regarding the strongest and weakest aspects of their education at East High School.

Item 11 of the opinionnaire was a matrix constructed to correspond with one used in a recent Utah Department of Employment Security report on jobs in non-agricultural establishments.¹ Graduates were asked to indicate the job they were now performing or in training for in the proper place in the matrix.

Table 1 from the Utah Report is reproduced on page 36, Chapter III. A comparison of the East High School graduates with Table 1 of the Utah Report is presented in Table 10.

¹

Utah Department of Employment Security, Jobs in Utah Nonagricultural Establishments Occupation Industry, 1960-1975, (Salt Lake City, Utah, June, 1968).

Table 10. Comparison of area of employment of East High School graduates with projected growth of job categories in Utah.

	UTAH REPORT--Wage and Salaried jobs			East High Graduates in or in Training for this field		
	1967	Projected 1970	Projected 1975	Projected Percentage of Change 1967-75	Number	Percent
Manufacturing	50,600	56,500	64,000	+26.5	17	7.9
Mining	11,799	11,300	11,000	- 6.0	4	1.85
Construction	14,100	17,500	22,000	+56.0	8	3.7
Transportation	23,200	23,100	21,800	- 6.0	4	1.85
Wholesale Trade	18,800	19,800	22,200	+18.0	5	2.3
Retail Trade	52,800	60,100	70,000	+32.5	22	10.2
Finance	12,900	14,700	17,000	+31.8	17	7.9
Service	47,600	57,400	72,000	+51.2	107	49.5
Government	98,500	109,600	125,000	+27.0	32	14.8

The four largest job categories in the state, government (125,000), service (72,000), retail trade (70,000), and manufacturing (64,000), show projected increases of 27.0, 51.2, 32.5 and 26.5 percent respectively. Of the graduates that responded to this item, over 80 percent indicated that they were employed in or in training for jobs in these four areas of work. Forty-nine point five percent are working or training in the general area of service, the majority going into teaching. Fourteen point eight percent and 10.2 percent will or have entered work in the government or retail trades respectively, while 7.9 percent will be in some phase of manufacturing.

These percentages agree with the projected areas of largest growth by the State Department of Employment Security.

The next item was an open response item in which the students were asked to comment on the strongest and weakest

aspects of their education at East High School. Specific comments are presented in Appendix C. In general, the strongest points were seen to be the academic preparation for college and the good teaching staff. The weakest aspects were judged to be the personal counseling, occupational counseling and orientation, and vocational preparation.

The graduates were given the following descriptions of five different types of high school programs. They were asked to rank them from 1 to 5 as to which would have done the best job of preparing them for what they actually did after graduating.

College-Preparatory. This is a traditional program aimed at meeting college entrance requirements. The courses involved are usually the "solids" of math, science, history, English and social studies.

General. This program is designed for the non-college bound student. The courses are less rigorous than in the above program. Such courses as general math or general science are taken instead of trigonometry, calculus, physics or chemistry. Electives are usually business, homemaking or industrial arts.

Occupational. This program is not aimed at developing any specific vocational skill, but at providing the student with many general skills useful in many different types of jobs. These general skills are such things as communication skills, personal appearance, hygiene, consumer knowledge, home and money management, etc. This program prepares a student for entry into many jobs that require meeting and dealing with the public.

Pre-Technical. Courses taken in this program are designed to prepare students for further study at a technical college or a business school. The science, math and English courses try to relate to the future goal of the student and are taught in a way that will have a practical application to the student's technical goal.

Vocational. In this program a specific skill is learned in high school. Half-time is spent in vocational classes and the other half-time in classes needed for graduation. Part-time employment during the school day is often part of the program.

Table 11. Ranking of five high school programs by number of respondents as to how these programs would have prepared them for what they did after graduation

	RANK				
	1 Number	2 Number	3 Number	4 Number	5 Number
College-Prep	111	15	10	10	19
General	7	26	31	38	63
Occupational	15	68	43	26	13
Pre-Technical	7	38	50	55	15
Vocational	25	18	31	36	55

A product-moment value was assigned to each of the rankings in Table 11 to indicate the relative selection. This was done by giving each rank a weight of +2 for rank 1 to -2 for rank 5, and summing the products of $N \times$ weight, giving the following results:

College-Preparatory	+189
Occupational	+ 46
Pre-Technical	- 33
Vocational	- 78
General	-124

These results depict the feelings of the graduates on how the programs would have prepared them for what they did after high school. It is consistent that 67.3 percent of them rank the college preparatory program first when 73.5 percent (Table 3) of them went to college. The low ranks given to the general program probably reflect this also, this being the only other track available to them when they were at East High.

The occupational program was highly ranked as the second selection. It was described as quite general and differs from the vocational course in that it does not attempt to develop a specific skill in a specific area. This type of program could be best suited for preparation for the service and government

categories that 64.3 percent (Table 10) of the respondents indicated they are or will be working in.

Summary

The college preparatory program at East High School was well accepted by the respondents, the majority of whom went on to college. Those that were working full or part-time mostly received their training "on the job." While a little more than half of the respondents had a definite vocational goal in mind upon graduating, only half of them actually pursued that goal.

The respondents felt that East High School was very helpful in helping them in: getting along with others, preparing for college, assuming responsibility, respect for the right of others, and thinking through problems. They saw little or no help from East High School in: training for an occupational field, identifying an occupational field, and preparing for marriage and family life.

Over half of the answering graduates did not feel that they had adequate guidance and counseling with regard to making decisions regarding their future.

Over 80 percent of the graduates returning the opinionnaire were either working in or in training for one of the four employment categories projected by the Utah State Department of Employment Security as generating 81,500 new jobs between 1967 and 1975.

CHAPTER V
SURVEY OF LOCAL BUSINESS AND INDUSTRY

A questionnaire was prepared to survey a cross-section of Salt Lake City business firms (Appendix D). One-hundred-fifty-seven questionnaires were mailed and 50 useable responses were received (32 percent). The Utah Directory of Manufacturers and the Salt Lake City telephone directory were utilized to assure coverage of a wide variety of employers. The largest respondent employed 3,445 persons and the smallest was a one-man publishing company.

Each of the first 7 questions requested a yes-no answer, and also solicited comments. The results of these questions are tabulated in Table 12. The comments are presented in Appendix E.

An open response question asked the employer what he considered the most important personality traits and attitudes that a graduate from East High School should possess. Table 13 presents a rank order of these traits and attitudes.

When asked the importance of the possession of these traits and attitudes as compared to the possession of specific vocational or technical skills, 27 percent of the employers thought that they were more important, 73 percent judged them equally important, and no one thought them less important than the vocational skills.

Local employers were asked to rank, from 1 to 5, the high school programs listed on page 64 as to which would be best suited for the average high school student.

Table 12. Responses of local employers to questions soliciting a yes-no answer

Question	Yes		No	
	Number	Percent	Number	Percent
Do you presently hire graduates direct from high school?	31	62.0	19	38.0
Would you hire graduates direct from East High School if they had special vocational training?	39	78.0	11	22.0
Would you hire students on a part-time, work-study basis in cooperation with East High School?	25	51.0	24	49.0
Would you hire student workers/learners/observers during their summer vacation months?	25	53.0	22	47.0
Does your firm now, or would your firm designate a person to serve on an advisory council to assist East High School in planning vocational education?	20	42.5	27	57.5
Would your firm designate an employee to serve on a craft committee to help East High School develop a specific vocational program?	21	45.0	26	55.0
Would your firm give positive support to East High School in terms of money or equipment for setting up and operating specific vocational education programs?	19	38.0	31	62.0

Table 13. Desirable attitudes and personality traits of East High School graduates, as listed by local employers

Rank	Trait or Attitude	Number of times mentioned
1.	Ability and willingness to work	16
2.	Desire and willingness to learn	14
3.	Ability to get along with others	11
4.	Dependability	9
5.	Honesty	7
6.	Ability and willingness to accept supervision (follow instructions)	6
7.	Desire to improve oneself	5
8.5	Pride in doing best possible job	4
8.5	Integrity	4
11.	Persistence	2
11.	Personal appearance	2
11.	Punctuality	2
16.	Politeness	1
16.	Maturity	1
16.	Judgement	1
16.	Sense of direction	1
16.	Initiative	1
16.	Industriousness	1
16.	Worthwhile goals	1

Table 14 is a result of assigning a weight to each rank of +2 for rank 1 to -2 for rank 5, and multiplying the weight by the frequency of selection to result in a product-moment rank order.

Table 14. Average and product-moment rankings of five high school programs as ranked by local employers

	Average (Mean) Rank	Product- Moment Rank
College-Preparatory	2.39	+23
Pre-Technical	2.79	+ 8
Occupational	2.94	+ 2
Vocational	3.13	- 5
General	3.74	-28

The ranking given these high school programs by the graduates of East High School was compared with the ranking given the same programs by the local employers, as shown in Table 15.

Table 15. Comparison of rankings of five high school programs by graduates and local employers

	East High Graduates	Local Employers
College-Preparatory	+189	+23
Occupational	+ 46	+ 2
Pre-Technical	- 33	+ 8
Vocational	- 78	- 5
General	-124	-27

Both groups assign top ranking to the college preparatory program and lowest ranking to the general program.

Eleven statements were presented concerning the role of comprehensive high school with regard to vocational education. Employers were asked to check whether they agreed with the statement, were neutral, or disagreed with it. Table 16 presents the response from these statements in rank order of percentage difference between agreement (+) and disagreement (-).

Summary

Sixty-two percent of the respondents hire high school graduates and 78 percent indicate they would do so if the graduate had vocational training in high school. Over half of the respondents replied that they would cooperate with East High School on a work-study program and would hire students during their summer vacation months. Less than half, however, are willing to designate persons to help on a vocational education advisory council or craft committee. Thirty-eight percent would give positive support to East High School in terms of money or equipment for vocational programs.

The most important traits for a graduate of East High School to possess, from the standpoint of the employer, are the ability and willingness to work, the desire and willingness to learn, the ability to get along with others, dependability and honesty. The employers feel that the possession of these traits is as important, if not more important, than the possession of specific vocational skills.

The employers ranked the college preparatory program as the best suited for the average high school student, with the general program as the lowest ranked program.

Table 16. Ranking of 11 statements concerning the role of the comprehensive high school with regard to vocational education

Statement	Agree	Neutral	Percentage	
			Disagree	Difference
Students should graduate from high school with both a saleable skill (however modest) and sufficient educational background to pursue further education if desired.	+79.0	12.5	- 8.5	+70.5
Every student in high school should have a tentative occupational goal on record based on adequate testing of his interests, aptitudes and abilities.	+76.0	12.0	-12.0	+64.0
The emphasis in high school should be on the learning process--developing the ability to learn and to change (flexibility).	+70.0	17.0	-13.0	+57.0
The student's high school courses should be taught in such a manner that they relate to his or her occupational choice.	+62.0	23.0	-15.0	+47.0
The school cannot give realistic training for work, but actual work experience should be gained by the student in a cooperating business or industry.	+51.0	28.0	-21.0	+30.0
The middle 60 percent of the students in ability should take a vocational curriculum aimed at preparing them for further study at a technical college, business or trade school.	+37.5	25.0	-37.5	0.0

Table 16. (Continued)

Statement	Percentage			Difference
	Agree	Neutral	Disagree	
The school should not be concerned with specific vocational training, but with the development of general traits and abilities applicable to a number of occupations.	+37.5	16.5	-46.0	- 8.5
All students should leave high school with a saleable (marketable) skill.	+29.0	25.0	-46.0	-17.0
It is not the role of the high school to provide vocational education, but this is the responsibility of the employer or of the trade and business schools.	+28.0	9.0	-63.0	-35.0
All education in high school should be general (neither academic nor vocational) aimed at preparing the student for whatever course he pursues after graduation.	+16.5	14.5	-69.0	-52.5
The high school's main responsibility is to select capable students and prepare them for college.	+12.0	16.0	-72.0	-60.0

The vocational program received the second lowest ranking by the employers.

The respondents from the business and industry survey agreed strongly with the statement that the high school should give the student both a saleable skill and the background to pursue further education. They felt that each student should have a tentative occupational goal on record which is based on his interests and aptitudes. The student's courses should be taught so as to relate to his or her occupational choice, and emphasis should be on the learning process--developing the ability to learn and to change. Employers also feel that the school alone cannot give realistic training for work, but students should receive some practical work experience in a cooperating business or industry.

CHAPTER VI
RECOMMENDATIONS FOR EAST HIGH SCHOOL

Of the several basic objectives of education in a democracy, the high school curriculum has often neglected that of vocation, or the ability to support oneself and one's family. Equal emphasis must be placed on each of the objectives if a high school is to be truly comprehensive. In an era of mushrooming accumulation of knowledge and social upheaval there is a real need to look at the relevance of the offerings of the high school. The test of relevance should ascertain whether the offerings are working to achieve the objectives, and imbalances should be corrected in order to avoid concentrating on one or more of the objectives at the expense of others. Graduates of East High School indicated an imbalance in favor of the college preparation while expressing a lack of adequate vocational or occupational preparation. They also reported a deficiency in counseling and guidance towards an occupational choice and in preparing for marriage and family life.

The recommendations for vocational education at East High School that result from this study have to do with the approach and philosophy more than with the specific vocational area to be taught. No longer is a vocational skill learned in high school or trade school likely to be the craft or art with which a person will make his career. The last two decades have seen the creation of entirely new occupational categories such

as the aero-space industries, oceanography, computer applications and micro-electronics. There has been wholesale elimination of other vocations, many of which have been the mainstays of vocational education. Schools have been slow to adjust to modern industrial and business needs, and the vocational educator faced with planning new facilities and programs sees a bewildering myriad of occupations from which to choose. It is only by grouping the wide variety of occupations into clusters that order and direction for planning can be achieved. By observing the types of jobs that the graduates of East High School have gone into, and those that they are likely to go into from the projections of occupational growth areas in Utah, the following major vocational clusters are recommended for East High School: business occupations, industrial occupations, and home and service occupations.

The above occupational clusters include the four major projected growth areas of wage and salaried jobs in Utah, for which 81,500 new jobs have been forecast between 1967 and 1975, in which 82.4 percent of the graduates of East High School who responded to the opinionnaire indicated that they are in training for or working in.

From the responses of the local employers, from the review of the literature and from the emphasis placed on it by the President's Advisory Council on Education, a major recommendation for East High School is to place considerable emphasis on the personality traits and attitudes considered desirable in an employee. These traits and attitudes are deemed as

important as, if not more important than, specific vocational skills, according to the sampled employers. The fast growing job category called the service occupations requires workers with common, identifiable skills not previously defined as vocational education. These are the ability to meet people in such a manner as to be presentable and pleasing, get along with fellow workers, handle money and keep simple records, converse intelligibly, and so forth. It is therefore recommended that a Department of Personal Development be established at East High School, with the specific assignment of developing these employability traits and attitudes.

Another major recommendation is to make maximum use of the community resources for work-study and cooperative work experience programs. The 1968 Vocational Education Amendments stress the need for more extensive programs in this area. The lead must be taken by the school and district personnel, however, if these programs are to become viable. The rather low percentage of response (32 percent) to the questionnaire sent out to local employers indicates their lack of involvement with the school and its issues. A larger study, conducted recently by the Pennsylvania State University, had similar problems with the involvement of business and industry:

If involvement is the key variable, the crucial problem becomes one of finding ways of increasing involvement, for the data also show that its present level is low. Employers and union officials gave the impression that they were not particularly concerned with what the schools are doing. They devoted their efforts to dealing with the problems of their own organizations, and these problems did not involve training young people. As a result, they gave little thought to what the schools were trying to do.

To reveal this lack of interest is not to criticize these respondents. Most people give serious attention only to those things that concern them on a day-to-day basis. This being the case, educators must assume the lead not only in their traditional role of administering vocational education but also in stimulating the active participation of all concerned segments of society...

In general, it is probably true that any technique that induces employers to take an active role in some phase of vocational education will be associated with more positive attitudes. This is the reverse of the usual approach of attempting through educational programs to change attitudes which, it is hoped, will lead to changes of behavior. Bringing about a change in behavior is, of course, more difficult than just presenting information. One way to change behavior may be for school officials to contact employers and union officials with specific requests for participation in specific projects, rather than just contacting them to inquire, "How can the schools serve you better?" The high percentage of employers who failed to respond to similar questions in this survey suggests they are not too sure.

The responsibility lies with the schools to design useful programs in cooperation with others in the community and then to enlist support for them. If concerned parties become involved in such programs, "image problems" of vocational education may be largely overcome.¹

That East High School does have an "image problem" with vocational education is apparent from the negative ratings given to it by both its graduates and by the respondents from business and industry. This is an indication of the need for reorganization of vocational education into new programs that give the students the type of training they need to meet the challenge of change, to provide the flexibility and ability needed to meet constantly changing job situations, and to provide them with the personality traits and attitudes necessary

¹Kaufman, Jacob J., et.al., The Role of Secondary Schools in the Preparation of Youth for Employment. (University Park, Pennsylvania: Institute for Research on Human Resources, The Pennsylvania State University, 1967) p. 7-40.

for satisfactory performance in a variety of jobs. It is with this in mind that the following "Center for Bifocal Vocational Education" is recommended for East High School. Through the establishment of such a Center, the district and the school can apply for funds for curriculum experimentation in vocational education and for trial of "innovative programs."

Recommendation for Bifocal Vocational Education for East High School

It is proposed to establish a Center for Bifocal Vocational Education at East High School. The efforts of the Center are to be focused on the student through two major channels:

1. Skill training in one of several occupational clusters.
2. Personality traits and attitudes through a Department of Personal Development.

This dual emphasis is recommended because employers appear more concerned about obtaining employees with the proper attitudes and work habits than they do about obtaining employees with skills of the trade. These personality traits and attitudes desired by the employer are the vocational skills needed in a growing number of service occupations. The conclusion to be drawn is that any vocational program concentrating on the job skills only will not produce workers suitable for today's labor market.

A student passing through some aspect of vocational education at East High School should be able to demonstrate acceptable levels of performance in both the operational skills of a given occupation and the personality traits and attitudes necessary for a person employed in that occupation. Vocational classes at East High School will consist of those taken in one of the

occupational skill clusters where the student develops a measure of job skill in a particular area, and in classes designed to develop attitudes, personal grooming and hygiene, effective communications and work habits.

Figure 1 portrays the proposed structure for the design of the Center for Bifocal Vocational Education. The hub of the Center will be the resource center and its adjacent counseling, testing and placement offices. It is around this resource center that the activities will revolve. Here the students will find a home-base, have study carrels, and here they will be encouraged to meet, congregate, study, discuss and enquire.

Radiating from the resource center will be the various occupational cluster departments. Each department will have a common core (job cluster) lab or shop, with adjacent specialty skill shops or labs.

The personal development department, charged with the non-job skill aspects of vocational education, will be adjacent to the resource center and the counseling offices. A work experience coordinator and/or supervisors will work with each department in establishing and supervising cooperative work experience programs with local business and industry and work-study situations with civil and governmental agencies.

The occupational clusters selected represent major employment areas in the Utah employment scene, with their predicted growth potential. The three major employment categories in Utah are the business occupations, the industrial occupations, and the service occupations. At a later date the service occupations could well be established as individual departments if the demand is great enough.

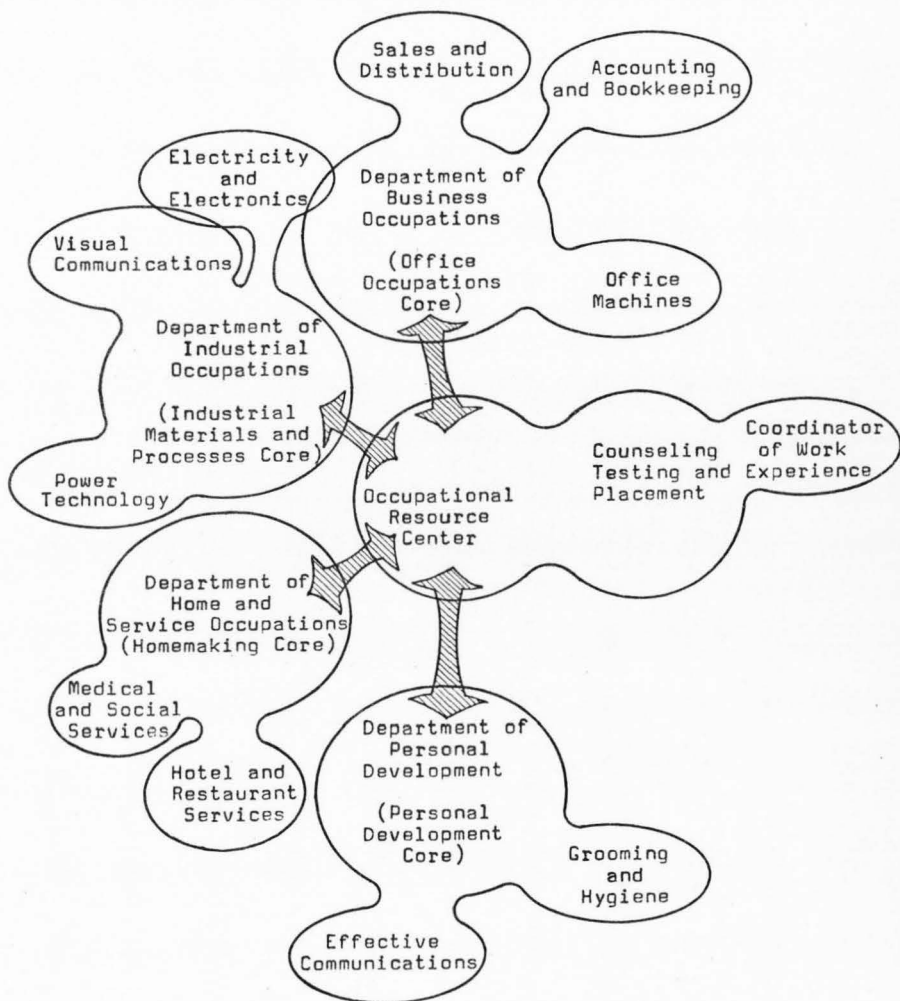


Figure 1. Proposed structure for the East High School Center for Bifocal Vocational Education.

Figure 2 shows an organization chart that would suffice for the establishment of the Center. Once the decision has been made to start with this organization the planning for the facilities and programs can commence. This planning should be done with knowledgeable persons actively involved in the occupational clusters selected.

The five departments suggested are listed below with specialty skill areas and major areas of responsibility.

EAST HIGH CENTER FOR BIFOCAL VOCATIONAL EDUCATION

1. Department of Occupational Counseling, Testing and Placement.
 - A. Occupational information, introduction and orientation.
 - B. Interest, aptitude and ability testing.
 - C. Profile development
 - D. School-business-industrial relations.
 - a. cooperative training programs
 - b. work-study programs
 - c. performance level testing
 - d. placement
 - e. advisory committees
2. Department of Personal Development.
 - A. Attitude development
 - B. Personal appearance, grooming and hygiene.
 - C. Effective communications.
 - D. Work habits and employability traits.
3. Department of Industrial Occupations.
 - A. Industrial materials and processes
 - B. Electricity and electronics.
 - C. Power Technology.
 - D. Visual communications.
4. Department of Business Occupations
 - A. Office occupations.
 - a. secretarial and clerical
 - b. management

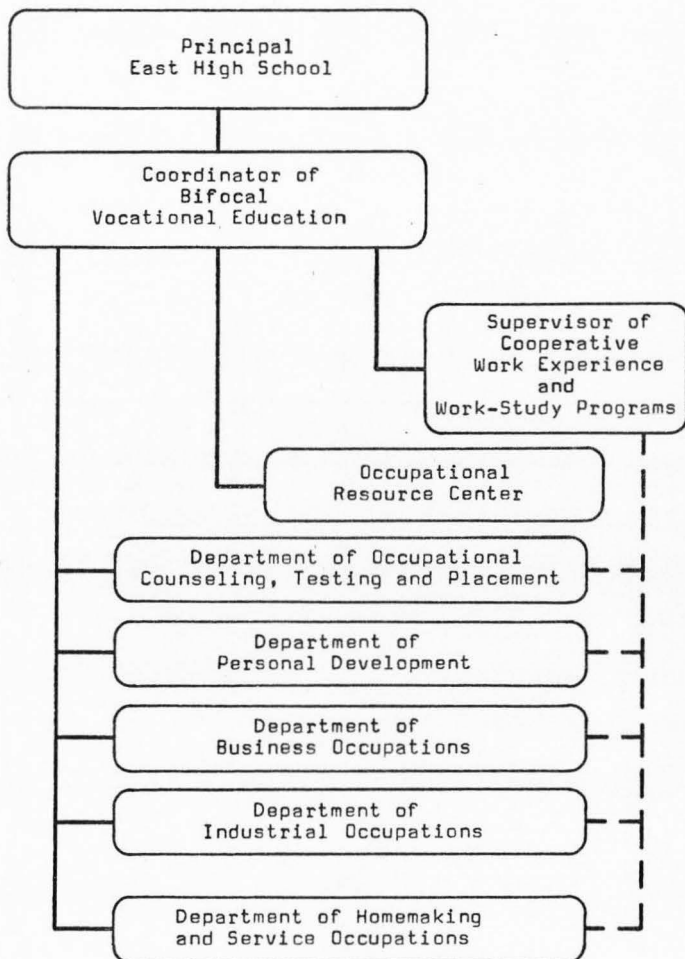


Figure 2. Organization chart for proposed Bifocal Vocational Education at East High School.

- c. business machines
 - B. Sales and distribution.
 - a. retail selling
 - b. wholesale distributing
 - C. Accounting and bookkeeping.
5. Department of Home and Service Occupations
- A. Homemaking
 - B. Restaurant and hotel services
 - a. foods, preparation and management
 - b. restaurant services, waitresses, cashiers, etc.
 - c. hotel and motel management, clerks, room services, maids, etc.
 - C. Medical and social services
 - a. premedical and paramedical
 - b. social services in the community.

The fifth department, Home and Service Occupations, may well be broken into three departments:

Department of Homemaking
Department of Restaurant and Hotel Services
Department of Medical and Social Services.

The decision regarding this division would depend upon available money, staff, students, facilities to provide adequate offerings in these areas. There is certainly sufficient indication that workers in the service occupations are in increasing demand, and the need for vocational education in these areas is great.

Important concepts

Common core within an occupational cluster. Each of the occupational clusters is centered around a core of skill training activities that are common to most workers within that occupational cluster. These common core learnings and skills would provide the background or base for specialization within

each department. Tenth grade exploratory experiences in one of the occupational clusters would probably involve work in the common core area. These common core offerings, combined with occupational information classes and profile testing could provide the incoming students with a basis for selection of a tentative vocational goal.

Each department would have the responsibility for deciding what the common skills are that all or most of the employees within their cluster should possess.

Common core for the industrial occupations. Almost all industrial effort is concerned with the production, fabrication or use of some material, commonly either metal, plastic, wood, ceramic, or some combination of these. Modern industry will select the material that will do the best job of meeting the requirements (specifications) at the lowest price. "Industrial Materials and Processes" is rapidly replacing the wood shop and the metal shop in the thinking of industrial educators. Performance skills in the selection, forming, shaping, adhering, finishing and testing of materials are needed as a background to specialization in most of the industrial specialties. In electricity and electronics the technician works with materials in chassis work, cabinetry, mounting, drilling, wiring, selecting and adhering conductors, ceramic (insulators), etc. The power mechanic is continuously working with materials, either replacing, repairing, resurfacing, relining, or reshaping. Metals are involved in the body, engine and frame, plastics, fibres, ceramics and synthetics play a large part in the mechanics' work. The draftsman, whose prime job is to portray an industrial

process or material in some finished form, needs a working knowledge of the many materials he is portraying. For these reasons the Industrial Occupations cluster has been centered around "industrial materials and processes" as a core common to most industrial specialties.

Performance criteria. The knowledge and skills discussed above should be identified, assigned a proper learning sequence, and stated in terms of demonstrable student performances. Achievement of these performance levels should become part of the student's high school record--being a more meaningful entry than a letter grade.

Student activities in each general or specialty area should be properly sequenced so as to build from the simple to the complex, and achievement (ability to perform) at any level through the program should provide the students with some level of employability.

Work experience. Employers in Salt Lake City have indicated a willingness to provide work experiences for East High School students. The establishment of these positions and the supervision of the program should be the number one priority and receive district and school administrative support. The Vocational Amendments of 1968 indicate a priority will be given to support for work-study and work experience programs.

Modern youth seldom have the opportunity to develop work habits and attitudes through part-time work outside of school hours. As short as 15 to 20 years ago the average youth had no trouble finding a part-time job or summer employment, and usually graduated from high school with work habits already

developed. Nowadays the work experience the high school youth obtain must be contrived, and it may even be necessary to reimburse or subsidize the employers for providing these experiences.

Industrial Education at East High School

The introductory course in the Department of Industrial Occupations should center around a common core of skills and knowledges relating to industrial materials and processes. Students should then be permitted to specialize in any of the following major areas: industrial materials and processes, power technology (or power mechanics), visual communications, and electricity and electronics. Composite specialties combining two or more of these specialty areas may be developed as the demand for them occurs. Electronic drafting is one such possibility, as is automotive electricity.

It is recommended that the central industrial materials and processes lab be adjacent to the resource center--connected by either an archway or an open stairway--and be equipped to teach the main processes involved in selecting, forming, shaping, fabricating, adhering, finishing and testing the materials commonly used in industry.

Adjacent to the industrial materials lab will be the three other main specialty labs--visual communications, electricity and electronics, and power technology.

There should be a minimum of two classrooms provided with easy access by the main labs, and equipped for the utilization of audio-visual training aids.

A tool room and parts storage area, manned by full-time help (preferably work-study students) should be easily accessible from the electricity-electronics lab, the industrial materials lab, and the power technology lab.

Figure 3 shows the spatial relationships recommended:

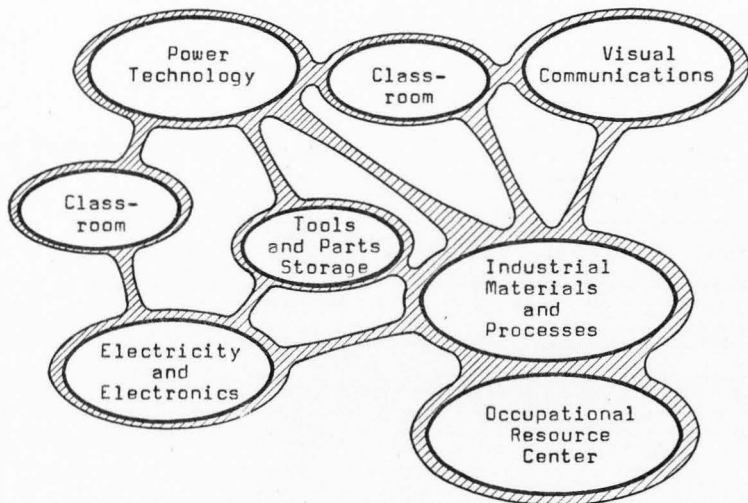


Figure 3. Spatial relationships within the Department of Industrial Occupations.

Philosophy and Guidelines

In the planning and establishing of new programs in vocational education, it is necessary to have guidelines that reflect the philosophy of the school and the district. The conclusions drawn from this study and upon which the recommendations are based reflect a philosophy which is best portrayed in the form of mandates for a comprehensive high school, followed by certain criteria that must be met by the vocational education program.

Mandates for the comprehensive high school

Certain mandates become apparent from the study, five of which have to do with the general, overall curriculum, and four of which pertain to the vocational aspects of the curriculum.

1. A comprehensive high school shall focus its efforts on accomplishing the seven objectives of secondary education:

- health
- command of the fundamental processes
- worthy home membership
- vocation
- citizenship
- worthy use of leisure
- ethical character

No single aspect of these objectives shall be deemed more important than the others, nor shall it receive priority over the others. Each subject offered in the high school should be examined for its direct contribution toward the achievement of these objectives, and each subject should focus on those objectives for which it is uniquely suited.

2. Measurements should be taken of each student entering high school to establish his or her level of achievement, aptitudes, manual dexterity, social and educational attitudes and occupational interests. The profile obtained should be used in conjunction with counseling sessions to prescribe a regimen of school activities that will take the student from where he is as far as possible in the time allowed. Provisions must be incorporated for periodic evaluation of progress and changing of interests or

goals that will result in a readjustment of the regimen.

3. All high school students should be made aware of their own unique capabilities through adequate counseling and testing.

4. A basic core of required comprehensive subjects should be designed to ensure the development of at least minimum acceptable levels of performance deemed necessary for young adults in modern day society. Achievement of these levels of performance (whether they be demonstrable academic skills, social attitudes, or consumer knowledges) should be considered a minimum high school education. All other high school offerings should be considered electives, or "prescriptives," and would constitute the pool of available subjects to be used as the regimen prescribed for the individual student in accordance with item 2 above.

5. All high school offerings should be subjected to a periodic test for relevance in meeting the needs of modern youth. If relevancy is found lacking the offering should be revised, updated or dropped from the curriculum.

6. All students, regardless of their academic abilities, should have the opportunity to gain some practical knowledge and experience in the world of work while in high school.

7. All high school students should have a tentative occupational choice or vocational goal on record, compatible with their interests, aptitudes and abilities.
8. High school students should have a chance to explore through study, counseling, field trips and practical work experience some aspect or phase of the occupation they have tentatively selected.
9. High school records and transcripts should list, in terms of performance levels, useful skills acquired by their students.

Criteria for vocational education at East High School

Certain criteria should govern the design of the vocational education programs and facilities at East High School:

1. New programs should consist of offerings in the projected "growth" areas of business and industry in Utah.
2. All programs should involve the community as the classroom. Whereas previously the student's home-base was the homeroom and his range of schooling consisted of the high school classrooms, the new philosophy is that the school is the home-base and all the resources of the community (including businesses and industry) should be actively part of the classroom.
3. Programs in vocational education should be "bifocal" in nature, being people-oriented as well as skill-oriented.

4. Program outcomes should be specified in terms of performance levels. Student records should be based upon performance levels achieved rather than upon grades or time involved (units, semesters, etc.).
5. Programs should be open-ended, encouraging students to aim as high and go as far as possible, but allowing each to "spin-out" with a measurable set of employable skills at any level of progression through the program.
6. The vocational education facilities should be designed so as to qualify as a "center" for curriculum development and experimentation in vocational education, thereby qualifying for Part I funds under the Vocational Amendments of 1968.
7. Junior high school and tenth grades should be utilized to broaden the students' experiences and backgrounds through exploration in the industries, the world of business, and in homemaking. At this level these experiences in conjunction with occupational exploration classes will provide the broad base necessary for tentative vocational choice.
8. Complete testing of all students' abilities, aptitudes, interests, mechanical dexterity, etc., should be conducted during the tenth grade, or whenever they enter East High School. The profile achieved by these tests should be used to work with the student in the selection of occupational goals.

9. Program offerings should be designed around occupational clusters that will provide the students with entry level skills in several specific jobs within that cluster of occupations.
10. Vocational education facilities should be adjacent to, and be actually an extension of a resource center. Emphasis should be placed on the learning process through student research and individualized learning. The resource center should be designed to provide easy two-way flow of students and information with each of the vocational clusters.
11. Each student in vocational education should have a "home base" in or adjacent to the resource center, consisting of a private carrel and locker, and be provided with a block of unstructured time during the school week in which to pursue individual ideas, studies, and interests.
12. Integral with the resource center, and actually one of the student resources, should be the occupational counseling, testing and placement facilities.
13. Consistent with educational theory that all persons need opportunities to practice newly learned behaviors, practical work experiences (either in laboratories, shops, community services, or cooperating businesses and industries) should be an integral part of all vocational education programs.
14. Articulation is necessary between East High School and Utah Technical College at Salt Lake City.

Any pre-vocational or pre-technical courses taken at East High School that will give the students a "head start" at the Technical College should be identified and spelled out in terms of performance levels necessary for advanced placement. Written agreements resulting from meetings between the two institutions should state the extent of cooperation and articulation between them.

A four-year program from grade eleven through fourteen could well be the result of such articulation, and provide those students interested in a technical career with an early goal and relevant studies.

Summary of Recommendations

The major recommendations were as follows:

1. To develop vocational education programs having a dual emphasis, which the author called Bifocal Vocational Education. Under this program the emphasis placed upon developing the personal traits, attitudes and work habits of the students will be as great as the emphasis placed upon developing specific work skills. It was recommended that a Department of Personal Development be established to deal with the developing of these employability traits and attitudes.
2. To breakdown the unwieldy structure of conventional vocational education by grouping occupations under three clusters:

Business occupations
Industrial occupations
Home and Service occupations

3. To expand the vocational education at East High School to include the entire Salt Lake City area through cooperative work experience and work-study programs.

PART II

EDUCATIONAL SPECIFICATIONS FOR RECOMMENDED PROGRAMS

IN INDUSTRIAL EDUCATION AT EAST HIGH SCHOOL,

SALT LAKE CITY, UTAH

CHAPTER VII
EDUCATIONAL SPECIFICATIONS FOR RECOMMENDED PROGRAMS
IN INDUSTRIAL EDUCATION AT EAST HIGH SCHOOL,
SALT LAKE CITY, UTAH

Plans for a vocational education addition to East High School have progressed to the extent that the outer walls and dimensions have been decided upon. The internal floor plans and arrangements are still flexible. This paper will summarize the recommended programs in Industrial Education and provide educational specifications for these programs for the purpose of serving as an aid to the district planners and the architect.

These educational specifications are in no way intended to restrict the design work of the architect. They are intended to describe the function, environment and relationships within the Industrial Education programs as seen from the viewpoint of the author. The final design that must meet the local, state and federal building codes will be the responsibility of the district planners and the architect.

Four departments were recommended for the vocational education complex at East High School: Department of Business Occupations, Department of Industrial Occupations, Department of Home and Service Occupations, and Department of Personal Development.

The Department of Industrial Occupations should center around a common core or cluster of skills involving "Industrial

Materials and Processes," recommended as a required introductory course for students interested in an industrial occupation. Almost all industrial effort is concerned with the production, fabrication or use of some material, commonly either wood, metal, plastic, ceramic, or some combination of these. A modern industrial product will be composed of the material that does the best job of meeting the requirements (specifications) at the lowest price. As a background or base for specialization in most industrial specialties, the student needs performance skills in the selection, forming, shaping, adhering, finishing and testing of materials. In electricity and electronics the technician works with materials in chassis work, cabinetry, mounting, drilling, wiring, selecting and adhering conductors, ceramics, etc. The power mechanic works continuously with materials; either replacing, repairing, resurfacing, relining or reshaping the materials found in a typical automobile. A man working in visual communications, whether he be a draftsman, printer, technical illustrator or photographer, is usually concerned with the visual portrayal of an industrial process or material in some finished form. He needs a working knowledge of the many materials and processes he is portraying.

It was recommended, therefore, that the student who enters East High School and selects industrial education take an introductory course in Industrial Materials and Processes while simultaneously taking a course in occupational information. In the occupational information class he would be subjected to a battery of tests and interviews for the purpose

of establishing a profile by which he and his counselor can work out a tentative occupational choice. The class would also provide him with an opportunity to explore his tentative occupational choice in depth to ascertain what he, as a worker, will need in the way of education, training and personality in that chosen field.

It is recommended that there be four specialty areas provided for juniors and seniors in industrial education at East High School. Each of these specialty areas of concentration may in turn have several sub-specialties, and those sub-specialties that are not practically available at East High School should be made available through cooperative work experience or work-study arrangements. The four major specialty areas are listed below with some of the possible sub-specialties.

1. Industrial Materials and Processes

production and fabrication

materials testing

woods technology

cabinetry

carpentry

construction

plastics technology

fiberglas

injection molding

casting

metals technology

machining

foundry

welding

sheet metal

2. Power Technology

small motor testing, service and repair

automotive technology

service station operators

wheel, tire and brake adjustment

front end alignment

body and fender

painting and upholstery

carburetion

electrical systems

engine mechanics

engine diagnosticians

service managers

auto sales

power plant

steam

diesel

3. Electricity and Electronics

house and commercial wiring

linemen

electrical machinery

- electronic communications
- radio and TV service
- industrial electricity
- electrical sales

4. Visual Communications

- sketching
 - commercial art
 - technical illustration
- drafting
 - engineering
 - architectural
 - electrical
 - electronic
- photographic processes
- graphic arts
 - printing
 - silk screen
 - design and layout
 - production and bindery

It is recommended that each of the specialty areas immediately form an advisory committee consisting of the teachers and of local business and tradesmen who are directly involved in that specialty area. The first assignment of the committee should be to decide upon the common core of skills, attitudes and knowledge needed by a student who wishes to work in that particular specialty. Secondly, they should decide upon what additional learnings are needed for the

sub-specialty areas. From the lists developed through these meetings, the needed shop/lab equipment can be determined, as well as the course outlines, performance criteria and instructional objectives. The advisory committees should be continuous, ongoing organizations that meet regularly to provide industry support and direction to the programs. An additional function and responsibility of the committee is to assist the school in establishing cooperative work experience situations for the students in the committee's particular specialty area.

Figure 4 depicts the spatial relationships of the four recommended programs in Industrial Education and the Occupational Resource Center.

Figures 5 and 6 show the outer walls of the two floors of the vocational shop addition to East High School, which already having been decided upon, constitute the limits for these educational specifications.

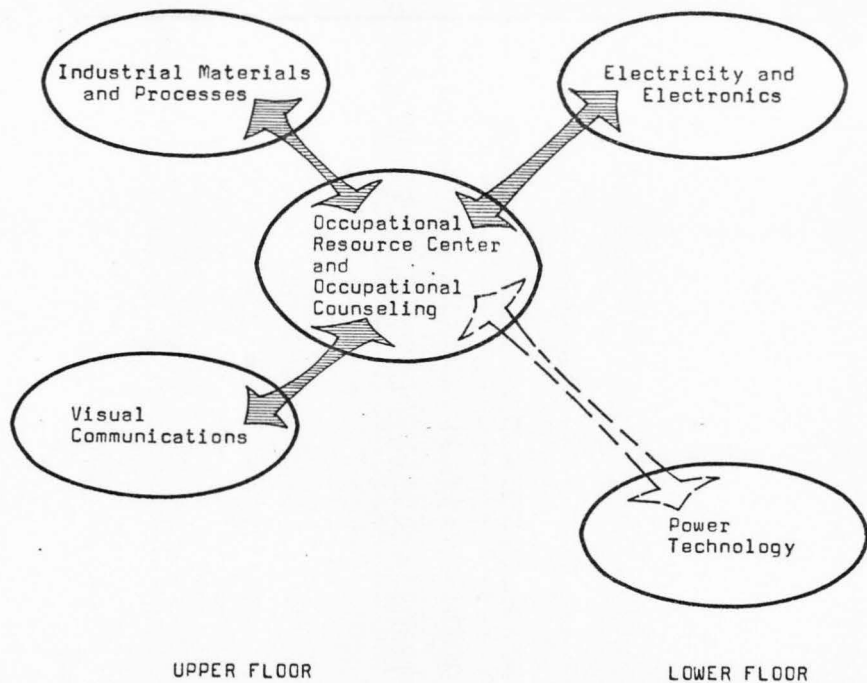


Figure 4. Spatial relationships in Industrial Education at East High School

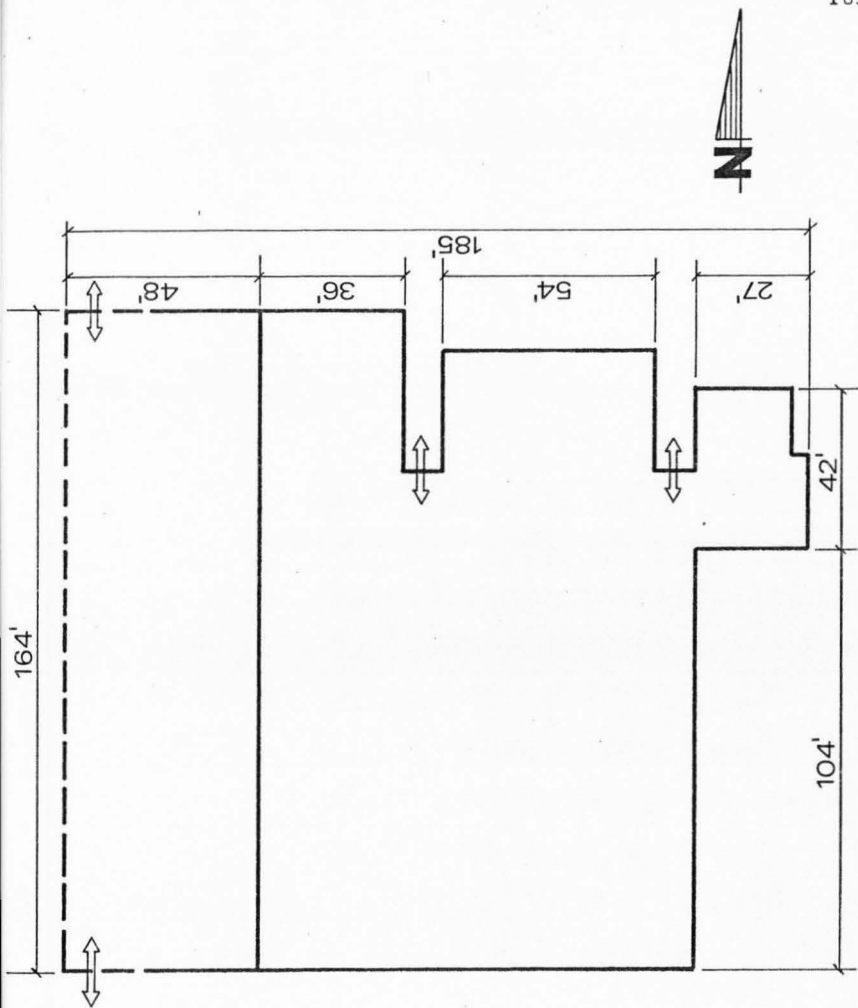


Figure 5. Proposed East High School Vocational Shop Addition, lower floor

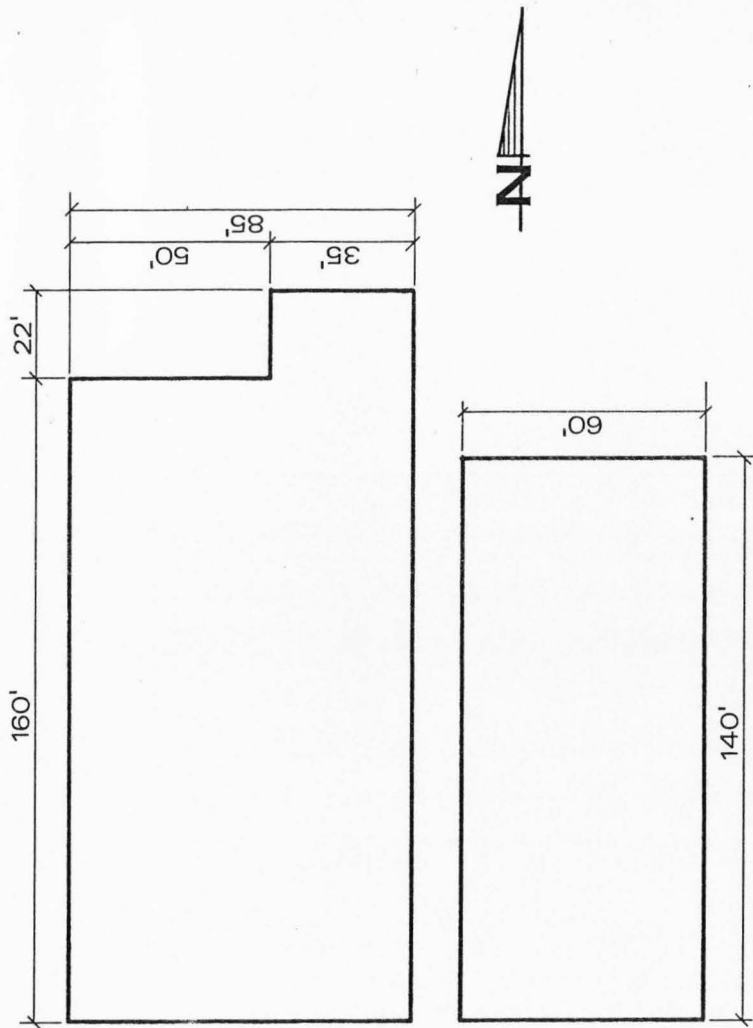


Figure 6. Proposed East High School Vocational Shop Addition, upper floor

1. INDUSTRIAL MATERIALS AND PROCESSES

1.1 General Information

- 1.11 Number of students -- 24 in a scheduled class for lab activities. 48 for lecture. Unspecified for open lab activities.
- 1.12 Number of faculty -- 2 (one with woods-plastics concentration, one with metals concentration)
- 1.13 Area -- laboratory 4504 square feet
 office 256 square feet
 classroom 898 square feet
 total 5658 square feet

- 1.14 The program. Industrial Materials and Processes will be the required introductory course for all incoming tenth graders interested in pursuing one of the industrial occupations. The introductory course would have as its main purpose the familiarization with the various materials used by industry and the processes involved in their use. Basic hand tool and portable power tool processes, along with the selection, planning, measuring, layout and processing of materials would comprise the first half of the course. The second half of the course would consist of a production problem utilizing the above skills and incorporating the use of production techniques and contemporary power machinery. This course would be "industrial arts" in nature (and philosophy) and would help lay a base for specialization in one of the four industrial-vocational options.

Because of the nature of the program it is recommended that the courses be team-taught by two teachers, one a metals major and the other a woods-plastics major, until such time as the teacher training institutions graduate materials majors. It is also recommended that teaching interns be utilized from Utah State University who are interested in developing a teaching major in industrial materials.

For those students who select Industrial Materials and Processes as their occupational option during the eleventh and twelfth grades, there should be courses available permitting specialization in materials in general or in a particular industrial material in depth.

- 1.15 Course offerings in Industrial Materials and Processes.
 The introductory course for sophomores, which is recommended as the first course in the

Industrial Occupations Department, can be either one year in duration (36 weeks) or one semester (18 weeks). If this course is required of all sophomores at East High School perhaps it should be an 18 week course with the other 18 weeks for the Occupational Information course (see original recommendations).

Those juniors and seniors deciding to select Industrial Materials and Processes as their occupational choice will be able to specialize in one of four areas:

- Industrial Materials and Processes (advanced)
- Industrial Woods
- Industrial Metals
- Industrial Plastics

These options should be occupationally oriented, with the course content determined through meetings with advisory committees made up of people knowledgeable about the particular area. As occupationally oriented activities they lend themselves to description in behavioral terms and performance levels that must be reached to qualify for employment. Once specified in these terms (behavioral outcomes and performance levels) instructional objectives can be written for the courses. The instructional objectives in turn govern the lab equipment acquired and the shop layout.

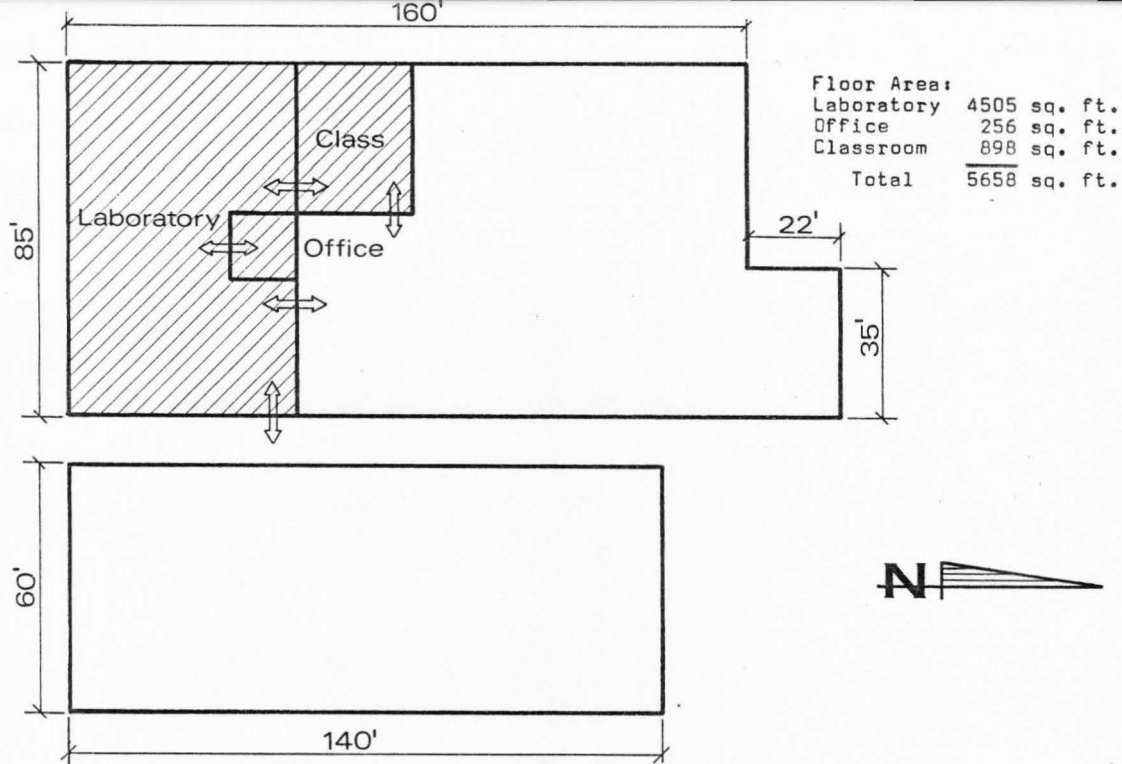
1.2 Access and Traffic

1.21 Accessibility. As shown in Figure 7, students can enter the IM&P lab through either the Resource Center or from the north-south hallway. The classroom (convertible into a large group room through a removable wall) can be entered from either the IM&P lab or from the Resource Center.

1.22 Traffic. Student traffic will normally flow into the lab from the hallway, but ease of flow to and from the Resource Center during class hours is important. A free swinging, double glass door should be provided between the IM&P lab and the Resource Center.

Traffic may pass directly into the classroom from the lab during class hours. When the lab is in session and there is a scheduled class for the classroom, the classroom may be entered from the Resource Center to avoid passing through the lab.

Emergency exit is available into the hallway with either a right or left turn, through the Resource Center to either the adjacent Electricity-Electronics Lab or into the hallway, or through the classroom to either the Resource Center or the adjacent classroom to the Electricity-Electronics Lab.



Approximate dimensions shown at 1/16" = 2'

Figure 7. Industrial Materials and Processes Laboratory, classroom and office

1.3 Environmental Conditions

- 1.31 Shape. The rectangular shape of the IM&P lab provides for easy division of the space into either material or process areas, depending upon the instructor's preference.
The office is placed with glass on three sides so as to have an unrestricted view of the entire lab.
- 1.32 Special Finishes. Consideration should be given to the use of industrial carpeting on all floor spaces not directly used for material handling or processing. These areas include the passageways, classrooms and offices. Concrete floors should be well sealed and impervious to oil and water absorption. Paint should be low glare and resistant to dirt.
- 1.33 Illumination. It is recommended that the space be windowless and that lighting be from a fluorescent source and provide 75 to 100 foot candles at the working level in the lab. Lighting should be arranged for a minimum of shadow.
- 1.34 Acoustical Treatment. Wall surfaces and ceilings should be acoustically treated to reduce reverberation, and in conjunction with the industrial carpeting provide for a low noise level.
- 1.35 Thermal Conditions. The spaces should be temperature controlled for year around temperature of between 68 and 72 F. in the lab. The office, classroom and lab should have separate temperature controls. A central air-conditioning plant is recommended for the entire Vocational Shop Addition, with separate controls in all spaces, due to the wide variation in temperature during the year in Salt Lake City. Aid ducting should be designed for a low noise level. It is recommended that the building be windowless as the heat passage through glass, either heat loss in the winter or the greenhouse effect in the summer, places an additional load on the air-conditioning system.
- 1.36 Visual Environment. Windows are not recommended. The classroom should have variable lighting for use at different levels for audio-visual equipment usage. The office should have glass on three sides to provide full view of the lab at all times.

1.4 Furnishings. NOTE: These educational specifications will not attempt to specify specific lab/shop furniture or equipment. The furnishings specified depend to a large extent upon the behavioral outcomes expected and the performance levels to be achieved. These will result from the initial meetings of the advisory committees and the instructors involved in each area.

1.41 Special Equipment. A portable television camera should be part of the permanent equipment for the Industrial Materials and Processes lab. The camera should be mounted on a tripod or rolling stand. Several monitor television screens should be mounted for easy viewing by all students in the lab. Many demonstrations and processes with materials necessitate a close-up view which can be achieved through the use of the video camera and repeater screens.

1.42 Special Considerations. Consideration should be given to a mass-production or fabrication area. A major concept in industrial processes involving materials in that of the production line, and the production project involving the total class will be a major activity which requires special planning in the layout of the laboratory area.

A second consideration is that of the removal of fumes and vapors from the material finishings, solvents, welding, etc. A paint room and an exhaust system will probably be required as necessary equipment.

A third consideration is that of storage of raw material and of partially completed material projects. As many as ten different class groups will be using the lab during the week and if each group is to be involved in a production project, either individually or mass-production, storage can be critical.

Air driven equipment such as spray painting, air grinders and buffers, abrasive cleaning and abrasive testing for finishes will require a supply of air at a constant pressure. As this area is directly over the power technology facilities, which will also require compressed air, consideration should be given to the installation of air piping and outlets for the IM&P lab which can probably utilize the air compressor from the power technology space below.

Material processing machinery as used in industry is often quite heavy. Milling machines, planers, lathes, etc., are difficult to move and handle. The IM&P lab is on the upper floor of the building and consideration should be given to how the machinery is to be moved into the lab. A side door opening over the driveway in the south-west corner of the lab would make it possible for a portable crane to hoist heavy machinery into or remove it from the lab. An alternate solution is to install an elevator platform from the driveway or from the Power Technology space below. The elevator is not recommended because of the high cost for the little actual use it would receive.

1.5 Utilities.

- 1.51 Electrical Outlets. To maintain maximum flexibility in the building, 110 volt and 220 volt electrical supply should be made available to all areas of the lab to be used as and where needed. This can be done either through the installation of overhead bus bars or through floor conduit with a grid layout.
- 1.52 Water and Plumbing. A student wash basin with hot and cold water should be installed. A drinking fountain that will double as an emergency eye wash would be desirable. A utility sink and water supply is a necessity for lab use, as work with materials includes washing and cleaning, rinsing, diluting, corrosion testing, quenching, etc.
- 1.53 Audio and Visual Conduit. With the state of the art in communications and teaching methods changing at such a rapid rate, extra conduit should be made available throughout the lab for future use as audio or visual recording or playback outlets, teaching machine installation, computerized instruction, etc. For a relatively low cost this conduit will insure ease of installation and flexibility at a later date.
- 1.54 Heating and Ventilation. These items were discussed under 1.35.

2. POWER TECHNOLOGY

2.1 General Information

2.11 Number of Students. 24 in a scheduled class for lab activities. Large and small group lectures. Unspecified number for open lab activities.

2.12 Number of Faculty. One full-time instructor, one half-time instructor with half-time in industrial relations and work-experience coordination.

2.13 Area. Entire lower floor of the Vocational Shop facilities.

Enclosed lab (including office)	13,500 sq.ft.
Small Engine Center	1,440 sq.ft.
Double classroom	1,620 sq.ft.
Covered driveway	7,872 sq.ft.
Tool and Locker rooms	1,056 sq.ft.

Total	25,488 sq.ft.
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2.14 The Program. This is the most critical of the offerings in Industrial Education at East High School. It is here that the largest floor space is committed, and the success of the program depends to a large extent upon the articulation and cooperation between the school and local industry. Power technology, the small engine, the truck, bus, tractor and automobile permeate the lives of every U. S. citizen. A large percentage of the nation's youth will work in some phase of production or service connected with private or commercial transportation. Almost 100 percent of the nation's youth will be automobile owners and consumers of automotive services which will represent a sizeable investment and expense. Because of this, a dynamic program in Power Technology at East High School is considered important.

This area must be able to attract students and should operate on a "waiting list" basis if conceived and operated correctly. As mentioned above, the success of the program depends upon industry support. To be a viable program that reflects current industrial needs, the focus must be on the developing of needed levels of skill at actual job situations. Thus, to train a service station operator a student must actually work in a service station setting pumping gas, changing tires, lubricating autos, etc. To develop skills in maintenance, service and repair of small engines a variety of small engines is needed. To learn body and fender work, upholstery,

tune-up, etc., the learning should take place under actual or simulated working conditions, with the tools, shop area and equipment identical to that used by industry. This means that the ideal learning situation is in a work-experience situation in industry or in the high school lab under conditions as near as possible to those in industry, or a combination of the two. In either case, what it is that the student is expected to learn, what skills, knowledge and attitudes he must demonstrate should be made clear to both him and the supervisor of learning, whether it be a supervising mechanic in industry or an instructor in school. It is essential that the local auto dealers and automotive unions be contacted and sold on the necessity of a dynamic program at East High School, and their help enlisted in writing behavioral outcomes and performance criteria.

The program in Automotive Service should be written in terms of performance packages to be progressed through at the individual student's speed or manner of learning. These learning packages, or instructional units, should specify the type of performance expected of the student upon completion and provide for a practical demonstration or testing of that level of performance which, once demonstrated, will be certified by the instructor and placed in the student's record. From the standpoint of the employer it is the information on the levels at which the student can perform that is of importance, not the number of periods of "auto shop" he has taken.

A typical instructional package may be one that leads to certification as a Service Station Attendant. The skills, knowledge and attitudes needed by a service station attendant can quite easily be defined. With cooperation from local gas and oil companies, East High School can actually operate a service station for training students in this area of work. Whether the station is open to the public, restricted to faculty and students, run by a major oil company, etc., depends upon the arrangements that must be made prior to opening the facility. One arrangement could be that a major oil company (Texaco, Standard, Mobil, etc.,) would sponsor the station and provide an experienced manager to oversee and supervise the student learners. An alternative would be a non-brand name station supplied alternately by the different oil companies and being completely student run with senior students acting as duty managers (on a pay basis and receiving certification as station manager after a semester of satisfactory work). Profits

from such a station would go into the Industrial Education fund for materials, equipment and supplies.

Advanced students may operate a free or low cost automobile diagnostic center for Salt Lake City residents who may, by appointment, leave their car for a complete examination and check-up, receiving a list of needed repairs and a cost estimate. They would be referred to a specific dealer. This service could be provided by East High School for those cooperating auto dealers and agencies who employ East High School students in a work experience program or who work with East High School in an advisory capacity. Such diagnostic service would provide positive feedback for the students from the agency performing the work by commenting on the accuracy of the diagnosis and the cost estimates.

2.15 Course Offerings in Power Technology.

Introductory course. Principles and operation of the internal combustion engine. Starting with the principles of two and four cycle engines, carburetion and lubrication, the student will work with model engines, progressing to the small utility engines used in lawn mowers, outboard motors, chain saws, motor scooters and motorcycles, pumps and generators. Performance criteria for the course is the ability to troubleshoot, dismantle, reassemble and tune these engines.

Small engine maintenance and repair. An advanced course in small engines which is run as an actual small business where the students take in engines for diagnosis, troubleshooting and repair. A small profit will be returned to the department for equipment and supplies. Community and industrial relations are of utmost importance, and cooperation from local industry should be obtained in setting up and operating such a course.

Automotive service. This course will not operate as a conventional lab or classroom activity. Students interested in this phase of the program will undertake specific instructional packages or learning units designed to develop a specific skill, knowledge or attitude, or group of skills and attitudes relating to a particular phase of the automotive service area. Progression will be at an individual rate and certificate of achievement will be made by successful completion of performance tests taken under actual working conditions and situations. Cooperating auto service agencies may assign one or more mechanics to supervise the certification of students in their particular field of specialization.

Instructional packages could be made up to cover the following area of automotive service:

- Service Station Attendant
- Service Station Manager
- Wheel, tire and brake adjustment
- Front end alignment
- Body and fender repairs
- Automobile painting
- Automobile upholstery
- Tune-up
 - Carburetion
 - Electrical systems
- Solid-state ignition systems
- Engine overhaul
- Engine diagnosis
- Cost estimation
- Service Manager
- Automobile sales
- Parts Manager and parts accounting.

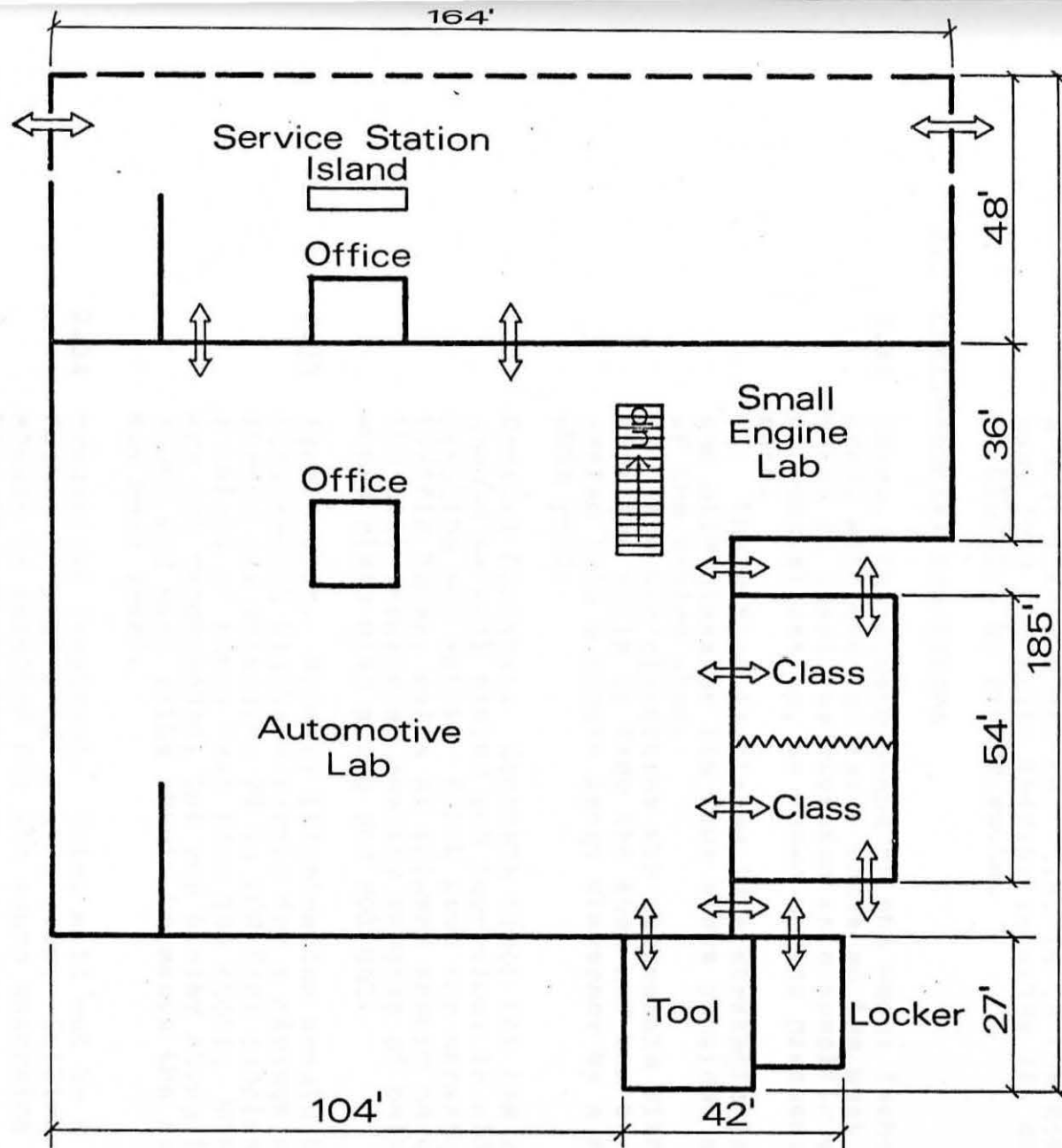
Each of these packages could be learned at East High School with a properly equipped and manned shop. Obviously they could also be learned on-the-job at a cooperating automobile agency under the supervision of a competent tradesman. Ideally the student would have both experiences and his competency would be certified in his high school record.

2.2 Access and Traffic

2.21 Accessibility. As shown in Figure 8 access to the shop area is from two short halls at the north side of the shop. These halls in turn open onto the east-west passageway at the north side of the building. They also connect with an entry to the old building. The shop may be entered by the stairway down from the Resource Center, providing the students with easy access to the resource material. Two large doors will slide open or swing up providing access to the shop from the covered driveway. Automobiles may drive in directly from Ninth South Street into the car wash, the service station area or into the shop.

2.22 Traffic. Automobile traffic flow will be into the shop area via the south door, flow counter-clockwise (as viewed from above) and exit at the north door.

Student traffic will enter mainly from the two short hallways at the north side of the shop. Traffic may flow into either classroom direct from these two hallways without entering the



Floor area:

Automotive Lab. (enclosed)	13,500 sq.ft.
Small Engine Lab.	1,440 sq.ft.
Double Classroom	1,620 sq.ft.
Tool Issue and Locker Rooms	1,056 sq.ft.
Covered Driveway	7,872 sq.ft.
Total	25,488 sq.ft.



Lower Floor

Dimensions approximately
1/16" = 2'

Figure 8. Power Technology

shop area. Entry to the shop from the Resource Center is another possible traffic pattern, but this stairway will be used primarily for accessibility to the Resource Center during class hours.

It may be preferable to move the hallway door between the tool and parts room and the locker room to a position north of the locker room in order to make the locker room part of the shop area. This would make the lockers and wash area accessible during class time without leaving the shop area and provide for a measure of security.

Emergency exits into either north hallway, up into the Resource Center, or out into the covered driveway provide ample escape routes in case of fire or explosion. The paint room, a most likely place for fire, is in the corner away from the exits thereby reducing its chances of blocking an escape route.

2.3 Environmental Conditions

- 2.31 Shape. The square shape of the Power Technology area, with the two large doors on the west side, makes it ideal for division into specific areas of specialization, as shown on the preceding page.

The office is placed in a strategic location, and with glass on its four sides provides a view of the entire shop.

The two classrooms are accessible either from the halls or from the shop and can be converted into a single large classroom by a moveable wall.

- 2.32 Special Finishes. Concrete floor for the shop should be well sealed and impervious to oil, gasoline and water. Paint used for marking traffic lanes, walls or columns should be of the best industrial quality capable of being wiped clean with a rag and solvent.
- 2.33 Illumination. Primary illumination should be from fluorescent lights arranged for a minimum of shadow and providing 75 to 100 foot candles at a height of three feet from the floor. Windows are not recommended, but any placed along the south and east walls should be above the average head level.
- 2.34 Acoustical Treatment. Noise will not be a major factor in such a large shop area. Ceiling tile should be selected for its sound absorbing qualities to reduce echo.

To eliminate shop noise from the classrooms, the classroom-shop wall should be sound insulated.

2.35 Thermal Conditions. Although a central heating and air conditioning plant is recommended for the new building, with separate temperature controls, it may be practical to provide these services to only the classrooms, office, service station office, tool room, and locker room. Large industrial type, thermostatically controlled space heaters may be the best solution to heating the shop area in the winter months. Opening and closing the large doors to the driveway to bring in and take out automobiles would place a tremendous load on the central air-conditioning plant--either for heating or cooling. It may be preferable to make no attempt to cool the shop area proper. It is recommended that a specialist in environmental engineering be consulted prior to making this important decision.

2.36 Visual Environment. Classroom should have variable lighting to provide for a variety of audio-visual equipment usage.

The office should have glass on all four sides to provide an unrestricted view of the shop area

2.4 Furnishings. NOTE: These educational specifications will not attempt to specify specific shop equipment, tools or furniture. These specifications are rightly the responsibility of the instructors and should be determined in conjunction with an advisory committee after the Power Technology curricula has been decided. Suggestions for consideration will, however, be made for special equipment or equipment that must be installed during the construction phase.

2.41 Special Equipment. The two large doors installed in the west wall of the shop for the entrance and exit of automobiles should be power operated. Controls for operation should be located both inside and outside, but with a master switch on the inside that will deenergize the controls. Similarly, the gas pumps master switch should be located inside the shop for obvious security reasons.

Steam-cleaning equipment should be ordered for installation during construction.

A paint room exhaust system will be needed. This system may work in conjunction with a tail-pipe exhaust system. Automobiles within the shop area should be provided with a quick-connect tail-pipe exhaust hose when the engines are running. This is especially important during the winter months when the main doors are kept closed.

Removal of exhaust and paint fumes is of major importance in the shop design.

Two automobile hoists are recommended, to be located as shown on the lower floor plan. Installation of the hydraulic equipment, pistons and cylinders must be considered at the time the floor is poured.

Due to the size of the shop, consideration should be given to the installation of an intercommunication system, master keyed from the office with a remote unit in each of the work areas. This can be used for signaling students and making announcements, checking with the tool issue and parts room, the service station office, etc., and in general maintaining a degree of control and communications with the large area.

Size and type of gasoline tanks for the service station island, along with the gasoline pumps is another major consideration. These tanks must be buried before pouring the driveway.

Overhead hoists and hoist tracks should be considered. These can be used for the removal of engines, the transporting of heavy equipment around the shop, etc. A minimum of two such hoists is necessary, one over the test engine area and the other over the engine overhaul area.

Installation of wheel spinning equipment and brake test equipment should be considered if the equipment is of the type that must be built into the floor.

Compressed air will be needed in almost every section of the shop. Spray painting, parts cleaning, dust removal, tire inflation, are just some of the uses.

2.5 Utilities.

2.51 Electrical outlets. To maintain the maximum of flexibility in the Power Technology area, 110 volt and 22 volt outlets should be provided within easy reach of all areas of the shop. This can be done through floor conduit laid in a grid form or from overhead bus bars.

2.52. Water and Plumbing. Student washing facilities should be provided in the locker and wash room. Hot and cold running water with sufficient sink space to provide for four people at once should be sufficient. Utility sinks with hot and cold water should be available for general usage in the shop area.

The service station island will need cold water for radiator filling.

- 2.53 Audio and Visual Conduit. Extra conduit for future use in instructional media. The intercom unit suggested in item a.41 can make use of this conduit.
- 2.54 Heating and ventilation. These items were discussed under 2.35. Space heaters should be selected for their low-noise level.

3. ELECTRICITY AND ELECTRONICS

3.1 General Information.

- 3.11 Number of Students. 20 to 24 in a scheduled laboratory. 40 to 48 in a lecture. Unspecified number in an open laboratory.
- 3.12 Number of Faculty. One
- 3.13 Area.
Laboratory 3240 square feet.
- 3.14 The Program. Many students shy away from electricity classes because of the abstract manner in which the theory is presented and because of the dependence placed upon mathematical analysis. The practical application of electrical theory is dependent upon a working knowledge of several basic concepts. Once isolated and defined, these basic, necessary concepts can be presented as the content of an introductory course in electricity. For example, Ohm's Law follows as a result of understanding the basic concept dealing with the relationship between current, voltage and resistance. It is this relationship that is the important understanding, not the formula for Ohm's Law. Nor does drill in the use of the Ohm's Law formula necessarily guarantee a grasp of this basic concept.

The teaching of introductory electricity (a necessary prerequisite to electronics) should be concerned with the basic concepts. The introductory lab should be concerned with demonstrating the basic concepts, and the testing should be aimed at having the student demonstrate a practical grasp of these basic concepts.

It is therefore recommended that the program at East High School be primarily concerned with developing the several basic conceptual understandings upon which further work in the field is so dependent. The state of the art in electronics is changing at such a rate that the basic theory takes on a new importance. Specific course content is difficult to select when it is not known what manner of component will be the heart of a piece of electronic gear in five or ten years. A strong grasp of the fundamentals gives the future technician a solid foundation upon which to meet the challenge of a changing technology. Once the student has a grasp of the fundamental principles in electricity, he should be free to pursue studies in one or more of the various occupational categories. As in

Power Technology, it is possible to establish what the prospective employee must be able to do and know to be deemed employable. The student can undertake instructional units or packages that lead to a specified skill or knowledge. Groups of packages will constitute a certifiable level of performance, which in turn denote a level of employability.

It is essential that articulation take place with Salt Lake Technical College with agreements as to what constitutes an acceptable level of performance for East High School graduates to challenge beginning technical college courses

In summary, the current emphasis on developing problem solving abilities in technical personnel is especially important in electricity and electronics. Problem solving skills must be built upon a thorough understanding of the principles involved. The ability to apply the basic principles of circuit analysis to new configurations provides the student with a tool that will serve him well no matter how the state of the art changes.

- 3.15 Courses in Electricity and Electronics. As suggested above, the basic course in this area should be one aimed at ensuring the acquisition of the fundamental concepts (principles, understandings) of electricity. Once a grasp of these concepts is demonstrated, the student should pursue a group of instructional packages through individual effort, small group effort, or organized class, that will result in a level of skill and knowledge which employers feel necessary. These packages can only be made up through conferences between the instructor and his advisory committee, as the advisory committee represents the future employers of the students. A structure similar to the following could be used for Electricity and Electronics:

Introductory course in Fundamental Concepts in Electricity

Instructional Packages in Electronics

Electronic circuits

Communications

receivers

transmitters

AM

FM

Industrial controls

Automotive electronics

Radio and TV servicing

Production techniques
Sales

Instructional Packages in Electricity
Motors and machinery
Power distribution
Home wiring
Industrial wiring
Lighting
Home appliances
Sales

3.2 Access and Traffic.

3.21 Accessibility. The electricity-electronics lab is accessible from either the north-south hallway or from the school entry to the east of the lab, as shown in Figure 9.

3.22 Traffic. Normal traffic to and from the lab will be from the west door into the north-south hallway, with the east door being available for emergency exit.

It is just a short distance down the hallway to the Resource Center.

3.3 Environmental Conditions.

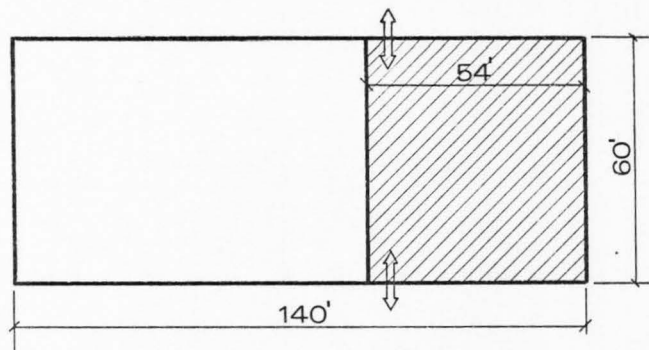
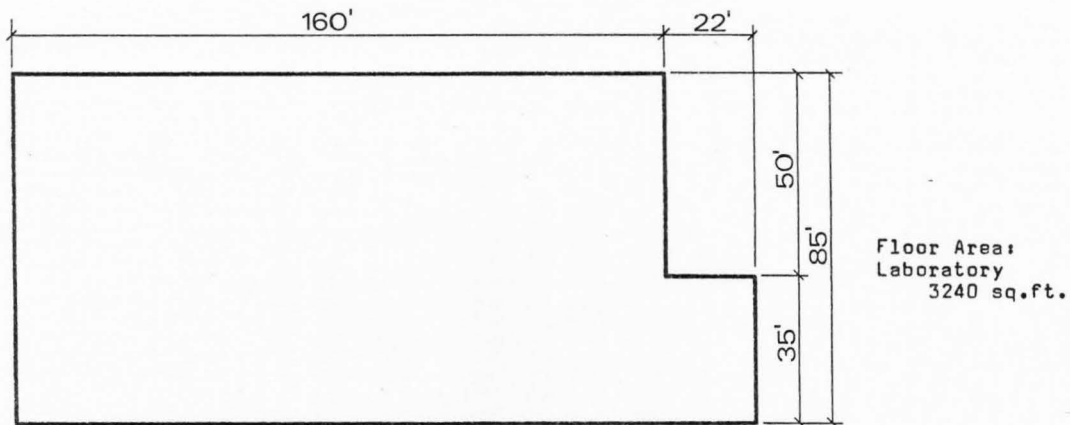
3.31 Shape. The rectangular shape of this area provides for flexibility in layout of equipment and student work stations.

3.32 Special Finishes. Industrial carpeting is recommended for both areas. Low-glare, compatible paint is recommended for the walls. Acoustical tile is recommended for the ceilings.

3.33 Illumination. Work with electrical and electronic equipment requires a soft, non-glare lighting of approximately 100 foot candles of intensity for fine work, and 50 foot candles for gross work.

Shielded fluorescent lighting should be used, and arranged to cast a minimum of shadow. The shielding is needed because of the radio interference produced and transmitted by fluorescent lights. This interference is a nuisance, and in some cases makes delicate adjustments and measurements impossible in electronic gear. It is possible to shield the fluorescent lighting to eliminate this interference.

3.34 Acoustical Treatment. Acoustical ceiling tile used in conjunction with the floor carpeting will provide for a low noise level with a minimum of echo.



Upper Floor

Dimensions
approximately
 $1/16" = 2'$

Figure 9. Electricity and Electronics

- 3.35 Thermal Conditions. The central air conditioning system will provide for a uniform, year around temperature.
- 3.36 Visual Environment. Carpeting, wall and ceiling colors should be chosen to provide a pleasant visual atmosphere not conducive to eye strain.
- 3.4 Furnishings. NOTE: These educational specifications will not specify specific lab equipment, tools or furniture. General suggestions will, however, be made as deemed important.

- 3.41 Special Considerations. Antennas and feed-in conduit will be required. The ability to pick up a strong radio or TV signal is necessary in an electronic facility. Provision should be made for the installation of a variety of antennas on the roof of the building and for conduit to lead in the cables.

Consideration should be given to specifying wood work benches, test benches, tables and shelving. The higher cost of wood is offset by its low electrical conductivity and electrical shock hazard. Used in conjunction with full carpeting, wood work benches provide a measure of electrical safety.

A filtered, D.C. electrical supply should be provided at each student work bench and test bench, having the following voltages and currents:
 0 - 20 volt, 1 ampere, for transistor work
 0 - 450 volt, 0 - 100 milliampere, 8+ supply
 6 and 12 volt, 10 ampere, automotive
 battery elimination.

110 volt A.C. should be available at all parts of the lab, with 220 volt available in both single and three phase in that part of the lab to be used for motors, machinery and appliance work. 6.3 and 12.6 volt A.C., 4 amperes and 2 amperes respectively, should be available at the student work benches and at the test benches.

Student lab equipment can be of the low cost, good quality type, such as Heathkit, Eico, Conrad, etc. Consideration should be given to providing the laboratory with one piece of each important type of equipment of high quality industrial electronics. For example, one good Textronic or Hewlett-Packard oscilloscope, VTVM, circuit analyser, power supply, counter, Q-meter, etc., should be furnished to be used as standards, for demonstration purposes, and for advanced student use.

A large portion of the Electricity-Electronics budget should be allocated to the acquisition of the latest training aids, films, transparencies, and demonstration equipment. No other area in

Industrial Education is so dependent upon the grasp of abstract material, and any assistance that can be given the instructor and students in the form of training aids will be money well spent.

3.5 Utilities.

- 3.51 Electrical Outlets. See the suggestions made under Special Considerations, 3.41.
- 3.52 Water and Plumbing. A utility sink with hot and cold running water should be provided for double use as a student wash station and to provide water for laboratory uses.
Compressed air piping from the Power Technology area would be desirable. Air is useful in an electricity-electronics area for blowing out chassis, spraying parts with solvent, painting and so forth.
- 3.53 Audio and Visual Conduit. Wires are always being strung from one place to another in an electricity and electronics area. Spare conduit between the student work benches and test benches will be useful for such things as code practice, special signal transmission, future audio-visual devices such as computerized instruction, etc.
- 3.54 Heating and Ventilation. See item 3.35.

4. VISUAL COMMUNICATIONS

4.1 General Information.

4.11 Number of Students. 24 in drafting.
20 - 24 in graphic arts.

4.12 Number of Faculty. Two, plus part-time commercial art.

4.13 Area.	Classroom	898 sq.ft.
	Drafting lab	1120 sq.ft.
	Graphic Arts lab	4154 sq.ft.
	Office	256 sq.ft.
	Total	<u>6428 sq.ft.</u>

4.14 The Program. The name Visual Communications was given to this area in an attempt to combine under one heading the art and methods of producing visual communications via the printed word, the drawing, the plan and the photograph. It partially does away with the artificial dichotomy that has separated high school drafting courses from the graphic arts. Being primarily concerned with the visual depiction and description of industrial materials and processes, the drafting courses are definitely concerned with visual communications in industry. As drafting to many people implies "mechanical" drawing, it is here expanded to include technical illustration whereby materials, products and processes are portrayed in a wide variety of manners including pen and ink, pencil and pastels, and then rendered for reproduction by graphic arts techniques. In effect, it is a marriage of drafting, commercial art and graphic arts. As the photographic processes play a major role in graphic reproduction, these processes must be included in any modern visual communications program. Not strictly a program in Industrial Education, Visual Communications is truly an interdisciplinary course--commercial art and technical illustration being useful in multi-media such as advertising, magazines and journals, and hence being a major factor in business and distributive education; modern business and office practices being concerned with the reproduction of drawings, letters, documents, plans and records.

This program should operate on a basis similar to that suggested for electricity-electronics. Basic introductory courses designed to give the student a knowledge and ability in pictorials, shadows, and other drafting techniques such as perspectives, orthographics and isometrics, should be followed by a commercial art phase where these

pictorials are transferred into a medium for reproduction. The introductory courses then pass into the graphic arts phase for learning layout and reproductive methods.

Advanced courses should permit specialization in any area within the total program, from a specific type of drafting (machine, architectural, electronic, etc.) to book-bindery. Each of these should be available as a learning package which specifies for the student and instructor what performance and knowledge constitutes a satisfactory level for employability, and how to acquire these levels of skill and knowledge. As in the previous areas, these packages are best developed by the instructors working in a cooperative setting with industry through an established advisory committee.

4.15 Courses in Visual Communications.

Introductory course.

- Introduction to visual communications.
- Sketching and drafting
- Rendering
- Reproduction
- Distribution.

Specialization. In depth learning packages in one or more of the following. Each package giving the student a certifiable level of skill and knowledge upon demonstrating satisfactory completion.

- Drafting
 - machine
 - architectural
 - electronic
- Freehand sketching
- Technical illustration
- Commercial art
- Commercial photography
- Graphic arts
 - composition and layout
 - photography and platemaking
 - offset reproduction
 - bindery and distribution
- Lithography
- Job printing
- Production printing
- Screen processes
- Photographic processes
- Office reproduction

NOTE: Specific courses and learning packages will be determined by the instructors and their advisory committees.

4.2 Access and Traffic.

- 4.21 Accessibility. As shown in Figure 10, the Graphic Arts lab is accessible from either the doorway to the north-south hallway or from the Resource Center.

The classroom is accessible direct from the lab, or through the Resource Center.

The Drafting Lab is accessible either from the Graphic Arts Lab or from the north-south hallway.

- 4.22 Traffic. Normal traffic flow to and from the lab will be through the door from the north-south hallway. During classtime the use of the Resource Center is encouraged by the easy access provided by a double, free-swinging glass door. Traffic to the classroom for usage during scheduled lab hours is direct from the lab. If the classroom is to be used by a class other than the one in session in the lab, traffic can enter and depart through the Resource Center.

Emergency evacuation of the lab is provided by the following routes:

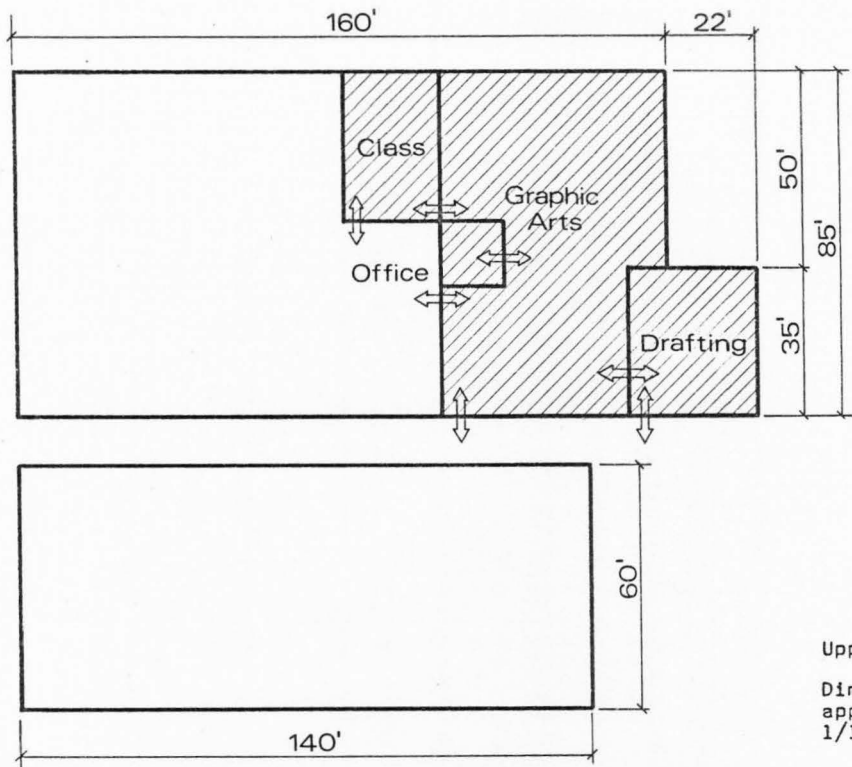
Direct into hallway, turning either north or south.

Through the Resource Center, exiting either into the hallway, to the IM&P lab, or down the stairs to the Power Technology area.

Through the double classrooms to either the IM&P lab or the Resource Center.

4.3 Environmental Conditions.

- 4.31 Shape. The rectangular shape of the Graphic Arts lab provides for flexibility in layout. The large size, approximately 85' x 54', is ample for 20 to 24 student work stations involving planning, production and compilation areas and a photographic darkroom.
- 4.32 Special Finishes. Industrial grade carpeting is recommended for the entire lab, classroom and office. Matching, low-glare paint should be used for the walls.
- 4.33 Illumination. As both areas require medium to fine work, a light intensity of 50 to 100 foot candles will be required at a working level of three to four feet from the floor. A low-glare, fluorescent lighting is recommended, arranged so as to cast a minimum of shadow.



Floor Area:
 Graphic Arts
 4154 sq.ft.
 Drafting
 1120 sq.ft.
 Classroom
 898 sq.ft.
 Office
 256 sq.ft.
 Total 6428 sq.ft.



Upper Floor

Dimensions
 approximately
 $1/16" = 2'$

Figure 10. Visual communications

- 4.34 Acoustical Treatment. Acoustical ceiling tile used in conjunction with carpeting will provide a low noise level and a minimum of echo or reverberation. Air ducting should be designed for low noise contribution.
- 4.35 Thermal Conditions. The central air conditioning plant will provide a steady, comfortable, year around temperature. Each space should be provided with its own temperature control unit.
- 4.36 Visual Environment. Windows are not recommended. The classroom should have variable intensity lighting to provide for a multiple of audio-visual equipment.
The office should have glass on three sides to provide for a full view of the entire lab.
- 4.4 Furnishings. NOTE: Specific furniture, equipment or tools will not be recommended in these educational specifications. These items are rightfully the responsibility of the instructors of the program in conjunction with the industrial advisory committees. Suggestions for special consideration will be made.

- 4.41 Special Considerations.
In both areas (drafting and graphic arts) it is essential that clean air be circulated through the ducting from the air conditioning plant. If special filters are not provided at the central unit, then special filters should be installed locally to eliminate dust and dirt from the system.

A photographic darkroom will be necessary in the graphic arts area. The size and location should be considered during construction. Hot and cold water will be necessary. A light trap is recommended in lieu of a door to the darkroom. This will enable passage into and from the darkroom without admitting light.

Modern equipment is essential in the area of graphic arts, and is also expensive. Early exploration of industrial cooperation in equipping this lab is encouraged. Such equipment as a variable spacing, compositing typewriter (which is available with up to 1500 fonts) and a photo composition machine for producing letters and symbols too large for the compositing typewriter are examples of two such pieces of equipment.

A major decision regarding the amount of job and production work to be done by the graphic arts lab for the school and district should be made before the equipment is ordered. Such a decision will greatly affect the program and the type of equipment needed.

4.5 Utilities.

- 4.51 Electrical Outlets. 110 volts and 220 volts should be available in both areas. It may be necessary to have 220 volt three-phase for the larger graphic arts machinery. 110 volt outlets should be convenient to student work stations for the possible use of light tables.
- 4.52 Water and Plumbing. A utility sink should be provided in both areas. The sink will double as a student wash basin and for utility work in the area. Hot and cold water should be provided. The darkroom will require hot and cold running water as well as sink and drains.
- 4.53 Audio and Visual Conduit. Extra conduit should be provided for the future installation of audio and visual communicating devices and training aids such as computerized instruction. Remote TV receivers for playing instructional tapes on request are a distinct possibility in the near future. With the emphasis on individualized learning, methods of piping instructional material to the learner are becoming increasingly more frequent. All new facilities, therefore, should anticipate the extra wiring and conduit needed for these trends.
- 4.54 Heating and Ventilation. These items were discussed under headings 4.35 and 4.41.

5. RESOURCE CENTER AND OCCUPATIONAL COUNSELING

5.1 General Information

5.11 Number of Students. Up to 32.

5.12 Number of Faculty and Staff. Total of three.
 1 Full-time Occupational Counselor
 1 Full-time Work Study and Work Experience Coordinator
 1 Full-time Secretary and Resource Center Librarian

5.13 Area.	Resource Center	1792 square feet
	Office	256 square feet
	Office	256 square feet
	Total	2304 square feet

5.14 Purpose and Function. This is the heart of the vocational education at East High School. It is here that the student has a home base where he can study in a quiet carrel, browse through the latest technical magazines and trade journals, research occupational or technical information, review training films, tapes and slides, talk with the counselor or work experience coordinator, meet with other students for small group meetings and study, or just plain relax.

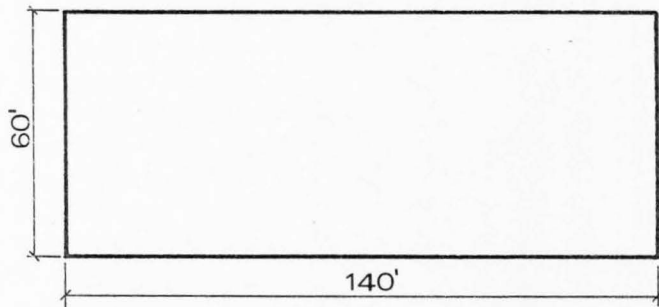
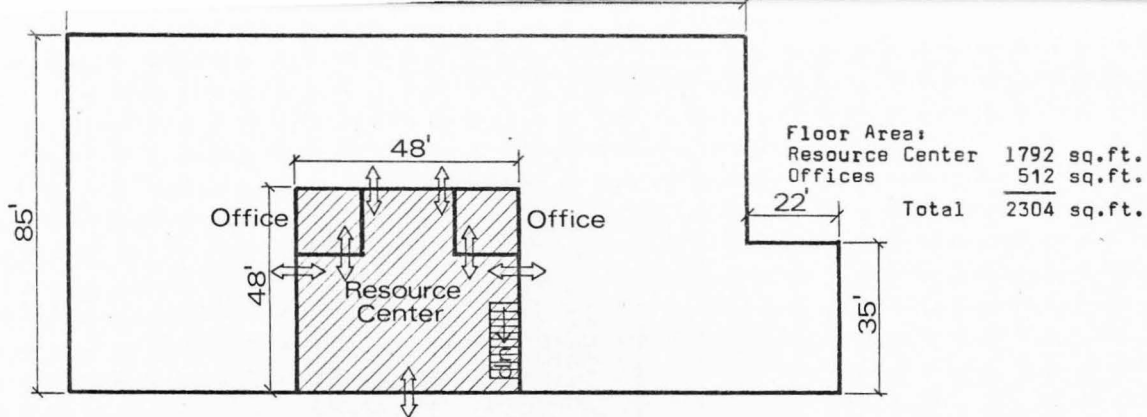
Shelves full of resource material, trade journals and magazines, occupational information and technical references will be open to student use during the entire school day. Students will be encouraged to use the facilities during their unstructured time, or during class time for special assignments or projects.

The Center is located so as to be readily accessible to all the areas of industrial education described in these educational specifications. It should be equipped and stocked with materials to service the entire spectrum of vocational education and not limited strictly to industrial education.

The purpose of the Resource Center is to provide a central area for students and faculty of vocational education to meet informally to pursue studies, research and projects of individual or small group interest. This Center will provide the vocational students and staff with a sense of unity and common purpose by being open to all.

5.2 Access and Traffic.

5.21 Accessibility. As shown in Figure 11, the Resource Center has four main entrances, through



Approximate dimensions shown at 1/16" = 2'



Upper Floor

Figure 11. Occupational counseling and Resource Center

double, free-swinging glass doors from the north-south hallway, the Industrial Materials and Processes lab and from the Electricity and Electronics lab, and via the stairway up from the Power Technology lab.

- 5.22 Traffic. Traffic will normally be into the Resource Center from the hallway, or from either the Industrial Materials and Processes lab or the Electricity-Electronics lab, or up the stairway from the Power Technology lab.

Traffic will pass through the Resource Center to enter the two classrooms when these classes are not part of the scheduled classes in session in the labs on either side.

5.3 Environmental Conditions.

- 5.31 Shape. The basic rectangular shape of the Resource Center permits functional arrangement of furnishings and shelving, and provides a degree of flexibility for future rearrangement.
- 5.32 Special Finishes. Emphasis should be placed on creating a pleasant, relaxing environment where the student will feel comfortable and "at home." Carpeting should be used throughout and be matched with compatible wall and ceiling colors.
- 5.33 Illumination. Soft fluorescent lighting should be arranged to provide about 50 foot candles of light at the reading level, with a minimum of shadow.
- 5.34 Acoustical Treatment. Carpeting, acoustical ceiling tile and bookshelving on three sides will provide for a quiet atmosphere conducive to reading and study.
- 5.35 Thermal Conditions. The central air conditioning plant will provide for a comfortable, uniform temperature regardless of outside temperature. Separate temperature controls should be provided for the Resource Center and each of its two offices.
- 5.36 Visual Environment. Compatible colors and carpeting with comfortable furniture will combine to create a "living room" atmosphere. Placement of the secretarial desk (as shown on the following page) will provide for a full view of the Center. Each of the offices will have a window looking out into the Center. Swinging glass doors from the hall and each of the adjacent labs will provide a view of the Center from the outside.

5.4 Furnishings. NOTE: See Figure 12 for suggested layout of the Center and its two offices.

5.41 Offices. Each of the offices should be provided with the following minimum furniture:

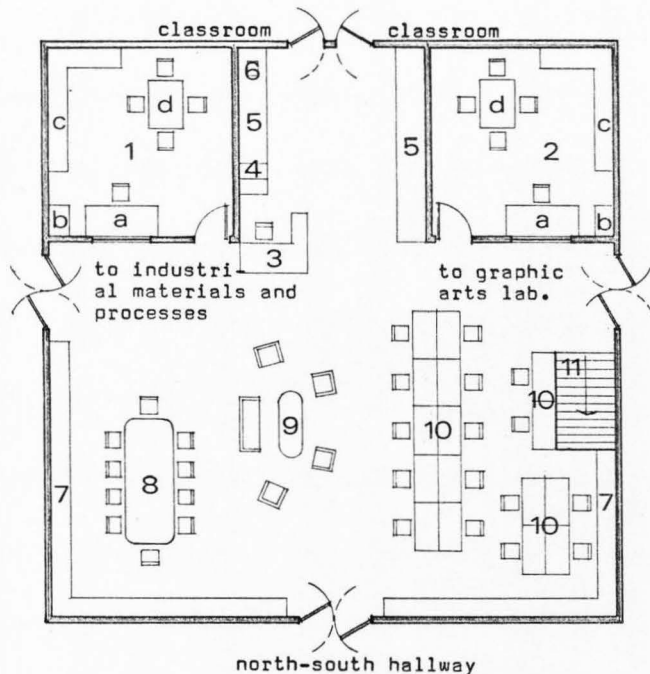
- 1 desk and desk chair
- 1 four-drawer file cabinet
- 1 table with four chairs for conferences
- bookshelving

5.42 Resource Center.

- 1 desk, secretarial with typewriter extension and desk chair
 - 2 four-drawer file cabinets
 - 1 16' storage cabinet
 - 1 9' storage cabinet with counter and sink
 - 1 4' x 10' conference table with 10 padded matching chairs
 - 4 lounge chairs
 - 1 sofa
 - 1 coffee table
 - 16 individual study carrels, with sides and rear wall for A-V projection. Individually wired with electrical outlets. Capable of being used individually or being grouped as shown. Each with matching chair.
 - 4 Sections of open shelving, 6' high in the following lengths:
 - 2 18' One for books, one for magazines and journals.
 - 1 22' For books.
 - 1 15' For books.
- To be arranged as shown.

5.5 Utilities.

- 5.51 Electrical Outlets. 110 volt outlets should be placed conveniently around the Center so as to be available for use for A-V equipment. Individual study carrels should be provided with 110 volt AC. Outlets should be provided in the offices and near the sink.
- 5.52 Water and Plumbing. As this room will undoubtedly be used for receptions, small conferences, meetings, etc., a sink and counter space with hot and cold running water is a necessity for serving refreshments, and for providing space for hot water for drinks.
- 5.53 Audio and Visual Conduit. Consideration should be given to providing wiring to each of the carrels for piping audio tapes or instructional material from a central source.
- 5.54 Heating and Ventilation. Discussed under 5.35.



Key:

1. Occupational Counseling Office
 - a. desk
 - b. file cabinet
 - c. book shelving
 - d. conference table
2. Work Study and Cooperative Work Experience Coordinator Office
 - a. desk
 - b. file cabinet
 - c. book shelving
 - d. conference table
3. Secretary desk
4. File cabinets
5. A-V storage shelving, films, slides, transparencies, etc.
6. Sink and coffee maker
7. Shelving
8. Small group study, meeting and conference table
9. Student lounge area, sofa, lounge chairs, coffee table
10. Individual study carrels
11. Stairway down to Power Technology



Figure 12. Resource center and occupational counseling, proposed layout.

CHAPTER VIII
SUMMARY, CONCLUSIONS, RECOMMENDATIONS
AND DISCUSSION

Summary

This study was undertaken as a result of the involvement of East High School in Project Success, a State sponsored project to encourage three large Utah high schools to become comprehensive. The purpose of this study was to provide rationale for vocational education in a comprehensive high school and to make recommendations for vocational programs and educational specifications for facilities in industrial education at East High School in Salt Lake City.

The methodology used consisted of:

1. A review of the literature to ascertain the following:
 - a. a definition and the role of a comprehensive high school.
 - b. what the role of vocational education is within a comprehensive high school.
 - c. what the trends are in contemporary vocational education.
 - d. what the trends are in employment in general and Utah in particular.
2. Ascertainning by means of an opinionnaire a sampling of graduates of East High School regarding their high school education.

3. A survey of selected local business and industry firms to ascertain their willingness to support vocational education at East High School through such methods as advisory committees, cooperative work experience programs, etc.

4. Consultations with the administrative personnel in the Salt Lake City Public School District and at East High School who were directly concerned with the problems involved.

The review of the literature was undertaken during the spring of 1968 while the opinionnaire and survey were conducted during the summer of 1968. Both instruments were designed in consultation with the counseling and administrative staff at East High School.

The initial report to East High School was printed by the District and distributed in April of 1969, and was entitled The Role of Vocational Education in a Comprehensive High School. This report contained the material presented herein as Chapters I through VI and had as its target the faculty, counseling, and administrative staff at East High School, and the district staff concerned with Project Success and East High School development.

The second report submitted to East High School was entitled Educational Specifications for Recommended Programs in Industrial Education at East High School, Salt Lake City, Utah. This report was submitted in July of 1969, and is presented herein as Chapter VII.

The recommendations of this study result from a review

of the literature and analysis of the graduate opinionnaire and of the survey of local employers. Consultations with district and East High School personnel were influential in formulating and tempering the recommendations.

The philosophy and educational experiences of the author are also reflected in the conclusions and recommendations.

A systematic review of the literature indicated that one of the major objectives of secondary education has been the preparation of youth for the world of work. Due to the rapidity of change in job requirements and employment patterns in our technological society, vocational education will be changing its emphasis from the occupation (specific job skills) to the individuals who will fill those occupations. Studies relating to vocational education and employment trends in Utah indicate that the high school student should be willing to work while attending high school, the employers will be willing to hire him, and the authorities will see work experience or work-study as an essential part of a comprehensive education. The growing area of the service occupations will require a set of skills not previously defined as vocational education; those dealing with attitude, appearance, bearing, ability to meet and converse with people, and many other attributes having to do with the person and his presentation.

Due to the rapid change in occupational patterns, authorities felt that occupations relating to the same general area

should be grouped into occupational clusters, and groups of common skills utilized by each of the occupations within a "cluster" could be identified and should be taught as a common core for that cluster.

Respondents to the graduate opinionnaire felt that the work taken at East High School was of little or no help in training for an occupational field, identifying an occupational field, or in preparing for marriage and family life. Over 80 percent of the respondents were either working in or in training for one of the employment categories that the Utah State Department of Employment Security lists as generating 81,500 new jobs between 1967 and 1975.

Of the employers who responded to the questionnaire, 62 percent indicated they would hire high school graduates and 78 percent indicated they would do so if the graduate had vocational training while in high school. Employers ranked the most important employability traits of the high school graduate as the ability and willingness to work, the desire and willingness to learn, the ability to get along with others, dependability, and honesty. These traits were deemed as important as, if not more important than, the possession of specific vocational skills. They felt that the student should have a tentative occupational choice on record which is based upon his interests and aptitudes. They also felt that the high school should give the student both a saleable skill and the background for further education, that the

student's classes should be taught so as to relate to his occupational choice and that emphasis should be placed on the learning process.

Conclusions

The conclusions drawn from this study were presented to the district as guidelines that would reflect the philosophy of a comprehensive high school. They were listed in the form of mandates for a comprehensive high school and as criteria for vocational education at East High School.

These conclusions are given below:

1. A comprehensive high school is one that emphasizes each of the basic objectives of secondary education.
2. A basic core of comprehensive subjects is a necessary requirement of all students to assure at least minimum acceptable levels of performance deemed necessary for young adults in modern society. All other school offerings should be electives or prescriptives.

High school offerings must be subjected to periodic review by the staff, students, and lay public through advisory committees to test their relevance in meeting the needs of youth.

3. A complete counseling profile is essential for each student entering the high school to ascertain his academic ability, manual dexterity, aptitudes, interests,

personality, social, and educational attitudes and occupational interests.

Each student needs to have a tentative occupational choice on record, compatible with his interests and aptitudes.

Each student needs an opportunity to explore or investigate his tentative occupational choice.

4. High school students must be evaluated in terms of levels of performance. Program outcomes must necessarily be based upon acceptable levels of performance and transcripts and records must list those demonstrable skills acquired by the student.

5. It is important that new programs in vocational education meet the following criteria:

a. include offerings in the projected growth areas of business and industry.

b. emphasize employability traits and attitudes as much as specific occupational skills.

c. involve the community as the classroom through field trips, visitations, guest speakers, etc.

d. be open ended, but designed around demonstrable levels of performance to permit students to "spin out" at any level with a set of measurable skills.

e. include practical work experience through cooperative work experience or work-study programs.

f. be designed around occupational clusters with

each cluster offering a core of common skills necessary to most workers within that cluster.

g. be articulated where possible with similar programs at institutions of higher education.

Recommendations

The major recommendations made to East High School as a result of the study were:

1. Develop vocational education programs having a dual emphasis, which the author called Bifocal Vocational Education. Under this program the emphasis placed upon developing the personal traits, attitudes and work habits of the students will be as great as the emphasis placed upon developing specific work skills. It was recommended that a Department of Personal Development be established to deal with the developing of these employability traits and attitudes.

2. Break down the unwieldy structure of conventional vocational education by grouping occupations under three clusters:

- Business occupations
- Industrial occupations
- Home and Service occupations

3. Offer specialty areas within the industrial occupations cluster of

- Materials and processes
- Visual communications

Electricity-electronics

Power Technology

4. Form advisory committees in each of the specialty areas.

5. Establish "materials and processes" as the common cluster of skills for the industrial occupations.

6. Identify and define the desired outcomes of each of the specialty areas in terms of levels of performance acceptable for employability. To create performance or instructional packages that will lead a student to these levels of performance.

7. Provide exploratory experiences for tenth grade students in each of the recommended occupational clusters through an introductory course designed around a cluster of skills and knowledge common to many jobs within that educational cluster.

8. Establish cooperative work experience programs and work-study programs to provide opportunities for practical work experience for all students enrolled in vocational education.

Discussion

As a result of the experience gained through this field study, some suggestions are offered that the author feels may increase the effectiveness of future field studies:

1. Direct contact with the teaching faculty at East High School was lacking due to the necessity for work with

the school and district during the summer vacation months. Residency in the district during the school year would have provided for opportunity to work with and to influence the faculty and to increase the effectiveness of the study. Therefore, a suggestion is made that future graduate students undertaking a similar type of field work make every effort to establish themselves in residency at the school or district involved during a regular school session.

2. Due to the very nature of a field study, the graduate student is working for two separate groups--the district or school, and his doctoral or master's committee. Problems may arise if the two groups expect different outcomes. One suggestion that may allay these problems and make the field study more workable is to have a representative from the school or district involved agree to sit as an ex-officio member of the graduate student's committee. This would serve to take the committee's interpretation of what is expected to the district, and would provide that vital link in communications to keep the committee informed as to the progress of the study in the field.

3. If the objectives of the field study are to result in reports to the school or the school district, as was the case in this field study, it is suggested that the graduate student confer with his committee and follow the recommended graduate school format for these reports. By anticipating the inclusion of these reports in his final report to the

university, he can avoid much rewriting and duplication of effort.

4. Educational planning methodology is a process most applicable to a field study. As a process it is influenced by the dialogue that is established between district personnel and the consultant. It provides suitable data for identification of needs and for problem solutions. Within the planning process the procedures proposed contain sufficient flexibility to permit the field worker to respond to changing influences and situations and varying personalities. It is suggested, therefore, that although the objectives and outcomes of a field study remain fixed, the flexibility of the process be recognized as an inherent characteristic of educational planning methodology.

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APPENDIXES

Appendix A

THE HIGH SCHOOL WE NEED

Appendix A

THE HIGH SCHOOL WE NEED

The American democratic commitments require that:

Universal education should be provided for all youth through the high school years.

The educational system should enable youth to secure the type of experiences which develop the personal, social and vocational competencies needed in our society.

Various community agencies should be available to serve the educational needs of youth.

A suitable program should be provided by the secondary school for all youth assigned to it through the legal authority of the community.

Each youth should be free to select his vocational goals and pursue an educational program leading to these goals.

To implement these democratic commitments:

The secondary school should be a comprehensive school.

A wide range of experiences should be provided through class and nonclass activities.

Certain types of growth would be promoted in all youth in the secondary school. The behavioral outcomes sought should include: increased understanding of self and role in society, commitment to democratic values, economic understanding, political acumen, and ability to think.

Individual students should be expected to achieve deepening knowledge, skill and insight in each area, but the amount of growth will vary from student to student.

Programs for students within the school should be planned on an individual basis.

Each individual's program should contain general education and specialized education.

The distinction between general and specialized education should be made in terms of the degree of choice given students. General education experiences should be required for all students and specialized education should be selected by each student in terms of his purposes.

One-third to one-half of the student's program should be devoted to general education designed to help him develop the competencies needed as a citizen. Both Class and nonclass activities should be used for this purpose.

The remainder of the student's program should be used to develop the talents that further his personal goals within the framework of elective offerings the community is willing to support. Elective choices should be made through the cooperative planning of the student, his parents and the school staff.

Courses in the general education phase of a student's program should be assigned to definite grade levels.

Courses in the specialization phase of a student's program should be open to students at any grade level if they have sufficient purpose and a satisfactory level of achievement.

Students should be allowed to select the specialized phase of their programs from the total offering of the school instead of being restricted to one of three or more types of curricula.

Pupil choices among the various offerings of the curriculum should be made jointly by the pupil, his parents and a staff member of the school in terms of the pupil's purposes and level of achievement.

Pupils with agreement of counselor and parents should be permitted to choose to work at varying levels of difficulty in different phases of the curriculum.

The testing and guidance program should help each pupil and his parents secure an accurate description of his abilities and achievement levels.

Students should be grouped in various ways throughout the different phases of their curriculum. Grouping of itself is meaningless unless the teaching utilized the kind of group provided to fulfill the purposes of general or specialized education.

In general education classes students should be grouped heterogeneously to provide experiences in working with persons of other socioeconomic backgrounds.

In classes designed to further a student's specialization, grouping should be made on the basis of the student's purposes and level of achievement.

Each student should be a member of at least one group with which he has a continuing relationship.

Each student should have a continuing relationship with a staff member who knows him well.

The classroom teacher should provide the major portion of the guidance for students.

Flexibility in scheduling should permit the organization of different classes for varying amounts of time.

Each faculty should develop an organization which guarantees continuous evaluation and planning and coordination of the total program.

Teachers of adolescents should move from dominant to supplementary roles as necessary, encourage students to challenge and question, and emphasize the drawing of generalizations and the understanding of relationships of various fields of knowledge.

Teachers of adolescents should develop skill in working with small groups in the class and should use flexible grouping within the class to provide for individual differences in purpose and levels of achievement.

Teacher education should be a function of the total institution in which teachers are prepared and the teacher education programs provided in the institution should be jointly planned by the various divisions of the institution.

Pre-service and in-service phases should be recognized as complementary divisions of teacher education by institutions planning the services they provide for teachers.

The experiences provided for secondary teachers should help them develop the special competencies needed for working with adolescents.

Appendix B

THE GRADUATE OPINIONNAIRE

13. Below are descriptions of five different types of high school programs. Assuming that all five were available to you when you were at East High School, which one would have done the best job of preparing you for what you did after graduation? Rank them from 1 to 5 (most beneficial to least beneficial).

COLLEGE-PREPARATORY This is a traditional program aimed at meeting college entrance requirements. The courses involved are usually the "solids" of math, science, history, English and social studies.

GENERAL This program is designed for the non-college bound student. The courses are less rigorous than in the above program. Such courses as general math or general science are taken instead of trigonometry, calculus, physics or chemistry. Electives are usually business, homemaking or industrial arts.

OCCUPATIONAL This program is not aimed at developing any specific vocational skill, but at providing the student with many general skills useful in many different types of jobs. These general skills are such things as communication skills, personal appearance and hygiene, consumer knowledge, home and money management, etc. This program prepares a student for entry into many jobs that require meeting and dealing with the public.

PRE-TECHNICAL Courses taken in this program are designed to prepare students for further study at a technical college or a business school. The science, math and English courses try to relate to the future goal of the student and are taught in a way that will have a practical application to the student's technical goal.

VOCATIONAL In this program a specific skill is learned in high school. Half-time is spent in vocational classes and the other half-time in classes needed for graduation. Part-time employment during the school day is often part of the program.

Please give us your current mailing address if it is different from the one on the envelope. _____

GRADUATE OPINIONNAIRE

EAST HIGH SCHOOL
Salt Lake City, Utah

1. What were your plans when you graduated from East High School? Check the most appropriate box next to Question 1. below.

	University	4-yr. college	tech. college	Jr. college	Trade school	Bus. school	Apprentice	Military	Work	Warriage	Wish school	On the job
Question 1.												
Question 2.												
Question 3.												

2. Check next to Question 2. above what you actually did right after graduating from East High School.
3. If you are now working full or part-time, check the box next to Question 3. above that will most accurately indicate where you received training for the job.
4. What are you doing now? Check more than one below, if necessary.
- working full-time school full-time
 working part-time school part-time
 unemployed, seeking work
 unemployed, not seeking work
 working part-time, seeking full-time work
 in military housewife other
5. If you are working full or part-time, what type of work do you do? _____
6. If you are now attending school full or part-time, what is your major? _____
7. Did you have a definite vocational goal when you graduated from high school? yes no
If yes, what was it? _____

8. Indicate below the ways in which your education at East High School helped you. Please check the most appropriate column for each of the items.

High School Area of Help	very helpful	some help	little or no help
taking care of my health			
participating in community and civic affairs			
preparing for marriage and family life			
getting along with others			
understanding myself			
conducting my business affairs			
training for an occupational field			
understanding social systems, races and religions			
understanding world events			
respect for law and order			
thinking through problems			
respect for the rights of others			
assuming responsibility			
identifying an occupational field			
preparing for college			

- yes 9. Do you feel that the type of education you received at East High School best prepared you for what you did after graduating?
 no
- yes 10. Do you feel that you had adequate counseling and guidance while you were at East High School that prepared you to make intelligent decisions regarding your future?
 no

11. If you are now working full or part-time, place a 1. in the box below that best describes the type and level of your job.

If you are not working, but are preparing for a job, place a 2. in the appropriate box below that will best describe the type and level of the job you are training for.

If you are now working and preparing for a higher level or different type of job, place a 3. in the box below that will best describe the new job you are preparing for.

	Manufac- turing Mining	Construc- tion	Transport- ation	Wholesale	Retail	Finance	Service	Government
Professional								
Managerial								
Technical								
Clerical								
Sales								
Service								
Agricultural								
Processing								
Machine Work								
Bench Work								
Structural Work								
Miscellaneous								

12. Briefly comment on the strongest and the weakest aspects of your education at East High School.

Strongest _____

Weakest _____

Appendix C
COMMENTS BY GRADUATES
OF
EAST HIGH SCHOOL

Appendix C
COMMENTS BY GRADUATES
OF
EAST HIGH SCHOOL

The following comments are some of those made by the graduates of East High School:

Strongest Aspects of Education
at East High School

Men

Good general education and ability to get along with people.

General education that taught self discipline in studying and approaching a variety of fields--appreciation of arts, sciences, music and other areas of study that I would not otherwise have been exposed.

Academics were the strongest in preparing me for a job.

I enjoyed everything about East High. I wish that I had tried and studied much harder than I did.

Good academic training.

Learning study habits.

Good general background of subjects.

Physical sciences.

Excellent teachers in the liberal arts and sciences.

Good general requirements helped prepare me for college.

Opportunity for social inter-play and leadership. Disciplines basically strong.

Several of my teachers who took time for personalized help. Also extra-curricular activities helped me become responsible.

Learning fundamentals of English, Math and Science.

Opportunity for outside class experiences and school officer.
Good English Teachers.

A great variety of subjects to choose from. A strong teaching staff. Excellent community-student body relationship.

Tech. drawing. It gave me something to work towards.

Meeting other students and comparing ideas. Working toward a common goal with other students.

Excellent stimulus in music, English and biological science.

The teaching staff was well qualified and were strict enough to cause me to work hard for my grades.

The stress on scholarship and academic subjects was most helpful.

I had a high respect for the administration.

Excellent preparation for college--very cosmopolitan and broad in world view (with exceptions).

The courses were, for the most part, challenging and required the organization of my time which made it an easy transition to college.

The variety of activities for potential growth.

Understanding world problems and what I can do to be a better citizen of the United States.

An understanding of the need to work and be honest in dealing with others while fellow students aren't.

Stressing the importance of continuing in a school of higher education.

I learned how to get along with others and participate in different activities.

An excellent academic education, unity, school spirit and extra-curricular activities, high-class students.

Quality of the faculty; availability of classes I enjoyed taking.

Preparation for study of technical subjects in college.

I feel the teachers at East High were the best Utah could offer--and the social life was the best.

Excellent mathematics background for college, along with one of the best music programs.

By far the most valuable part of my years at East was my close association with dedicated and genuinely concerned teachers adept at bridging the "generation gap." I believe I remember and appreciate most the things learned after school and between classes.

The way most subjects are covered quite deeply.

Learned how to apply for a job in a business class.

I feel I learned more from my association with athletics than from going to class day after day.

Emphasis on college-prep classes--though at the time I was undecided as to my future.

Math education, student office, and my history teacher who was the only teacher that made me really work.

Strongest is the emphasis put on physical education and learning in this particular area.

Women

Wonderful opportunities for gaining confidence through interaction with others.

Basic class content was helpful in preparing for college entrance exams.

Emphasis on the individual (I was quite unprepared for the impersonality of college).

I had a few very stimulating teachers. I wish they had all been so interesting.

Science courses gave me a good foundation for further learning in the university.

Office practice classes, typing, etc., were of the better subjects that helped me.

Gave me a desire to receive a higher education. I received leadership and social training which was invaluable.

Some very good, well-prepared teachers who were interested in teaching their particular subject.

I believe the home living class helped me to womanhood. I learned most from the classes that were strict and flunked me.

A. P. classes available, leadership development encouraged, many "exceptional" teachers.

The type of education and teaching methods were good.

Learning all aspects of education and how to get along with people in this fast moving world. Also helping me to want to further my education.

Definitely the Seminary. Next to that English, physiology, biology, and music classes.

I had many opportunities to be in positions which made me assume responsibility and be dependable. This has helped me very much.

I did take a bookkeeping class and a consumer math course which helped me in my employment.

The arts, humanities, also scientific fields. I acquired a strong appreciation of beauty and a thirst for learning. Also I learned much about getting along with people.

Business subjects for secretarial work and part-time employment for on the job training.

Choice of classes, teachers with a real interest in students and inspiring them to better objectives.

Classes and other activities that involved my generation. Dealing with people and being a better person.

Being trusted with responsibility, being taught respect for others, and how to get along with them.

I didn't have the problems that some of my collegemates did because I was used to hard studying.

There was an even balance between academic studies and recreation.

I understood the business part as it was taught well and I liked it.

Student loyalty to and participation in school functions.

It helped me decide what my major interests are and what talents needed to be developed.

The homemaking department helped me the most. Also the business department.

History, English and music most profitable subjects. Facing responsibility, working harmoniously with others, enjoying life, etc., organizing time.

Experiences in student government, athletics, and the emphasis on academic achievement, and learning to live with people.

Speech and English (especially the Speech 1 and discussion classes I took) have helped me at the University.

Social and sports and music which are of no use to anyone after high school.

Gave me a knowledge of what I could achieve if I applied myself.

I received a good basic education in many broad fields of study; the social activities were a good social preparation.

Got to know a lot of friends. Of course, it was the spirit of unity everyone felt, I think, and that's something you never get again.

I felt the strongest aspect of my training was in math.

Helped realize importance of further education--helped me prepare myself for college enrollment.

I enjoyed high school for the good times with good people. Socially getting along and making good friends most important to me.

Fairly good staff of teachers thus offering a good program in all the courses offered.

When the teachers were good the classes were excellent. When the teachers were bad I didn't learn a thing.

Weakest Aspects of Education
at East High School

Men

Occasional poor teachers (math) and no real counseling.

I didn't think the curriculum demanded enough from the students, especially the senior year. It was too easy to just drift through.

Not enough time was spent on problems each of us face, daily and understanding the world affairs. Practical information was secondary to what we had to cover in the book.

The counseling was poor. No one gave me a perspective of the future college work I would do. I was never personally encouraged about future scholarships, honors programs, and things which I could not have known unless they told me.

Religious training available for only one group out of many.

Lack of preparation in fields necessary and useful in everyday life; such as personal finance, money and banking, etc.

Little vocational planning or guidance.

Very poor industrial, technical and vocational training so important to the many jobs one must work while seeking higher degrees.

Terrible English department--antiquated teachers and ideas.

I would have benefitted more by having other subjects required rather than the general subjects for my continued education.

Working with other people, probably due to the fact I was a transfer from another school and could not break into the already formed social groups and cliques.

Gym, health and seminary were some of the weakest.

East High did not equip a student who had no further educational plans with a technical trade or skill.

Unable to express myself and know goals in life.

Introduction to types of jobs and what requirements are needed for such jobs. High school was a closed culture. We saw only ourselves and not what the world was like. I am prejudiced against many cultures today. I don't understand why negroes have to act and talk the way they do. I don't like being around them nor seeing them in the same building. I like a non-integrated system. I do not know if this helps you any but I formed this opinion between my last year at East and now.

No help or training in an occupational field of my choice.

Perhaps a few optional classes in "practical" subjects might be offered, such as personal finances, etc.

I didn't seek the available counseling therefore the responsibility was my own, not the school's fault.

A real look at our goals and aptitudes and how to reach and utilize them.

Lack of counseling for the future.

Actual orientation toward college. A lot was talked about it--little was made applicable while in high school.

Favoritism in counseling and in classes

Perhaps too singular in its goal of college preparation--could have been offset by interesting and well handled vocational

classes with college-bound students in mind (basic auto mechanics for boys and girls, basic home carpentry, etc.). Some was available, but didn't attempt to cater to the interests of most students, but rather to the disinterested in academic progress.

Failed to promote an interest in any one specific area of study.

Very little emphasis was placed on the achievement of good attitudes and confidence in self through development of individual talents. (I will be happy to elaborate on this topic at your request.)

Too much wasted time; not enough application of the will, self, soul and ability.

Social sciences, history. Lack of flexible curriculum. Lack of high degree of motivation due to graduation requirements which were classes which failed to develop any interest.

Poor stimulus in history and physical sciences. A great deal of nonsensical busy work.

The limited number of students to participate in inter-school athletics and other programs. Too many students not given a personal touch.

I feel that with better counseling I could have been better prepared after graduation.

Lack of training for menial tasks (bookkeeping, budgeting, cooking, shopwork, etc.). Of course these were available but I could not get them into my program.

None or little vocational opportunity.

No opportunity to learn a trade.

Lack of rapport between faculty and student; generalized apathy toward teaching by most faculty members.

Counseling inefficiency.

My only criticism would have to be directed at individual teachers who proved to be weak in their subjects--but I don't believe such things can always be avoided.

Very seldom in fact not once was I personally counseled by the faculty of East.

Too many people to receive proper help.

Although the counseling was adequate I never felt that anyone really knew much about the field I was interested in.

No vocational counseling of any depth, several impersonal teachers, too much BUSY WORK.

Not enough help in determining future goals.

There was not enough vocational or occupational guidance or counseling to help me prepare for college adequately.

All the classes seemed so generalized that it was hard to find an application for what was learned. It was so generalized that it was uninteresting.

They were dull years.

Math lacked in any real training useful to me.

No mechanics or technical skills taught.

Our structured classroom and school work situations which were somewhat stifling. Had a hard time with English teachers only at East High.

Not enough liberalization.

Speech--no training at all.

Some teachers too set in their ways and will not adjust to student needs.

Industrial arts and counseling.

Students need to be emotionally prepared for college. High school too sheltered.

The counseling system at East is a complete failure; it serves as a "police force" only (checking up on students). Weakest is the emphasis most of the teachers at East put on memorization of facts rather than any real learning. "Busy work" is an all too important tool used at East High.

Getting put together on what will happen when you're out of high school and guidance to what you are going to do. You're babied too much.

Speech should be mandatory.

Defining an occupation; the general area of humanities.

Structured competition oriented teaching format, wherein memorization of facts was stressed more than the ability to think.

Vocational exposure: I found I had little or no impression of how much I would enjoy or dislike various occupations. I found the best and most adequate counseling came from university officials and friends whom I contacted.

Women

I feel badly about those teachers who weren't interested enough in me as a student.

Awareness of social ills and political basis of our society.

More guidance about fields requiring other than a 4-year college program. Get rid of nonsense "copy out of the book" homework, by assigning outside reading and reports.

Little effort to develop personal initiative. Instruction in writing poor, but this seems to be a tendency in area schools.

No training in office machines and no practical application of techniques.

Not enough subject choice--the new flexible scheduling program may be a remedy to this.

Predominance of church influence.

I don't remember much comment on current affairs, with the exception of the astronauts orbiting the earth in history.

Gave very little assistance with techniques essential for college study--lacked tools to study without direction.

I managed to play around a lot and not study much.

Weakest concerning office work--classes which lend themselves towards actual circumstances as are found in an office.

Not enough time spent with individual students. Large number of poor, inadequate teachers.

Not enough individual guidance.

Vocational: I had to spend part of my first 2 years of college learning business skills to earn money in the summers. This is my fault because I didn't look ahead (or was not advised to).

Social Sciences. Developing occupational skills, except as a homemaker.

Student government--school run by tradition not students.

Teachers didn't give much help for individuals.

Teachers need to take more interest in the individual student.

Individual class curriculums not integrated with other classes.

The inability of the programs offered to inspire interest in me as a student.

English classes didn't prepare me for college.

1) There was not adequate counseling as a group or individually early enough. 2) There was not the right type of emphasis placed on why an education is important--especially for women--that they were responsible for homes and what they were--the community problems and how to participate in them--child psychology and rearing--in things most women need to know without having to spend \$500 in college to learn.

I really didn't have time to take all the subjects I would have liked to. Most of the classes were compulsory.

Classes, etc., with no relevancy to anything or our lives. Some things seemed so unimportant and/or antiquated.

Being put in classes with too many of the top students. This makes it very hard on an average person. Also the teacher may not think it worth his and your time to help you through the class. I found this to be true with several teachers and classes.

Not taking enough time to explain things in some classes such as English and history. Or taking too much time on unimportant things, busy work, etc.

Student leaders should try to plan activities to include more students--such as after game parties were only for the students who could dance, others felt left out.

Not enough vocational preparatory for those not planning to attend college.

I really didn't know what was going on in the "outside" world.

Not enough individual help and counseling.

Required schedule too rigid to meet individual needs. Assignments need to be on more of an individual level to accommodate various levels of skills. Counselors often knew less than the students about college tests and were discouraging about chances to be accepted into college when such pessimism was unwarranted (as proven in several students' situations--they later were accepted into high ranking colleges).

Counseling system weak--not enough time to really talk with counselor about college curriculum, etc.

Not enough challenge to the thought processes. Too much busy work--not enough class participation and discussion.

Poor counseling.

Counseling was extremely poor.

The mix-up of classes (like when you get in a class that you already had the year before, etc.).

Thinking problems through and understanding the inter-relatedness of different aspects of education and life.

More awareness of specific vocational goals and knowledge of advantages and disadvantages of the programs.

I don't believe there was a really weak point in my education at East.

Because it just provided a basic background on all the subjects, I didn't really get to know myself until college.

It is a caste system, I felt branded or permanent classes with no hope of progression among students.

I don't know if you'd call it a weak aspect but the most discouraging thing was the tremendous social pressure.

Too much racial prejudice and too clickish. Teachers (some) the same.

Counseling program: inaccurate information, poor understanding of the relation between student and school or society. How about draft counseling?

As in all schools cliques played a large part of determining officers, etc. (It's difficult to think of weak points for East. It was a very good school.)

Study habits, poor teachers, they weren't interested in having the students learn, just in teaching.

Not enough personal help--lack of help in fulfilling an individual's goals (teachers unconcerned).

Understanding people from other cultures and backgrounds.

To Whom This Concerns:

Excuse my strong impulse to say more on this subject, but it is a very important one and I feel very strongly about what I got out of high school. (Rather what I should have put into it.)

I didn't get anything very important out of high school because, unfortunately, I had no idea of where I was going (except some type of college), I ended up going to a Medical Assistant's School (which was an escape from facing my real problem) and I now feel that it was a waste of precious time and money. I did this because I didn't know what I'd do if I went to college. Fortunately, I became interested in a field through reading. (I had never been a big reader and

until then I didn't realize what a fantastic feeling it is to know what you want to do) I wish someone back in Jr. High or earlier would have forced me to read. I feel that if a person at the age of 14 or 15 is exposed to enough literature concerning various vocations and to people who are from different fields, he will feel a great deal more secure about the future and where he wants to put his efforts.

I am glad that the administration is making advances towards giving students a more flexible course of study. This type of program will give the student a better opportunity to explore his needs for self satisfaction thus indirectly helping the cause of mankind. There are two basic things that should be considered in helping the student to be happier in his high school years:

- 1- The emotional pressures that accompany the approach of adult-hood and "facing the world."
- 2- The exposure to what is really happening in the different fields and how the "person to person" contact is so important in building a happier environment for everyone.

Again I want to say that I am very inspired about what the high schools are trying to accomplish. It is a great feeling to know that my children are going to be treated on more of an individual basis rather than like pieces of machinery being run through a factory on a conveyor belt.

Sincerely,

Appendix D
SURVEY OF BUSINESS AND INDUSTRY
QUESTIONNAIRE

BUSINESS AND INDUSTRY SURVEY

 VOCATIONAL EDUCATION
 for
 East High School
 Salt Lake City, Utah

Name of Firm _____
 Address of Firm _____
 Type of service or product _____
 Your name and position _____

Approximate number and breakdown of employees
 _____ professional or managerial
 _____ technical
 _____ sales and service
 _____ skilled
 _____ unskilled
 _____ TOTAL

- ___ yes ___ no 1. Do you presently hire graduates direct from high school?
 If yes, what are your main selection criteria?

 If no, why not? _____

- ___ yes ___ no 2. Would you hire graduates direct from East High School if
 they had special vocational training in high school?
 If yes, what kind of vocational training would they need
 to be considered for employment by your firm?

 If no, why not? _____

- ___ yes ___ no 3. Would you hire students on a part-time, work-study basis
 in cooperation with East High School? If yes, in what
 occupational areas? _____
 Person to contact _____
- ___ yes ___ no 4. Would you hire student workers/learners/observers during
 their summer vacation months? If yes, in what occupational
 areas? _____
 Person to contact _____
- ___ yes ___ no 5. Does your firm now, or would your firm designate a person
 to serve on an advisory council to assist in planning
 vocational education for East High School?
- ___ yes ___ no 6. Would your firm designate an employee to serve on a craft
 advisory committee to help East High School develop
 a specific vocational program? If yes, in what occupational
 or vocational cluster would your industry be best suited to
 advise? _____

- yes no 7. Would your firm give positive support to East High School in terms of money or equipment for setting up and operating specific vocational education programs?
 Conditions _____
 Person to contact _____
8. What, in your opinion, are the most important personality traits or attitudes that a graduate of East High School should possess?

9. For employment by your firm, do you consider the possession of these personality traits and attitudes more important, equally important, or less important than specific vocational or technical skills?
 more important
 equally important
 less important
10. In light of employment trends in our modern technologically oriented society, what occupational groups or skill clusters are most appropriate to offer as vocational education at East High School?

11. Please rank the following high school programs from 1 to 5 (most beneficial to least beneficial) in terms of how you perceive them as being the best program for the average high school student.

 GENERAL This program is designed for the non-college bound student. The courses are less rigorous than in the college-preparatory program. Such courses as general math or general science are taken instead of trigonometry, calculus, physics or chemistry. Electives are usually business, industrial arts, homemaking.

 OCCUPATIONAL This program is not aimed at developing any specific vocational skill, but at providing the student with many general skills useful in many different types of jobs, such as communication skills, personal appearance and hygiene, consumer knowledge, home and money management, etc. This program prepares a student for entry into many jobs that require meeting and dealing with people.

 VOCATIONAL This program teaches a specific skill in high school. Half-time is spent in vocational classes and the other half-time in classes needed for graduation. Part-time employment during the school day is often arranged.

 COLLEGE PREPARATORY This is a traditional program aimed at meeting college entrance requirements. The courses involved are usually the "solids" of math, science, history, English and social-studies.

 PRE-TECHNICAL Courses taken in this program are designed to prepare students for further study at a technical college or business school. The science, math and English courses try to relate to the future goal of the student and are taught in a way that will have a practical application to the student's occupational goal.

12. There has been considerable debate concerning the role of the comprehensive high school regarding vocational education. Which of the following contentions do you agree, remain neutral, or disagree with? (mark them below)

Some people contend that:

- A. all students should leave high school with a salable (marketable) skill.
- B. the school should not be concerned with specific vocational training, but with the development of general traits and abilities applicable to a number of occupations.
- C. it is not the role of the high school to provide vocational education, but that this is the responsibility of the employer or of trade and business schools.
- D. the emphasis in high school should be on the learning process -- developing the ability to learn and to change (flexibility).
- E. that the high school's main responsibility is to select capable students and prepare them for college.
- F. every student in high school should have a tentative occupational goal on record based on adequate testing of his interests, aptitudes and abilities.
- G. the student's high school courses should be taught in such a manner that they relate to his or her occupational goal.
- H. the school cannot give realistic training for work, but actual work experience should be gained by the student in a cooperating business or industry.
- I. students should graduate from high school with both a salable skill (however modest) and sufficient educational background to pursue further education if desired.
- J. all education in high school should be general (neither academic nor vocational) aimed at preparing the student for whatever course he pursues after graduation.
- K. the middle 60% of the students in ability should take a vocational curriculum aimed at preparing them for further study at a technical college or a business or trade school.

	agree	neutral	disagree
A.	_____	_____	_____
B.	_____	_____	_____
C.	_____	_____	_____
D.	_____	_____	_____
E.	_____	_____	_____
F.	_____	_____	_____
G.	_____	_____	_____
H.	_____	_____	_____
I.	_____	_____	_____
J.	_____	_____	_____
K.	_____	_____	_____

13. Please use the rest of this sheet and the back for any comments, suggestions or criticisms.

Appendix E
COMMENTS BY RESPONDENTS
TO BUSINESS AND INDUSTRY SURVEY

Appendix E
COMMENTS BY RESPONDENTS
TO BUSINESS AND INDUSTRY SURVEY

Following are comments of local employers to the open response questions contained in the survey of local business and industry.

Do you presently hire graduates direct from high school?

If yes, what are your main selection criteria?

Grade point C or better, citizenship, good attendance and punctuality, health
Willingness to work, ability to think for himself and work without constant supervision
Mental ability, desire to learn a trade
Providing they meet job specifications
Ability to work
Willingness to learn, good appearance
Job need
Some indication of alertness, dependability and ability to learn mechanical tasks
Appearance, attitude, aptitude for beginning jobs
Dependable and willing to work are the types in demand
Mechanical aptitude, basic stability
Desire, willing to learn and invest some of their time to learn the job.
Honesty, mechanical aptitude and ability to deal easily with people
Ability to work with hands and follow instructions
Very quick to reason, alert, clean, intelligent, good at reading, writing, spelling and simple arithmetic
Intelligence and manual dexterity.

If no, why not?

Skills required in our business not found among high school graduates
Do not have the practical skills necessary
Our needs are for people with some woodworking skill
Prefer part-time college men
Machine operators need to be older and more responsible because of accident danger
Not many young people care for this type of work (cleaners), quite hot
Prefer to hire more mature persons, generally

Pay scale not attractive
 Lack maturity
 Not trained for bakery or not interested
 Do not feel and could not take the risk
 Most high school graduates do not have their service obligations taken care of nor do they have any training
 No takers for hard work, nor realization of work's potentiality.

Would you hire graduates direct from East High School if they had special vocational training in high school?

If yes, what kind of vocational training would they need to be considered for employment by your firm?

Electronics, radio license, typing, shorthand, clerical skills, key punch operator
 Printing
 Mechanics with basic training
 Welders and shop help, other crafts
 Training as carpenters best for us
 Machine shop training to include pantagraph
 Clerical, food service
 Mechanical drafting
 Baking
 Basic electricity and basic electronics
 Art, printing, metal working
 Training in electronics assembly, testing and trouble shooting would be helpful, machine shop and drafting
 Dairy science
 Welding, machinist, fabrication, stock room
 Primary building skills
 Training in display work with a talent in this field
 Clerical with typing and shorthand, printing arts would be helpful in our apprentice program
 Broad education with some home nursing classes
 Bicycle servicing
 Sales, stock, delivery, office
 Office help, type and customer relations
 Secretarial, dietary, custodial, receptionist, nursing skills.

If not, why not?

We train all our own help
 Demands additional
 From our experience in the past our needs require older persons who can be confident running a machine
 Mostly unskilled workers to start
 Prefer to hire more mature persons
 No special training needed.

Would you hire students on a part-time, work-study basis in cooperation with East High School?

If yes, in what occupational areas? (Company and contact person in parentheses.)

Printing (Jaffa Printing Co.)
 Only in busy period during summer (Lemco Corp., Albert Thomas)

Die cutting, tool making, and stone setting (D.C. Tanner Co., Michael Reddish)

Dietary (Holy Cross Hospital)

Blueprint boy, engine clerk (Peterson Filters and Engine Co., Eugene Kroff)

Printing Trade (Howard Jackson Press, James Jackson)

Clerical (Xerox Corp., 72 E 4 S.)

Maybe, auto mechanics helper (Safety Brakes Co., Mr. Love)

Summer stock room help (St. Regis Pulp & Paper Co., Mr. V. L. Burt)

Building skills (Mosier Investment Co., Dale W. Mosier)

To help display men as helpers (Modern Display Service, Inc., Bill Vriens, Jr.)

Sewing, warehouse (no name attached)

Yes, would like to help (Rope and Rigging Supply Co., Mr. Robt. Deiner)

We're willing to talk (Newspaper Agency Corp., H. L. Price)

Housekeeper, nurses aide (Crestwood Nursing Home, Anna Lee Segura, R.N.)

Probably (Pyke Mfg. Co., Frank Pyke)

Part time now (Gutherie Bicycle Co., H. W. Goddard)

Delivery, sales and stock (Pembroke Co., R. Stevenson)

Dock labor, after school (Hygeia Ice Co., Jarold Free)

During busy times we have need for unskilled help, (Coit Drapery Cleaners, Robt. Hale)

Graphic Arts training (Woodruff Printing and Litho, Rex Woodruff)

Delivery and possible sales (Neff Floral Co., A. J. Neff)

Possibly, would require some new thinking on our part, but might prove very practical (Salt Lake Mill and Lumber Co., Lemonte Peterson)

Kitchen helper, dishwashers, counter help, waitress (Chuck-A-Rama Buffets, Mr. Ballof, Mrs. Beal)

Secretarial, dietary, custodial, receptionist, nursing skills (Bonneville Convalescent and Nursing Centers, R. J. McPhie).

Would you hire student workers/learners/observers during their summer vacation months?

If yes, in what occupational areas? (Name of firm and contact person in parentheses.)

Kitchen helpers, dishwashers, counter help, waitresses
 (Chuck-A-Rama Buffets, Mr. Ballef, Mrs. Beal)
 Stock and inventory (Pullman Wholesale Tailors, G. C.
 Allington)
 Graphic Arts training (Woodruff Printing and Litho, Rex
 M. Woodruff)
 Have hired some in recent years (Rubber Engineering &
 Mfg. Co., T. C. Rigby)
 Dock labor and drivers (Hygeia Ice Co., Jarold Free)
 Bicycle (Guthrie Bicycle Co., W. H. Goddard)
 Unskilled, packing, shipping room (Pyke Mfg. Co., Frank
 S. Pyke)
 Housekeeping, nurses aides (Crestwood Nursing Home, Anna
 Lee Segura, R.N.)
 General Baking work (Holland Bakeries Inc., A. H. Dalebout)
 We're willing to talk (Newspaper Agency Corp., H. L. Price)
 Display men helpers (Modern Display Service, Bill Briens)
 Workers/learners (U.S. Lime, Division of Flintkote, Grants-
 ville, John Gardner)
 Primary building skills (Mosier Investment Co., Dale
 Mosier)
 Stockroom (St. Regis Pulp and Paper Co., Verl L. Burt)
 Possible lab helpers (Bennetts, Wallace Bennett)
 Plant help, unskilled (R & W Dairy Prod., Richard Russell)
 Machinist and electrical repairman (General Electric, 301
 S 7 W, R. G. Goff or C. R. Goff)
 Student workers (Safety Brakes Co., Mr. Love)
 Printing trades (Howard Jackson Press, James Jackson)
 Blueprint boy, engine clerk (Peterson Filters and Engine
 Co., Eugene Kroff)
 Some summer jobs (Holy Cross Hospital, Joseph Brusatto)
 Die cutting, tool making, stone setting (D. C. Tanner Co.,
 Michael Reddish)
 School Equipment (Lemco Corp., Albert Thomas)

Would your firm designate an employee to serve on a craft
 advisory committee to help East High School develop a specific
 vocational program?

If yes, in what occupational or vocational cluster would
 your industry be best suited to advise?

Electronics, key punch (Mt. States Tel & Tel)
 Health careers (Holy Cross Hospital)
 Business machines orientation, specifically related to
 office copying (Xerox)
 Electrical (General Electric)
 Precision machining, electronics (Cordin Co.)
 Mfg. of lime and limestone products (U.S. Lime)
 Display, designing, production, sales (Modern Display
 Service)
 Metal trades (Ajax Presses)

Graphic Arts (Woodruff Printing and Litho)
 Sewing machine operator (Pyke Mfg. Co.)
 Graphic Arts (Newspaper Agency Corp.)
 Plastics (Rider Plastics)
 Electronic computers (Burroughs Corp.)
 Woodworking, building (Salt Lake Mill and Lumber Co.)
 Offset printing (Gnas Ink Co.)
 Power sewing (Osborne Apparel Mfg.)
 Welding and fabrication (National Cylinder Gas)
 Nursing, all therapy areas, dietary, personnel, office
 management (Bonneville Convalescent and Nursing Center)
 Commercial art counseling, advertising and reproduction
 techniques (Gardiner Advertising Agency)

Would your firm give positive support to East High School in
 terms of money or equipment for setting up and operating
 specific vocational education programs?

Conditions:

Not unless programs involving commercial advertising and
 marketing were involved (Gardiner Advertising Agency)
 Could be discussed through sewing industry organization
 We could help supply educational programs (Gans Ink Co.)
 Not now, perhaps later (Salt Lake Mill and Lumber Co.)
 Come talk to us (Newspaper Agency Corp.)
 Obsolete and unused equipment (Ajax Presses)
 Willing, but not very able (Mosier Investment Co.)
 Equipment (General Electric, Homer L. Brown)
 Yes, if given authorization (Xerox)
 Panograph machine (D. C. Tanner)
 Some limited (Mt. States Tel & Tel, J. M. Burntee,
 524-6650)

VITA

Frank Bernard Barrows

Candidate for the Degree of

Doctor of Education

Dissertation: A Study of Vocational Education in a Comprehensive High School with Recommendations for Vocational Education and Educational Specifications for Industrial Education at East High School, Salt Lake City, Utah

Major Field: Industrial Education

Personal Data: Born at Oakland, California, July 7, 1927, son of W. Joe and Mary D. Barrows; married Maria I. Weissenberg June 21, 1951; two children--Louis R., and Ann F.

Education: Attended elementary schools in Oregon, Alaska, Washington, Florida and California; graduated from Walla Walla High School, Walla Walla, Washington in 1945; received Bachelor of Science degree from United States Merchant Marine Academy in 1949, with a major in marine steam and diesel engineering; did graduate work toward general secondary teaching credentials at San Francisco State College, 1954-56, with major in industrial arts and minor in physical science; attended National Science Foundation Summer Institute in electronics at University of Houston, 1962; completed requirements for the Doctor of Education degree, with a major field in industrial education and a double supporting field in educational administration, at Utah State University in 1970.

Professional Experience: 1968 to present, Assistant Professor in Industrial Technology at California State Polytechnic College; 1966-68, teaching assistant and research assistant, Utah State University, Department of Industrial and Technical Education; 1964-66, Assistant Professor, University of Southern California assigned to the Malawi Polytechnic School, Malawi, Africa, responsible for organizing and equipping telecommunications laboratory and developing courses of study in electricity and telecommunications; 1960-64, instructor, College of San Mateo, teaching at

Westmoor High School, Daly City, California, in electricity and radio shop and physical science; 1951-54, sailed as marine engineer on various U. S. merchant vessels; 1949-51, Assistant Engineer Officer, U. S. Navy, Korean service.